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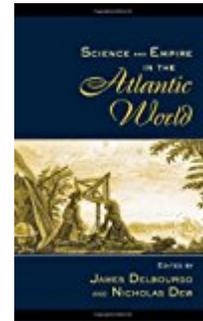
in the Humanities & Social Sciences

James Delbourgo, Nicholas Dew, eds. *Science and Empire in the Atlantic World*. New York: Routledge, 2008. xiv + 365 pp. \$95.00 (cloth), ISBN 978-0-415-96126-4; \$31.95 (paper), ISBN 978-0-415-96127-1.

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Not a New Atlantis: The Complexities and Contingencies of Knowledge and Power in the Atlantic World

Science and Empire in the Atlantic World opens not in the Atlantic Ocean but in the Pacific on an imaginary island off the coast of Peru. In his *New Atlantis* (1627), Francis Bacon conjured this island and its kingdom, Bensalem, as a model for England in its early forays into commerce and colonization in the Atlantic world.[1] Such a starting point for a collection of essays on the Atlantic world may be surprising. Yet, in their introduction, the editors, James Delbourgo and Nicholas Dew, explain that, although Bensalem was not *in* the Atlantic world, it was *of* the Atlantic world. Written at a time when the Spanish Crown was still the primary colonial power in the Americas, Bacon's *New Atlantis* also signals the importance of the Iberian world as a pioneer and model of European visions and techniques of "Atlantic knowledge and power" (p. 4); not only is Bacon's imaginary island located off the coast of a Spanish viceroyalty, but Bacon's narrator also apparently speaks Spanish, as do the inhabitants of the island. Accordingly, essays on the Iberian Atlantic—mostly Spain and Spanish America—figure prominently in this volume even as it covers a range of the geopolitical contexts of the Atlantic world, including British, Dutch, French, Portuguese, and Spanish enterprises in North America, South America, and the Caribbean. While the central theme of the collection is the making of natural knowledge in and about the colonial Americas, the editors and contributors have made an effort to take the

Atlantic world in its broadest conception seriously and to fully explore its utility as a unit of analysis for understanding the relationship between early modern sciences and empires. Although the volume itself does not make a big deal of this inclusiveness, it is a significant feature. After all, it was not that long ago that Jorge Cañizares-Esguerra made his forceful critiques of the ways in which historical scholarship on early modern science and the Enlightenment overlooked and often simply ignored the Iberian world.[2] *Science and Empire in the Atlantic World* represents a new era in the histories of science and the Atlantic world—an era in which the Iberian world is simply assumed to be part of the story without any hand-wringing and without much fanfare. This is a positive development.

Although the editors do not call attention to the variety of their selections, it is one of the volume's strengths and the editors made inclusivity a primary goal in their selection process—a feature also reflected in the volume's broad conception of early modern science, including selections on astronomy, botany, cartography, medicine, natural philosophy, and technology. Delbourgo and Dew make good use of the diversity of the essays by organizing the volume into four thematic sections, each with three essays, with an afterword to the whole collection by Margaret Jacob entitled "Science, Global Capitalism and the State." Each of these sections includes essays drawn

from different scientific enterprises and geopolitical contexts, as in section 1 which includes Alison Sandman on geographic knowledge in the Spanish Atlantic, Nicholas Dew on astronomical practices in the French Atlantic, and Joyce Chaplin on oceanographic knowledge in the British Atlantic. This organizational scheme supports the editors' goal for the contributions to "be read comparatively to see how Europeans and American Creoles competed in the project to make knowledge in relatively discrete zones of territorial and maritime influence" while at that same time considering these case studies as "interlocking parts of a larger history of knowledge, communication, and empire in the Atlantic World—a history that transcends any single national framework and is defined as much by unpredictable crossing as mercantile containment" (p. 20). Ultimately, the very architecture of the collection results in a volume that seeks to "work against traditional national narratives of center-periphery relationships" (p. 6). Here, the essays are discussed out of order.

One prominent theme in this collection is the epistemological consequences of Europe's encounter with the Americas. While existing scholarship has tended to emphasize the epistemic distance and dissonance between "Western rationalism" and "Native American shamanism and magical thinking" (p. 100) during the early modern period, Ralph Bauer's essay shows that European ways of knowing actually had much in common with indigenous ways of knowing, especially in the case of sixteenth-century European occult philosophy. Through a close reading of Sir Walter Raleigh's *The Discoveries of the Large, Rich, and Bewtiful Empyre of Guiana*, Bauer argues that "occult philosophical traditions provided important epistemological venues in an early modern discourse of 'discovery' not only for the apprehension of empirical phenomena that seemed to be at odds with the more authoritative sources of the scholastic canon but for an interaction with local (often oral) form of knowledge" (p. 102). In contrast to Bauer, Antonio Barrera-Osorio argues that the new empirical practices that the Spanish developed in response to their encounter with the New World, constituted an alternative to "Aristotelian, Neo-Platonic, magical and alchemical practices of the sixteenth century" (p. 178). Through an examination of cases from agriculture and cartography, Barrera-Osorio argues that the Spanish Empire "fostered the creation and development of institutions and institutionalized empirical practices for the study and organization of the New World" (p. 178). When considered side by side, the essays from Bauer and Barrera-Osorio show how the em-

pirical knowledge of the Americas had different effects depending on the context. In another case study from the Spanish Empire, Alison Sandman considers the declining authority of yet another kind of empiricism: the tacit and experiential knowledge of ship's pilots. She argues that ship's pilots and their knowledge lost utility and authority as the Spanish Crown focused its efforts on publicizing and endorsing "the universal, theoretical, systematic knowledge of the cosmographers" (p. 33). These three selections reflect some of the variety of reactions among Europeans to empirical observations and experiences of the New World. It also is important to note that these essays appear in different sections of the volume. While the editors' thematic organization of the collection is useful, the general of coherence of the essays means that readers can follow a variety of intellectual itineraries to connect, compare, and contrast the contributions in myriad ways.

Another strength of this volume is its commitment to providing "a social history of the interconnections between radically different peoples that made and circulated natural knowledge" (p. 12) as part of a conscious effort to turn away from European "heroic narratives of discovery" that have characterized "the history of science beyond Europe" for so long (p. 5). Many of the techniques and institutions developed to facilitate science and empire in the Atlantic world involved the coordination of a variety of social groups that played a significant, if often underappreciated or unrecognized, role in these enterprises. Júnia Ferreira Furtado takes us to colonial Brazil with her revisionist account of the role of Portuguese physicians in the development of tropical medicine. Furtado describes the emergence of a "colonial empiricism" constituted by the material and intellectual exchange between Luso-Brazilian barber-surgeons and indigenous peoples and African slaves in the interest of "gathering and testing of plants, drugs and other objects" (p. 128). Furtado's essay highlights two features of such interactions that appear in several other essays in this collection. On the one hand, those with direct experience of American nature and indigenous peoples, such as Furtado's barber-surgeons in Brazil, often used their experiences to bolster their authority vis-a-vis scientific practitioners in Europe. On the other hand, as Europeans assimilated this empirical knowledge of American nature, they increasingly effaced reference to the indigenous peoples, African slaves, or Creoles who gave rise to that knowledge in the first place.

Focusing on the slave societies of southern North America and the Caribbean, the essay from Susan Scott Parrish shows how African slaves co-opted the empiri-

cism that pervaded the colonial Americas and used it to their advantage. “Empiricism,” writes Parrish, “often gave authority where political empire took it away” (p. 282). In such situations, European colonists often experienced anxiety born of conflicting conceptions of African slaves as possessing “the capacity to perform empirical work” while treating “African knowledge as potentially subversive” (p. 283). Similarly, François Regourd’s essay examines the reception of mesmerism by both colonial elites and African slaves in late eighteenth-century Saint Domingue. For colonial elites, mesmerism fostered their efforts to engage broader discourses and practices of medicine and science that pervaded the French Atlantic even as they questioned the ability of “Old World” experts to judge the applicability of mesmerism to the New World. At the same time that some colonial elites sought to discredit mesmerism, colonial magistrates expressed fears that blacks might appropriate this knowledge and use it against whites. Thus, Regourd argues, “mesmerism in Saint Domingue appears as a fascinating catalyst of tensions and fantasies” and, ultimately, it was the encounter with the occult powers of mesmerism that provided colonial elites with the language and notions to describe Vodou—a much more elusive body of Atlantic knowledge, practices, and rituals “built on a constant cross-fertilization” (pp. 324-325). In light of the variety of peoples who employed empirical techniques and allegedly European bodies of knowledge to their own ends, these contributions suggest that making natural knowledge in the Atlantic world constituted a range of malleable ideas and practices that were as likely to undermine as to affirm imperial power.

Creoles were another important group of intermediaries in the Atlantic world navigating between indigenous, African and European ways of knowing while attempting to develop their own epistemology and to assert their own authority. In many cases, we see that the experience of Creoles provide a means to question and undermine the geography of (European) centers and (American) peripheries that has dominated much of the scholarship on the Atlantic world as well as science and empire. In considering Benjamin Franklin’s efforts to know and represent the Gulf Stream in the Atlantic Ocean, Joyce Chaplin offers a “useful corrective” to characterizing “science and empire in terms of distinct geographic zones, usually divided hierarchically into center and periphery” (p. 73). Even though the Atlantic Ocean was central to the British imperial enterprise in the Americas, knowledge of that medium of empire remained surprisingly diffused and decentralized. Ultimately, Franklin’s real

achievement was not necessarily in making new observations about the ocean but rather in collecting and collating the knowledge of mariners—an effort that made the Gulf Stream legible. While Chaplin suggests that “there was no center” in Franklin’s case, Daniela Bleichmar, in a contribution on the circulation of botanical knowledge in the late eighteenth-century Spanish Empire, presents a world in which there were multiple centers of knowledge production—a world in which, surprisingly, Madrid was not always the main reference point for naturalists in Spanish America. Instead, Bleichmar shows how Spanish and Creole naturalists on both sides of the Atlantic world found themselves operating within “dense institutional and administrative networks” in their efforts to identify and exploit botanical commodities from Spanish America—cinnamon, tea and cinchona bark—as part of “initiatives [that] originated not only in Madrid but [also] in places like Bogotá, Lima, and Mexico City” (pp. 227-228).

Like their counterparts in South America, Creoles in colonial British America had to navigate a complex network of centers of knowledge production. In his essay, Jan Golinski focuses on an “Atlantic discourse concerning the effects of climate on civilization” (p. 155)—a discourse that supported a privileging of European centers of knowledge production over those in the America. Golinski shows that British American Creoles not only laid claim to knowledge of American climate but also asserted their power to change this climate through civilization itself as part of their efforts to refute European theories of the degenerative effects of the American climate. James Delbourgo tells a similar story of the contributions and powers of Creoles in British America through the case of electrical machines in the mid-eighteenth century. Delbourgo emphasizes the malleability of the “truths that electrical machines yielded” (p. 257). At one moment, “provincials” in British America might view electrical demonstrations as their access point to European Enlightenment; and at another moment, they might interpret these same demonstrations as representing their political and epistemological independence from European imperial power. As “American provincial cosmopolitanism yield[ed] to a romantic republican nationalism,” operators and interpreters of these electrical machines showed that these technologies could serve as “engines of both unity and disunity in the Atlantic World” (p. 258).

One other valuable contribution of this collection is its emphasis on the contingency and fragility of knowledge and power in the Atlantic world. Here, a re-

turn to Bacon's *New Atlantis* is useful. The centerpiece of Bacon's utopian vision was a state-sponsored institution for the study of the natural world, known as Solomon's House. One remarkable achievement of Solomon's House was that its agents had traveled the world collecting all kinds of information and knowledge without anyone learning of the existence of their island. In other words, Bensalem got all the beneficial knowledge of long-distance, cross-cultural exchange without any of the hassles of commercial and colonial entanglements that characterized such enterprises in the Atlantic world. Whereas the collection of knowledge from afar was quite easy for the imagined kingdom of Bensalem, several essays in this collection illuminate the contingencies and difficulties involved in actually knowing and governing across the vast the expanse of the Atlantic Ocean "in an age before the modern nation-state and professionalized scientific disciplines" (p. 6). Travel itself could be a problem. In 1672, when Jean Richer, a member of the Académie des sciences in Paris, traveled to French Guiana to take astronomical observations, he had to hitch a ride on a commercial vessel, unlike his counterparts a century later who were provided with ships from the French Crown. Nicholas Dew uses this episode to show that, before the late eighteenth century, scientific travelers acted more like "freeloaders" than full-blown agents of empire (p. 59). Not all scientific travelers were as resourceful or lucky as Richer. During a largely unplanned thirty-five-year odyssey in South America, Joseph du Jussieu, a French physician and naturalist, endured various failed attempts to send the results of his botanizing in South America back to Paris. In his essay, Neil Safier uses Jussieu's experience as an example of "thwarted knowledge," a phrase that Safier defines as "knowledge that was cut off from broader networks either by obligations imposed by (Spanish) colonial powers, climate and metrological complications, financial considerations, (English) maritime bellicosity, or Jussieu's own changing psychological disposition" (p. 205). Contributions like these from Dew and Safier call attention to the quotidian, yet significant, ways in which that Atlantic world was as much an obstacle as an opportunity to the making of natural knowledge.

Overall, this collection of essays succeeds at presenting a diversity of case studies without sacrificing coherence and cohesiveness. It also succeeds in making a case for the utility of transnational, transimperial approaches in the historical study of early modern sciences and empires. Not surprisingly, *Science and Empire in the Atlantic World* is emerging as a foundational text among recent efforts to tell the history of science from a more global

perspective.[3] While such efforts represent an admirable and useful historiographical turn, it is still unclear how they interface with scholarship oriented more toward local, national, or regional contexts. The problem is especially acute in historical scholarship on science in colonial Latin America. As noted above, the history of science in the Iberian world in general has received little attention in Anglophone scholarship until very recently. The relationship of this collection of essays to that historiography is somewhat ambivalent. On the one hand, it makes the Iberian world an integral and natural part of the histories of science, empire, and the Atlantic world. On the other hand, the findings of these essays, when taken as a whole, suggest that even the vast expanse of Latin America may be too constrictive a geographical frame for characterizing the interactions between early modern sciences and empires. As this collection makes clear, it is not just the "Euro" in Eurocentrism that is the problem; it is also the centrism. In the early modern Atlantic world presented here, knowledge was not the product of a center or even a group of centers but, instead, it was the result of movements and interactions throughout the Atlantic world, even across imperial borders. In some sense, the success of the Atlantic paradigm here presents a challenge to any attempt to treat colonial Latin American science or Iberian science as enterprises distinct from the larger Atlantic world. Nonetheless, this collection has much to offer to students and scholars of the history of Latin America, especially by showing that many of the peoples of the Americas played a central role in the complex and contingent pathways of Atlantic knowledge and power.

Notes

[1]. For an interesting contrast to the reading of Bacon offered in the introduction to this collection of essay, see Deborah Harkness's recent book, *The Jewel House* (New Haven: Yale University Press, 2008), which suggests that Bacon owed much of his vision of the sciences and the institutional organization to the communities and activities he encountered in the city of London.

[2]. Jorge Cañizares-Esguerra, *Nature, Empire, and Nation: Explorations of the History of Science in the Iberian World* (Stanford: Stanford University Press, 2006); Jorge Cañizares-Esguerra, *How to Write the History of the New World: Histories, Epistemologies and Identities in the Eighteenth-Century Atlantic World* (Stanford: Stanford University Press, 2001).

[3]. On the global history of science, see Sujit Sivasundaram, ed., "Focus: Global Histories of Science," *Isis* 101, no. 1 (2010): 95-132.

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