



Vol. 5, No. 1, Fall 2007, 345-356

www.ncsu.edu/project/acontracorriente

Review/Reseña

Jorge Cañizares-Esguerra. *Nature, Empire, and Nation: Explorations of the History of Science in the Iberian World*. Stanford: Stanford University Press, 2006.

Early Modern Iberian Science: Ignored But Not For Much Longer

Matthew James Crawford

University of California—San Diego

There is a fundamental aspect of the early modern Iberian World that continues to be overlooked if not actively ignored in Anglophone historical scholarship: science. Thus, use of the word “explorations” in the subtitle of Jorge Cañizares-Esguerra’s *Nature, Empire and Nation* is fitting since this book discusses largely unexplored historical terrain. While intellectual life (of which science is a part) has received some attention in historical scholarship on colonial Latin America, Anglophone readers would be hard-pressed to find references to the “Iberian World” (Spain, Portugal and their colonial territories) in even the most recent histories of

early modern science. For instance, Cañizares-Esguerra notes that two recent works on the Scientific Revolution by renowned historians of science “manage to exclude the Iberian empires” as completely as earlier twentieth-century narratives did (45). Omission of the Iberian World is surprising given that, in recent decades, historians of science have subjected the Scientific Revolution, one of their main historiographical concepts, to much debate and revision. Despite critical re-evaluation, however, the geography of the narrative of the Scientific Revolution and early modern science has received little scrutiny. Consequently, historical ignorance of early modern Iberian science persists even though historians of science have developed a deeper and more nuanced understanding of science in early modern England, France, Germany and Italy. Even in the emerging field of the history of colonial science, the focus has mainly been on British, French and Dutch colonial and imperial enterprises with little consideration of Spain and Portugal in spite of the fact that the Iberian peninsula was (literally in some cases) the starting point of European expansion and colonization.

Nature, Empire and Nation engages this gap in our knowledge of the early modern Iberian World on both a historical and historiographical register. On a historical level, these essays add much historical knowledge of science in the early modern Iberian World. In addition to describing historical examples, Cañizares-Esguerra also seeks to explain why scientific knowledge, practices, and institutions took the form that they did in the early modern Iberian World. In particular, he suggests that patriotism, more often than not, whether among Creoles in Spanish America or Spaniards in Spain, was a crucial factor. In addition, Cañizares-Esguerra is not content with simply pointing to early modern Iberian science and saying: “there it was.” Rather, this book also provides explorations of the historiography of early modern Iberian science that seek to explain how and why Iberian contributions to the history of science became and remains marginalized in (primarily Anglophone) narratives of enlightenment, modernity and the emergence of modern science.

Although the book is divided into chapters, it is essentially a collection of essays which, with the exception of the last chapter, are all

pieces that Cañizares-Esguerra has published in various venues in the last decades or so. Beginning with Iberian science in the sixteenth century, the selections proceed roughly chronologically through the seventeenth, eighteenth, and nineteenth centuries incorporating examples and case studies from Spain, South America, and México. There is approximately an equal amount of space devoted to both sides of the Atlantic and, at a number of points, the essays suggest a greater continuity and coherence of scientific and intellectual traditions between Spain and its American viceroyalties than has previously been attributed to them. Consequently, for Latin Americanists, this book subtly suggests a more holistic approach to the Iberian World along the lines of the rubric of the Spanish Atlantic. Cañizares-Esguerra's observation at one point that early modern science in Portugal and Brazil needs more attention makes its absence in this book even more noticeable. Nonetheless, these essays reflect the exceptional range of Cañizares-Esguerra's erudition about the early modern Iberian World as evidenced by various sciences discussed including astronomy, natural history, cartography, biogeography, and political economy among others.

The first two essays focus on Iberian science in the sixteenth century. While the first essay provides an overview of scientific and epistemological traditions in colonial Spanish America, the second essay, after discussing a few historical examples, focuses mainly on the historiography of early modern Iberian science. The second essay is iconic of the approach and central concerns of this book and reflects Cañizares-Esguerra's intellectual passion through its engaging and, at times, polemical style. Notably the title of this essay ("The Colonial Iberian Roots of the Scientific Revolution") has been toned down a bit since its first appearance in 2004 in *Perspectives on Science* where it bore the title: "Iberian Science in the Renaissance: Ignored How Much Longer?"¹ Taken together, these first two essays work to support Cañizares-Esguerra's premise that "any understanding of European traditions of colonial science needs to come to grips with the long-term patterns that first emerged in the tumultuous multicultural world of the early modern Iberian empires" (13).

¹ Jorge Cañizares-Esguerra, "Iberian Science in the Renaissance: Ignored How Much Longer?," *Perspectives on Science* 12, no. 1 (2004): 86-124.

Across both essays, Cañizares-Esguerra shows how early modern Iberia provided other European states with a model of imperial science rooted in a “chivalric epistemology” in which “chivalric, gendered values colored the pursuit of knowledge” (10). It is best represented by the image of “the cosmographer as knight, or the knight as cosmographer” (10). Cañizares-Esguerra provides many examples of the influence of this model as in the case of proponents of colonization in Elizabethan England, including Sir Walter Raleigh, who admired and assimilated this “chivalric epistemology” and the practices of Iberian colonial science. Other compelling examples of imitation of Iberian tropes come from Francis Bacon’s *Instauratio magna* (1620) and *New Atlantis* (1626). With regard to the former, Cañizares-Esguerra suggests that the frontispiece of *Instauratio magna* “purposefully sought to imitate” Andrés García de Céspedes *Regimiento de navegación* (1606) both of which show a European ship sailing beyond the pillars of Hercules (18). With regard to the latter, Cañizares-Esguerra argues that “the institutions and values of Bacon’s *New Atlantis*, with its crusading order of Solomon’s House, in every respect resemble those created by Spain and Portugal to gather knowledge for utilitarian purposes” (21). In the end, these essays reiterate an argument made by José Antonio Maravall almost forty years ago that Iberian intellectuals “first developed a sense that moderns had superseded the ancients” (14). Of course, as Cañizares-Esguerra points out, the great historical irony is that Protestant and Enlightenment Europe, in constructing narratives of modernity, actively defined itself as modern and progressive in opposition to the backwardness of Catholic Iberia – the very region that invented one of the predominant tropes of modernity.

The second essay develops another line of argumentation in its review of the historiography of early modern Iberian science. Here, the narrative of the Scientific Revolution emerges as an iconic modern narrative premised on the notion that the “mathematization and mechanization of the cosmos in the seventeenth century ultimately led to secularism, industrialization, and capitalism: the birth of the modern world” (23). In particular, Cañizares-Esguerra tries to explain why the Iberian World has remained marginal to such narratives when there is

evidence that Bacon and others clearly admired and borrowed Iberian techniques and tropes. Not surprisingly, Cañizares-Esguerra traces this trend back to the influence of the notorious *leyenda negra* about Spain and its colonial enterprise among other factors. Excerpts from several works, such as Montesquieu's *Lettres persanes*, show how Northern Europeans, especially in France, built upon this early modern trope by portraying Iberians as "the antithesis of modernity," a view which was only reinforced by the decline of the Spanish and Portuguese empires in the seventeenth century (24). Finally, in shifting its focus to several recent and well-received works by Richard Drayton, David Freedberg, and Lorraine Daston and Katherine Park, this essay provocatively suggests a continuity between the active exclusion of Iberia from eighteenth-century narratives of modernity and the passive ignorance of early modern Iberian science permeating current scholarship in the history of science.

While we might, at least, expect Spanish historians to have made the case for Iberian science, they too, Cañizares-Esguerra argues, have contributed to the problem. Although appreciative of Spanish historians' contributions to our knowledge of early modern Iberian science either through publishing primary sources or through producing historical surveys, he notes that this scholarship has several shortcomings. First, he notes that "for all their historicist sensibilities, most Spanish historians of science seem overly concerned with identifying the pioneers of modernity" (39). The problem with this strategy, according to Cañizares-Esguerra, is that "by looking only for traces of modernity in the Spanish polity, these scholars ignore all other aspects of the practice of natural philosophy in early modern Spain" (39). Second, Cañizares-Esguerra also critiques Spanish historians of science for relying too heavily on the bibliographic approach, which, from his perspective, simply replicates the patriotic strategies of early modern Spaniards, who responded to critiques of other Europeans by producing lists of "the remarkable intellectual successes of the Spaniards since the Romans" (30). He faults this approach for not deploying this "erudition" and "meticulous research" in the service of "grand interpretations" which could unseat the inherited narratives of modernity that have circulated since the Protestant Reformation and

Enlightenment (39). The essay ends with an optimistic prediction: “it is just a matter of time before books in English on the Scientific Revolution begin adorning dust jackets with the frontispiece of García de Céspedes’s *Regimiento de navegación*, rather than that of Bacon’s *Instauratio magna*” (45).

In the remaining essays, Cañizares-Esguerra follows the pattern of these first two essays by using empirical evidence to critique and revise various narratives of modern phenomena that have excluded or ignored the Iberian World. In addition, several of these essays develop a third major theme: patriotism and its influence on perceptions of the natural world and the production of natural knowledge. For example, the third essay examines the transition in late seventeenth- and eighteenth-century México from baroque science, which fostered a primarily emblematic, Neoplatonic and hermetic view of nature, to modern colonial science, which encouraged more economic, Newtonian and mechanical conceptions of nature. While baroque and modern colonial science may have encouraged markedly different visions of the natural world, Cañizares-Esguerra argues that patriotism, especially among Spanish American Creoles, was a “unifying theme throughout the long eighteenth century” (63). Within the baroque perspective Creole patriots took pride in the “mineral and pharmaceutical wonders of their land” as a reflection of “God’s providential designs” (62). Later in the eighteenth century, such patriotic sensibilities, now inflected with a proto-nationalism, fostered a sense of “agricultural potential” of American lands as Creoles envisioned their region becoming “a leading commercial emporium in the world” (62).

The fourth essay gives another example of the interconnection between patriotism and natural knowledge by focusing on astrology in seventeenth-century Spanish America and the invention of “modern forms of the racialized body” by Creole intellectuals (65). What made the colonists’ conception of the racialized body modern was “the emphasis on biological determinism,” the “focus on the body as the locus of behavioral-cultural variations” and an “obsession with creating homogenizing and essentializing categories” (66). In part, this approach, developed by Spanish-American Creoles, served as a resolution to the paradox of arguing

“that America was under benign, soothing cosmic influences without giving up their construct of Amerindians as phlegmatic miscreants” as a way of responding to European critiques of the degenerative influence of the New World (85). In working out the solution, scholars in Spanish America “invent[ed] two different bodies, one for Amerindians and the other for white European colonists” (95). At the end of this essay, Cañizares-Esguerra highlights this case as an example of Iberian participation in modernity by emphasizing that this science of race in Spanish America resembled and predated the science of race that emerged in the late eighteenth and early nineteenth century in Europe. Yet, Northern Europeans in the seventeenth century took little notice of this science because they defined modernity by “dismissing colonial intellectuals and by denying the status of science to astrology, Aristotelian metaphysics, and Galenic physiology,” which were the primary intellectual registers in which Creole scholars articulated the first modern science of race (95).

Shifting to eighteenth-century Spain, the fifth essay examines how patriotism influenced the development of Spanish political economy with regard to the modern theme of national decline. This theme was most evident in the debates among Spanish scholars over the causes of Spain’s decline and the appropriate response to speculations of other Europeans on the subject. Not surprisingly, Spanish intellectuals attempted to develop their own theories and accounts of the causes of decline. These efforts, according to Cañizares-Esguerra, became a kind of “patriotic crusade,” which resulted in the emergence of two main approaches: one that advocated reforming Spain’s economy according to the suggestions of “much-maligned foreign observers,” and another that rejected “speculative theorizing” and advocated more detailed historical research in the archives in order to discover the true causes of decline (99). Moreover, these two positions were not mutually exclusive but represented two different “epistemologies” (107). Both positions derived from a “patriotic epistemology” which produced theories and arguments conditioned by a sense of pride about Spain and its history. For example, some Spanish intellectuals, such as José Cadalso, rejected foreign critiques of Spain not simply because they deemed these critiques too subjective but also because

they associated these critiques with a new form of sociability connected to the “commercial humanism” dominant throughout much of eighteenth-century Europe (98). As a result, Cadalso and others looked to the revival of the Spanish Renaissance, as an alternate form of sociability and culture, to set Spain on the road to recovery and check the spread of newer forms of sociability and consumption (101-103). In the end, Cañizares-Esguerra counters the traditional view of the Spanish Enlightenment as “nationalistic or narrowly provincial” by explaining that Spanish patriotism, at least in the case of political economists, was of the “cosmopolitan” kind in which Spanish intellectuals engaged with and ultimately rejected the views of foreign critics “precisely because [foreign critics] sought to present Spain as only marginally ‘European’” (111). As further evidence of the Europeanness of Spanish Enlightenment, Cañizares-Esguerra cites the example of Juan Pablo Forner whose ideas “anticipated Edmund Burke’s in almost every respect” (111). He writes: “clearly, Forner and Burke belong in the same cultural world” (111).

The sixth essay returns to the natural sciences and offers a re-interpretation of the scientific travels of eminent German naturalist Alexander von Humboldt in South America. In particular, Cañizares-Esguerra seeks to turn “diffusionist narratives of scientific discovery” on their head and argue that, in fact, “Humboldt learned to read the Andes as a natural laboratory” from Spanish American scholars who “had for decades (if not centuries) been developing this idea” (116). In tracing the history of the notion of the Andes as a natural laboratory, Cañizares-Esguerra shows how the “long-standing tradition of thinking about the American viceroyalties as Edenic microcosms” transformed into eighteenth-century notions of American viceroyalties as trade emporiums supplying the entire globe with products cultivated in the various American microclimates, especially in the Andean region (128). Thus, Cañizares-Esguerra argues that it was the existing views of the natural world in eighteenth-century New Granada that influenced Humboldt’s vision of the Andes and biogeography as reflected in Humboldt’s relationship with the Creole intellectual, José Francisco de Caldas. Cañizares-Esguerra observes: “prompted by the ceaseless rhetoric about the microcosmic virtues of the

Andes, Humboldt began to think of these mountains as a laboratory for testing theories of biodistribution” (128). Consequently, Humboldt’s ideas about biogeography “did not emerge in Europe,” but, rather, “Humboldt learned to read the Andes as a natural laboratory for studying the geography of plant communities only because local scholars had been toying with this idea for years” (128).

The last essay focuses on Mexican landscape painting in the nineteenth century and seeks to situate the work of José María Velasco (1840-1912) “in the wider context of nineteenth-century Mexican aesthetic and scientific discourse, locating it in the larger tradition of representations of nature and nation building” (130). Thus, as in previous chapters, Cañizares-Esguerra seeks to show how a modern form of discourse existed in Latin America, which introduces the possibility of discussing “similarities and differences [in a wider global context], particularly with respect to developments in the United States” (130). As Cañizares-Esguerra points out, “like their Australian, U.S., and European peers, Mexican artists sought to find the nation in representations of nature” (132). Moreover, in contrast to previous work, such as that of Mary Louise Pratt, which has characterized Latin American bourgeoisie as trying to ape European, especially Humboldtian, conceptions of nature and landscape, Cañizares-Esguerra argues that Mexican landscape artists were not “hopelessly derivative” but, in fact, rejected the vision of Humboldt and his followers of tropical landscapes as spaces “full of diverse plant and animal populations, but empty of humans” (154). Rather, many Mexican landscape artists, such as Velasco, developed an “urban-centrism” in which cityscapes merged with landscapes in the iconography of the nascent Mexican nation (154). In the “Coda” to this essay, Cañizares-Esguerra takes issue with the restrictive function of terms like “the West” and “Western civilization” which has resulted in the exclusion of the supposedly non-Western experience of Latin Americans from histories of the “Victorian” middle-class experience in the nineteenth century. Consequently, whereas historians have tended to categorize Mexican elites, such as these landscape artists, as simply imitating the West, Cañizares-Esguerra urges that dispensing with the category of “the West” will promote recognition of the fact that “millions of

‘Victorians’ also appeared in Latin America” and that they actively participated in “what was in fact a global cultural phenomenon” (168).

Throughout the book, Cañizares-Esguerra’s historiographical explorations provide a nice complement to the historical ones and the tone of his writing reflects a well-calibrated sense of outrage over the exclusion of the Iberian World. Since many of the essays imply that the Iberian World, consequently, deserves more attention in historical narratives of modernity and modern science, it is worthwhile to consider whether these essays make an effective case for this position. Two themes for further consideration emerge. First, some examples, such as the emergence of a seemingly modern form of scientific racism in seventeenth-century Spanish America or conservative political economy in Spain, do not seem as effective as would be, say, discussion of Iberian equivalents of Isaac Newton and the Royal Society and Iberian contributions to more mainstream aspects of early modern science such as the phenomena of botanical gardens, which do receive some treatment in the first essay. Though work on such topics exists, Cañizares-Esguerra’s response seems to be that we need to treat early modern Iberian science, especially that of the seventeenth century, on its own terms rather than trying to project outside or present conceptions of science and modernity on to the early modern Iberian World.

Oddly enough, this notion of the distinctiveness of the Iberian case seems to bear a family resemblance to the claims of early modern Northern Europeans who focused, although in pejorative terms, on distinguishing the Iberian World from the rest of Europe. An added difficulty is that too much focus on the unique aspects of the Iberian case might lead historians to continue to bracket the Iberian World off from narratives of modernity and modern science. Thus, some unresolved tension exists here between treating early modern Iberian science as something unto itself and as a contributing part of an emerging modernity. Moreover, this book offers little guidance as to whether these case studies should be taken as a call for the revision of a singular narrative of modernity or as a starting point for the development of narratives of a multiplicity of modernities (Iberian and others).

Secondly, even the most compelling examples, such as Francis Bacon's borrowing of Iberian tropes in the sixteenth century or the re-interpretation of Humboldt as derivative of a Spanish-American scientific tradition, would benefit from some discussion of how (or if) these initial borrowings and interactions led to any sustained exchange and circulation of ideas and information between Iberians and non-Iberians. In many cases, ideas and, especially, critiques seem to have flowed only in one direction, either from the Iberian World to the rest of Europe or vice versa. Again, perhaps, Cañizares-Esguerra has already addressed this issue in explaining the influence of patriotism on the production of knowledge such that, while Iberian intellectuals, from seventeenth-century Creole naturalists to twentieth-century Spanish historians of science, engaged with foreign critiques, these scholars mainly directed their responses inward to Iberian audiences leaving non-Iberians trapped in a world of their own stereotypes and ignorance. By emphasizing, in particular, that this trend is as true for today's historical scholarship as it was for early modern naturalists, these essays suggest a need for more historical and historiographical attention to the connections and *disconnections* in the intellectual exchange between Iberian and non-Iberian Worlds.

Overall, *Nature, Empire, and Nation* provides a good introduction to the history of science in the early modern Iberian World and its historiography. Thus, it will be valuable to scholars and students alike. As the myriad of examples in this book attest, the Iberian World not only introduced one of the dominant tropes of modernity but also continued to contribute to and participate in broader cultural phenomena of modernity and modern science. In the end, these essays offer an engaging perspective on an underrepresented topic and forcefully suggest that some re-thinking of received narratives of modernity, such as that of the Scientific Revolution, is in order. In addition to hoping for García de Céspedes' frontispiece to displace Bacon's frontispiece on the covers of books about the Scientific Revolution, perhaps we might also hope for a fuller and broader dialogue between communities of English-speaking and Spanish-speaking (and Portuguese-speaking) scholars working on early modern

science. With the publication of this collection of essays, science in the early modern Iberian World can not be ignored much longer.