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Antonio Barrera-Osorio, Experiencing Nature: The Spanish American Empire and the Early Scientific Revolution

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the urban centers of Taxco and Acapulco, frequently referenced in terms of markets and nodes of transportation, do not figure as central points of analysis in this spatial history of population movement and economic expansion.

The erudition of this profoundly regional study is impressive; yet, one questions whether the weight of the author's theoretical framework overshadows the history it is meant to explicate. For example, Amith's discussions of sentiment and moral economy, in reference to places and processes of community formation, rely on citations of theoretical texts but do not include descriptive subject matter concerning religion, ritual, and the imagery of particular places. It is surprising to find only a few references in this work to the rich scholarship in history, art history, literature, and anthropology concerning the symbolic meanings of the *āltepētī* and the legends of ancient migrations through watery worlds and different terrestrial spaces in Mesoamerican traditions. Had Amith engaged more fully with recent works on other regions of Mexico that document and theorize the cultural import of demographic displacements and resettlements for colonial spaces and social/ethnic identities, he would have anchored his research even more firmly in the richly varied historiography that provides the context for spatial histories like *The Möbius Strip*. Taking into account such caveats, this book contributes in important ways to interdisciplinary research on the particularities of place, the global consequences of colonialism, and the dialogic quality of history understood as process.

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Experiencing Nature: The Spanish American Empire and the Early Scientific Revolution. By Antonio Barrera-Osorio. (Austin: University of Texas Press, 2006. xi + 211 pp. Illustrations, appendixes, notes, bibliography, index. \$45.00 cloth.)

Antonio Barrera-Osorio's work is an incisive look at the Spanish contribution to the modern Scientific Revolution. Based on his dissertation research, Barrera-Osorio's book makes a convincing argument about how the Spanish approach to the exploration and resource exploitation of the Americas set the foundation for the empirical study of nature that is at the heart of the Scientific Revolution. As the Spanish undertook the exploration and colonization of an entirely new world that had never been encountered before, classical thought and theory could not explain this new world, and the Spanish needed practical information about it in order to use it for Spain's benefit. The Spanish Crown institutionalized the practice of relying on empirical data and experimentation to gain knowledge about the New World, and this approach to the study of nature and the body of knowledge amassed by Spain was

published and translated into various European languages, which helped pave the way for the seventeenth century's Age of Enlightenment and the Scientific Revolution.

By focusing on Spain, the first European nation-state to establish an Atlantic empire, Barrera-Osorio demonstrates that the scientific enterprise was not solely a Protestant achievement. He relies on both published and unpublished sources to demonstrate how Spain's empire-building enterprise relied on, and legitimized, empirical practices. Barrera-Osorio carefully builds his case for how empirical practices actually emerged in Spain's Atlantic enterprise by studying the relationship between the Crown and its subjects. He traces the activities of scholars, ship pilots, entrepreneurs, and royal officials in the practices of navigation, agriculture, and instrument-making and how this interplay promoted and institutionalized an empirical culture, the basis of modern science (p. 7). He documents many examples to demonstrate his point, three of which are the activities of the Casa de la Contratación and its influence in the development of new navigational techniques; the technological innovation of using mercury for smelting silver (the amalgamation method); and the books of nature written by Gonzalo Fernández de Oviedo and José de Acosta.

Created by the Spanish Crown in 1503, by the 1550s the Casa de la Contratación in Seville was a well-established center for the collection and dissemination of information about the New World. Barrera-Osorio analyzes sixteenth-century reports produced by various experts to document the Crown's reliance on empirical data to synthesize information about New World navigation, instrumentation, and cosmography, and develop processes to certify pilots, charts, and instruments to increase the efficiency of exploration and commercialization of the New World.

The exploitation of silver mines in the Americas became an important source of wealth for entrepreneurs and the Crown alike during the sixteenth century. Bartolomé de Medina's adaptation of the amalgamation process—using mercury for extracting silver from ore—to increase the production of silver is another example discussed by Barrera-Osorio. The Medina amalgamation process is an outstanding example of how scientific experimentation and entrepreneurs were fostered by the Crown and how this developed new technologies that fueled the exploitation of New World resources.

In the last two chapters, Barrera-Osorio focuses on the Spanish Crown's interest in obtaining information about the natural world. The author notes that it was the Spanish bureaucracy that developed methods for this information gathering. This process was formalized in the 1571 statutes *Ordenanzas Reales del Consejo de Indias* and the royal decree of 1572 requiring descriptions of overseas possessions. He emphasizes that the Crown's instructions for the reports were that they be not only detailed and thorough but also include commentary by royal officials and residents who had practical knowledge of the New World.

The Crown also commissioned scholars such as Gonzalo Fernández de Oviedo and José de Acosta to produce their respective histories of the Indies. Although trained in the classical tradition, these historians also used the empirical information gathered on the natural and cultural world of the Americas. The seeds of relying on this experience to arrive at the "truth" can be found in these "circuits of information" and "books of nature" so ably discussed in Barrera-Osorio's book.

In conclusion, this book is an excellent account of the Spanish contributions to the development of the modern scientific enterprise and should be read by those interested in sixteenth-century history and the history of science. Because of its elegant and easy-to-read style, general readers who enjoy history will find it interesting as well.

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War and Genocide in Cuba, 1895-1898. By John Lawrence Tone. (Chapel Hill: University of North Carolina Press, 2006. xiii + 338 pp. Illustrations, maps, tables, notes, bibliography, index. \$35.00 cloth.)

The word "genocide" was not coined until the end of World War II, but it appears in the title of John Lawrence Tone's book to describe what happened in Cuba during the tragic war for independence at the end of the nineteenth century. Tone joins a lengthening list of historians who use the term to describe events that occurred long before the mid-twentieth century. He does not clarify the meaning or go into detail about this supposed genocide until the latter part of the book, which distracts the reader's attention from the many other worthwhile parts of this study. The reconcentration policies carried out by the Spanish commander, General Weyler, led to what Tone estimates as 100,000 deaths from a combination of starvation and epidemic disease. The suffering was terrible, but even though it was presented in the tabloid press of the United States as something later generations would label genocide, that was not the purpose of the Spanish policy of reconcentration. The suffering and deaths added to the dimensions of this Caribbean tragedy.

Tone makes extensive use of Spanish military archives in this first rate study of the war, and he certainly does not hesitate to offer new judgments on the various participants. He has written a welcome, concise history of the Cuban War for Independence in which he succeeds in setting out clearly the complexities of this prolonged war of liberation that turned out to be a tragedy, in one form or another, for both the Cubans and the Spanish. Tone believes