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# Juan Pimentel.

## *Fantasma de la ciencia española.*

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**JUAN PIMENTEL PRESENTS US** with a panoramic history of Spanish science, from the early sixteenth century to the present. Its leitmotif is an understanding of science as a ghostly and haunting activity in the context of Spanish culture, where science has been underrepresented and lacking in national and international recognition despite the abundant achievements of scientists from Spain over the centuries. To illustrate his argument, Pimentel makes good use of some of the most impressive scientific accomplishments in the history of Spain and Hispanic America. Chapter 1, “Espectro y avistamiento del Mar del Sur,” studies the so-called discovery of the Pacific Ocean by Vasco Núñez de Balboa (1475–1519) and the subsequent first cartographic representation of the Americas’ Pacific coast: the *Carta portulana representando el Mar del Sur* (1518), a cartographic milestone Pimentel finds “haunted” by the “ghosts” of the extinct Cueva people, particularly Ponquiaco, main cacique of the Panamanian coast; these Amerindian spectral presences accompany the “ghosts” of the Spanish, Portuguese, and Italian experts who helped demarcate and imagine a coast that included Dabaiba, a mythical golden city precursor of the most famous El Dorado.

If native people of Darién and Veragua were responsible for a great deal of the geographical information gathered by the Núñez de Balboa expedition, the Indigenous presence in early modern Spanish science is even more haunting in the work of doctor Francisco Hernández de Toledo (ca. 1515–87). The author of the *Historia natural de Nueva España* is, along with Santiago Ramón y Cajal (1852–1934), the most famous of all Spanish men of science. Hernández tackled the unimaginable task of updating, perfecting, and completing the *Natural History* of Pliny with a natural history of the New World. In chapter 2, “Naturalezas de otro mundo,” Pimentel relates Hernández’s massive project to an equally gigantic enterprise: the gathering of reliable geographical and naturalist information about Spain’s overseas possessions by the Council of Indies in the 1570s. The most visible result of these efforts is the well-known *Relaciones Geográficas de Indias* (1579–85), of which Pimentel provides a beautiful example: the mestizo map of the Zapotec town of Macuilxochitl, where Indigenous informants provided the immense majority of the knowledge displayed, including their consciousness of the ecological changes brought about by Spanish presence in their lands. The

polyphonic knowledge included in the *Relaciones de Indias* and in Hernández's natural history became a ghostly presence in early modern science accounts as neither of these two massive works sponsored by the Council of Indies would be published for centuries. Nevertheless—and despite the tragic loss of all of its colored illustrations—the work of Hernández had considerable influence in the development of early modern natural history through new processes of selection, translation, appropriation, and misappropriation.

In chapter 3, “La mirada del ángel,” Pimentel dissects some of the interconnections between the emerging field of microscopic medicine and its artistic representation using techniques and conventions common to the Spanish baroque. Among the distinctive qualities of the famous Golden Age of Spanish arts are a refined retrenchment into an orthodox Catholic culture and an accompanying literary disenchantment with the vain concerns of this world. The baroque thus promoted a profoundly moral vision of the world, even at the dawn of “el irremediable ascenso de la tecnología y el materialismo” (137). Such a view remained an intrinsic part of cutting-edge scientific achievements such as the impressive *Atlas anatómico* (ca. 1689) of Crisóstomo Martínez (1638–ca. 1694), where masterful macroscopic and microscopic images of human bones documenting their growth are accompanied by common moral symbols of life and death, or sin. Like the majority of baroque art, this *moralized anatomy* helped sustain the Spanish political body. Pimentel demonstrates how a common way of coupling the emerging microscopic view of nature with the all-encompassing Catholic view of the world was through the analogy of the angel's gaze, capable of seeing both the macroscopic and the microscopic details of life.

“La flora imaginaria,” chapter 4, deals with José Celestino Mutis (1732–1808) and his *Flora de Bogotá*, one of the great treasures of Latin American science and the Spanish Enlightenment. As it is well known, the crowning achievements of the naturalist work of Mutis and his collaborators are its luscious illustrations made with natural pigments extracted from local products. The plants were supposedly painted in their natural habitats, *ad vivum*, although they were also the product of an artificial and synthetic endeavor, which implied working with plants in their different stages of flowering and following rigorous geometrical patterns. This Enlightened naturalist work from the viceroyalty of Nueva Granada was famously influential on Alexander Humboldt's groundbreaking work in the Americas and became a quasi-religious national symbol for the independent republic of Colombia. This “colossal trofeo de la ciencia hispanoamericana” (171–73) was sent to Spain's new Botanical Garden in 1816 and would remain unpublished until 1952.

Chapter 5, “Figuras de la nación y del tiempo,” is an account of the development of Spanish modern cartography. Pimentel includes the history of the *regla española*, the best machine of its time for the adequate measurement of geodesic patterns in very different geographical environments. The nineteenth-century mapping of Spain accompanied the scientific discovery of geological time, revealing, in the case of the Iberian Peninsula, an ancient “Jurásico tropical” of sorts (233). The transition to a new political community in Spain after the loss of the last American colonies

was made visible by the new cartographic imagination, which became an important part of regeneration narratives pleading for more science and education as the solution to the nation's problems. The mapping of the contemporary arid and rocky landscape of Spain also served as a common metaphor for the writers of the Generación del 98 in their description of a decayed, melancholic, and abstracted nation. Spain's nineteenth-century cartographers developed "protocols, specialized corps, standardized instrumental, method, and a long-term project" (202); they helped, in other words, to bring modern science to the republic.

A member of the Generación del 98, Santiago Ramón y Cajal, the most influential of all Spanish scientists, is the subject of chapter 6, "Una lección de anatomía." A scientific figure akin to Galileo, Ramón y Cajal was also a towering figure in the institutionalization of modern science in Spain, as he became the first president of the Junta para Ampliación de Estudios e Investigaciones Científicas (JAE) created in 1907. He was also as much an artist as he was a scientist. Thus, for example, in the photograph *Clase de disección* (1915), which aptly graces the front cover of Pimentel's book, the father of neuroscience emulates Rembrandt's famous *Anatomy Lesson of Dr. Nicolaes Tulp* (1632), symbolically incorporating Spain into the great narrative of modern science, using the doubly haunting *artificio* of a fake corpse.

In chapter 7, "Mujeres que observan," Pimentel juxtaposes two women who exemplify the ideological division of Spain before and after the Civil War of 1936. The first is the avant-garde painter Maruja Mallo (1902–95), who aspired to recreate a "naturaleza absoluta" based on non-Euclidean symmetry (311). She was part of the celebrated Residencia de Estudiantes, created in 1910 by the JAE with the goal of modernizing education and science in Spain and attended by many remarkable Spanish artists and writers, including Salvador Dalí and Federico García Lorca. On the other side of the ideological spectrum of Civil-War Spain Pimentel places scientist Piedad de la Cierva (1913–2007), an expert in optics and radiation who collaborated in Spain's national efforts to industrialize optical glass. She was also an aggregate of the Catholic organization Opus Dei, which greatly promoted Spanish science during Franco's dictatorship, helping transform the JAE—dismantled during the Civil War—into the Consejo Superior de Investigaciones Científicas (CSIC), still today Spain's largest research institution.

Chapter 8, "Naturalia en la Pinacoteca," analyzes a 2013 exhibition in the Museo del Prado drawn from the Museum's little-known naturalist collection—another ghost of Spanish science. While the Prado was first inaugurated in 1857 as the Real Museo de Ciencias Naturales de Madrid, Pimentel argues that the origins of this most emblematic building of Spanish culture were suppressed as the nation decided to give much more attention to art as an appropriate symbol of Spanish genius and identity. The official and unofficial relegation of national science is then much like the Prado's naturalist collection: a familiar and yet strange guest at the same time.

*Fantasmas de la ciencia española* thus evocatively traces the (ghostly) importance of Spanish science both for the advancement of knowledge and for the history of the nation. The book is at the same time an academic monograph of impressive depth and a literary essay, rich in metaphors,

images, and analogies. It is also a beautiful object, full of color images of Hispanic and global artistic and scientific treasures. As Pimentel hopes, this unique book should interest a general public as much as it will attract specialists of the many rich histories of Spanish science.