

Science in the Spanish and Portuguese Empires—1500–1800, edited by
Daniela Bleichmar, Paula De Vos, Kristin Huffine and Kevin Sheehan,
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Iris Kantor

Department of History/University
of São Paulo Brazil
ikantor@usp.br

The recently published *Science in the Spanish and Portuguese Empires—1500–1800* brings together fifteen articles as well as two essays that summarize the main arguments developed in the collection. Geared towards an Anglo-American university audience, the book reassesses the importance of the Iberian legacy for understanding the scientific revolutions of the modern age by giving greater weight to the different (and highly particular) ways of engaging in, communicating and theorizing science that were practiced under the scope of the Portuguese and Spanish empires. The organizers question the reductionist and depreciative views associated with Iberian scientific culture that still persist in the great historiographic narratives about the formation of modern science.

Such silence is not recent but was contemporary to the campaigns of detraction promoted by rival empires, conveyed through the spread of the *Black Legend* (portraying Iberians as bad colonizers) and through the controversies about the natural human inferiority of the New World throughout the 17th and 18th centuries. On the other hand, these negative images were also appropriated by the historiography of decadence, (namely as expressed in the works of Antero de Quental, António Sérgio and their followers, written from both a liberal and a Marxist point of view) which, in its turn, attributed to the Inquisitorial censorship, Catholicism and the Jesuits the main “epistemological obstacles” to the development of scientific thought in the countries and regions subject to Iberian colonization.

The studies brought together in this collection seek to definitively overcome the dichotomy between scientific practice and Catholic culture, demonstrating that the political and theological context of the natural world—a baroque scientific sensibility that took divine providence into account, was averse to experimentation, and had a propensity for theoretical eclecticism—did not represent a genuine impediment to the formulation of universal explanatory models.

One of the principal merits of the proposed interpretation is to restore Iberian protagonism. This was a presence that is not only perceived as having made a specific contribution to the history of modern science, but is also seen as part of a broader historical process in which attempts were made to reconstruct the social contexts legitimizing the “scientific systems.” It is not a question of assessing the weaknesses or possible successes of the enterprises in themselves, but rather of understanding the global and local impacts resulting from the accumulation (or dispersal) of knowledge acquired in the experience of managing empires with a transcontinental dimension.

Such a perspective shifts the focus of analysis to the geographical mobility of the (individual and collective) actors involved in the transmission and circulation of knowledge beyond political, religious, social and linguistic frontiers. This angle of observation makes it possible to establish a new interpretive framework, already fairly distant from earlier historiographic approaches, which were generally marked by visions of moral decadence or apologetic reactions. The authors of this collection

did not fall into the trap of transforming the overseas discoveries into the touchstone of scientific nationalism.

Certainly, this approach represents a difficult anachronism to avoid, given the active role played by the Crowns in creating specialized institutions and in forming professional bodies. The understanding of the overlaps (not without their own tensions and conflicts) between the imperial designs and scientific production of the two crowns presents itself as a theoretical challenge that runs counter to the models of analysis developed by Weber and Habermas. In fact, the articles reveal a more complex reality, a field of experiences formed from a wide range of institutional and informal spaces (the court, courtly salons, universities, academies, missionary seminaries, botanical gardens, private libraries, expeditions and itinerant offices, etc...) and from different forms of social interaction. The great relevance of these different contexts and the way in which they interplay forces us to revise classical sociological models. Most of the articles, and especially Anna More's, opt for the theory of Pierre Bourdieu to explain the conditions under which scientific activities were carried out in the New Spain.

In the same way, the authors do not disdain the restrictions imposed upon the dissemination of scientific discoveries for geopolitical reasons: the secrets of State (*arcana imperii*). However, they do highlight the fact that more than simply controlling the flow of scientific information, the crowns succeeded in preventing its publication and, consequently, its dissemination and official recognition in the European republic of letters. Onésimo Almeida and Kevin Sheehan, for example, draw attention to the importance that the reports of the Portuguese and Spanish navigators had in the work of Francis Bacon, despite the fact that Bacon did not attribute the credits that were due to the sources used. Unlike their imperial rivals, the Iberian Crowns were never able to exploit in their own favor the full propaganda potential of those experiments that were successfully conducted.

Following the lead of Alexander Von Humboldt, the author of the preface to the collection, Canizares-Esguerra alerts us to the need to research hundreds and thousands of still unpublished manuscripts deposited at the archives and libraries in order to be able to make a correct assessment of the ranges and limits of the Iberian scientific culture. Palmira Costa and Henrique Leitão also emphasize that researchers need to study the correspondence of the metropolitan and local authorities, the diaries of travelers and traders, and the reports of missionaries and local chroniclers in order to capture the everyday dimension of these experiences.

Divided into four parts, the collection seeks new approaches for contextualizing scientific production at both the intra-imperial and trans-imperial level. In the first part: "Reassessing the Role of Iberia in Early Modern Science", two bibliographical reviews provide us with an updated panorama of the research undertaken in the last two decades. Both in the Portuguese case and the Spanish case, the authors note the difficulties that foreign historiography has had in incorporating the most recent contributions. In the second part: "New World, New Sciences," the authors explore the epistemological tensions aroused by the confrontation between fieldwork and office-based research, between practical experience and theoretical speculation. In the third part of the book, "Knowledge Production: Local Contexts, Global Empires," a study is made of the relationship between science and the construction of long-distance empires, while case-studies attenuate the dichotomy between centers and peripheries in emphasizing the intense interchange of knowledge and the multiple variables affecting local production.

In fact, the expansion of trade and the process of colonization intensified the contacts made with native populations. Commercial and political considerations made it possible for a social class to emerge—translators or cultural mediators—that was fundamental for making the necessary conversions and encouraging exchanges between the systems of native and European knowledge. The activities of these "experts" served as proof of their enormous capacity for appropriating the local socio and biodiversity. Hybrid characters emerged who were neither totally Creole nor completely European, such as the Portuguese navigator in the service of Felipe III (Filipe II of Portugal) Pedro Fernandez de Quirós, the mathematician and astronomer Carlos de Singüenza y Góngorra, the naturalist and publisher of periodicals Jose Antonio Alzate y Ramirez, and the Creole naturalist José Celestino Mutis. All of these testify to the coexistence and interlinking of frequently distinct matrices of thought, which

nonetheless stimulated the elaboration of other scientific languages and taxonomies, more recently given the name of “patriotic epistemologies” (cf. Canizares-Esguerra).

The politicization of these epistemologies as a reaction to the enlightened reforms introduced in the late 18th century is not a subject that is investigated in this collection. As far as this particular aspect is concerned, the studies are distanced from those historiographic perspectives that seek to discover in the tensions between Peninsular and Creole scientists a source of inspiration for the affirmation of anti-metropolitan identities (cf. Antonello Gerbi, David Brading, Thomas Glick). The organizers make this clear when they propose a chronology from 1500 to 1800, thereby excluding the process of political emancipation set in motion by the Napoleonic invasions and the events following the revolution of Cadiz (1812). Fiona Clark, Daniela Bleimach and Paula de Vos, on the other hand, highlight the tendency towards an affirmation of the imperial patriotism that united Peninsular and Creole populations alike against the prejudices conveyed by the theories about the natural inferiority of the New World.

In the fourth and last part of the collection: “Commerce, Curiosities and the Circulation of Knowledge,” a more direct exploration is made of the interconnections between commercial motivations, applied science, and curiosity. The studies here bring new actors to the fore whose empirical experiments and concrete experiences lay at the root of the technological innovations that were later incorporated and disseminated by highly prestigious European scientists. Attempts are made to reconstruct the chain of transmission of knowledge that was considered useful for trade and for the government of different peoples (especially in the field of medicine, botany, mining, navigation techniques, astronomy and cartography). In more than 300 years of colonization, the Iberian crowns developed their own systems for collecting and processing information, giving rise to the formation of a network that was not only institutional but also informal, and one operated at a worldwide level. Paradoxically, even the initiatives of the missionary orders (at the Jesuit, Franciscan and Dominican colleges) helped in the formation of an empirical culture, open to experiments and the lay conception of the natural world.

Of the fifteen studies presented, only four are dedicated to the Portuguese Empire, while the rest relate to the Spanish Empire. The imbalance is remarkable, but it does not affect the global perspective of analysis, demonstrating, on the contrary, that there is still a long road to be followed in terms of research. Especially in the case of the possible crossovers between the two empires, the establishment of thematic, chronological and biographical connections might help to bring the more common experiences even closer together and highlight the contrasts with other empires. Recent historiography has shown that “erudite commerce” between the Portuguese-Americans and the Spanish-Americans was more intense than was originally thought. The contradiction between cosmopolitanism and scientific nationalism became even more intense after the Napoleonic expansion. Scientific activity in the Iberian world was never a neutral labor but was rather one that called for great political, economic, philosophical, and emotional involvement. *Science in the Spanish and Portuguese Empires* opens for us a historiographic agenda that is indisputably fundamental.