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EDICIONES COMPLUTENSE

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Pimentel, Juan, *Fantasmas de la ciencia española*, Madrid, Marcial Pons y Fundación Jorge Juan, 2020, 413 págs. ISBN: 9788417945015.

A lone dissector, surrounding by a focused group of students examining an anatomical cadaver in the early stages of being sliced into and then pulled apart, peers out toward yet another perspicacious observer, this time a photographer, who captured an iconic moment through the chemical magic of the photographic medium. The image of Santiago Ramón y Cajal at work, which serves as the striking cover of Juan Pimentel's *Fantasmas de la ciencia española*, is counterbalanced on the rear cover by yet another iconic depiction of dissection: Rembrandt's *Anatomy Lesson of Dr. Tulp* (1632). This jarring, if in many ways also felicitous juxtaposition represents in stereo-visual form one of many underlying lessons of Pimentel's masterful study of Spanish science: that there are always inherent "shadows," or phantoms, that lie beneath a particular work; that trans-temporal comparisons are part of the research we must do to unearth contemporary meanings; and that Spain's sometimes parochially recounted scientific history, made even more parochial by the ignorance of the outside world, must be connected to stories from other parts of the globe, if only to demonstrate what makes Spain unique by comparison.

Fantasmas seeks both to illuminate our understanding of Spanish science and also to challenge and undermine it, taking many of the most classic moments of the last five hundred plus years and replaying them – often in stereo format – to a piercing symphonic effect. Under Pimentel's pen, Spanish science itself becomes an object of dissection, whereby the author peels apart the layers of connective tissue that have become well-worn tropes of national honor and pride and renews the reader's understanding according to the latest methodological contributions of historical scholarship, art, and literary studies. If, as Pimentel writes in one chapter, "the scientific eye is a trained organ," then both of Pimentel's eyes are highly trained in a double-sense: as expert witnesses that are able to observe details and features that are invisible to the uninitiated eye; and in the sense that training is synonymous with focus, an attentive gaze that is unwavering, unmoving, and exacting.

It is rare that a book fulfills all of the requirements of a deeply analytical scholarly narrative and also earns sufficient praise to be made required reading for a broader public interested in the sweeping history of a nation. But that is most certainly the case here. Not only for the content, however, and not only for the beautiful and accessible language. Rather, it is for the elegant reconstruction Pimentel makes of episodes that we thought we knew, that we thought we understood, that we thought were already fixed definitively, in hallowed form, in the annals of the history of science and Spanish history more broadly.

The book takes its reader on a journey through five centuries of images, objects, and texts that relate to the history of science broadly conceived: from the natural history of the Spanish American colonies to experiments in the history of art in the

corridors of the Museo del Prado in the 21st century. Over the course of eight exceptionally rich and varied chapters, Pimentel offers us a curatorial tour-de-force, showing us a great master's painting here, a portolan chart there, a strange object from a curiosity cabinet in one locale, a rarefied scientific instrument in another. The objects that populate these chapters are not the typical stuff of which Spanish science is made; instead, they represent obtuse forms of global items on the move, shifting in shape, and scattering into the penumbral regions of our consciousness as soon as we think we understand why they are part of a given scientific panorama. What is more, Pimentel offers a sophisticated introduction to some of the most relevant theorists of art and science in the academy today. From Didi-Hubermann to Bruno Latour, from Paul Ricoeur to Alessandra Russo, passing through Joan Scott, Natalie Zemon Davis, and Italo Calvino, Pimentel's impressive erudition is spoon-fed to us in doses that even the most theory-averse reader will find satisfying.

The author begins with an iconic episode from early Spanish exploration: Núñez Balboa's "discovery" of the Pacific. An early Portolan chart, held at the Herzog August Bibliothek in Wolfenbüttel, Germany, serves as the visual cue for an exploration of geographical knowledge that is both present and hidden at the same time, especially as it concerns the local knowledge of the native groups that Balboa and his cohort encountered in the isthmus of Darién. Pimentel emphasizes the essential role of notaries and scribes, men of the pen rather than the sword, who accompanied Balboa and his cohort and enabled the production of charts, sketches, and narrative accounts. But the emphasis here is on indigenous forms of knowledge, embodied in the figure of Ponquiaco, son of the preeminent cacique, who represented in many ways the intermediate zones of contact that enabled Spanish conquest to unfold. "The sociology of science has spent many years explaining that we usually assign individual merit to discovery when in fact they are social processes of negotiation," writes Pimentel, condensing in a single phrase an extraordinary range of scholarship which he subsequently cites with care. A remarkable feature of this book, in fact, are its footnotes, which are neither intrusive nor superfluous. Rather, they are concise, informative, and provide a coherent vision of some of the most relevant scholarly interventions across a range of disciplines. They also range across many linguistic traditions, which is a testament not only to the cosmopolitan nature of Pimentel's interests, but also his linguistic competence in English, French, Spanish and Portuguese. It should also be said that Pimentel always models scholarly generosity: rarely, if ever, does he not give ample credit to the generations of scholars who have preceded him. In short, he opens the book with an emphasis on the most conspicuous disappearance, the "ghosting" of the indigenous populations who provided such critical support for the Spaniards that first arrived on America's shores. From the very first chapter, it is clear that subaltern actors and diverse forms of knowledge systems are at the heart of his project.

Perhaps not surprisingly, one of the richest chapters is chapter 2, where Pimentel is on solid ground as he guides his readers through the landscapes of sixteenth- and seventeenth-century Iberian natural history. Again, front and center is an indigenous source, the "mapa de Macuilxóchitl," an exceptional sheet from the *Relaciones geográficas* that the author likens profitably to the work of Chagall. It is a brilliant juxtaposition, one that is both anachronistic and essential for bringing the fuzzy nature of these indigenous maps-as-narratives to life for the modern reader. Instead of the indigenous actors as ghosts in this frame, it is Francisco Hernández, the king's

protomédico, whose "interminable appearances and disappearances" make him an excellent candidate for a historical life as a ghost, despite the long shadow he cast over centuries of natural historical practice. He served in Pimentel's words as "a ventriloquist" of Mexica *materia medica*, learning from indigenous apothecaries and mestizo herbalists, among others. What faltered were the publications he was meant to produce, and the destruction of many of his most precious manuscripts, which only lived on through interpreters such as Nardo Antonio Recchi – who took copious notes on Hernández's El Escorial manuscripts – and later Juan Eusebio Nieremberg, whose *Historia natural* also served as an Iberian encyclopedia of natural marvels, albeit within a highly rarefied religious universe. Some of the images from Nieremberg's text were thought to be derived from early drawings that were mediated by Hernández, pointing once again to the role of indigenous knowledge and in particular to the central place of visual imagery in communicating unexpected forms of expression.

Two additional chapters squarely focus on the early modern period and the perceived conflict – in reality, a rich substrate of interconnections and overlapping spheres – between baroque art and the scientific revolution. The figure of the angel – occasionally surrounded by skeletons – as intermediary and interlocutor makes its presence clearly known in two radically different images in chapter 3, one by the microscopist Crisóstomo Martínez and another in a *vanitas* painting by Antonio de Pereda. Once again, Pimentel summons the expressionist artist Paul Klée to draw an analogy between how Pereda brings together the temporal and eternal (the same that were found in Nieremberg) and some of the perennial conflicts between the past and present. But it was through the emerging field of microscopy – and the spectacular images from the *Atlas anatómico* that Pimentel pulls apart – that the material cultures of print in the Spanish baroque shed light on moral and technological dilemmas of the seventeenth century. In the subsequent chapter, the illustrations of José Celestino Mutis and his botanical expedition to the Kingdom of New Granada bring some of the minute visual attention that was present in the earlier chapter to bear on the flora of the northern Andes. Here again, Pimentel takes his broad knowledge of the scholarship on Mutis – which is extensive – and pays homage to it, while at the same time advancing a powerful argument about the place of Mutis and his expedition's production at the fulcrum between the artistic schools of the colonial past and the European tradition of botanical drawing, on one side, and a later tradition that continues to influence and inspire Colombian artists today.

Starting with chapter 5, Pimentel moves more forcefully toward the present, out of his own area of scholarly expertise but with a gifted pen and an analytical voice that would lead an unsuspecting reader to assume that he had always been an historian of the nineteenth- and twentieth-century world. In chapter 5, the author takes as his object of study the cartographic image of the Spanish nation, bringing his experience as curator of several prestigious cartographic exhibitions – including the recent, spectacular *Cartografías de lo desconocido* at the Biblioteca Nacional de España – to highlight the material, epistemological, and interpersonal challenges that emerged when creating graphic images of territory. Pimentel writes that "maps and fossils are images, each with its own conventions and meanings," and from this realization proceeds to deconstruct the meanings behind iconic renderings of the national body, from Jorge Juan and Antonio Ulloa to geological maps of the late-nineteenth century. Picking up on this interest in images, chapter 6 examines representations

on a different scale, that of the human body, and the extraordinary depictions of the inner workings of circulatory and other physiological systems carried out by the Spanish neuroscientist Santiago Ramón y Cajal. What is fascinating is the way that Pimentel deconstructs and dissects not only the images of physiology produced by Ramón y Cajal, but his own self-presentation to the Spanish and international communities. The work of Alfonso Sánchez García, eminent photographer of the day, becomes a way of bringing Spanish science – "that phantom member of the Spanish past" – into dialogue with the work of other great Spanish writers and thinkers. But more than to Spain alone, Ramón y Cajal attempts to place his work and those of his colleagues on a par with international efforts, and the mimicry inherent in a photographic image in dialogue with the anatomical paintings of Rembrandt, for example, resounds at a moment of Spain's most intensified efforts to see itself in a positive (international) light.

If it is true that women as protagonists and historical actors are largely absent in the previous chapters, chapter 7 pays detailed attention to two "women who observe," the painter Maruja Mallo and the chemist Piedad de la Cierva, in an unorthodox juxtaposition that nonetheless serves the purpose of blurring the lines between those "frontier zones in which women have had to live and negotiate constantly." After retracing the fascinating biography of Mallo and analyzing several paintings that put her in dialogue with similar scientific themes throughout the book (especially *La Venus mecánica* and *Antro de fósiles*), the transition to the conservative moment in which Piedad de la Cierva had to overcome an extraordinary number of barriers in her quest to succeed as a chemist is somewhat jarring. But the itinerary of a tour through the United States – from Washington to Rochester (home of Bausch & Lomb) and beyond – among other episodes from De la Cierva's life demonstrates all too clearly the challenges faced by female scientists under Franco, and the exceptional efforts by some to succeed despite misogyny and gender bias.

At the end of this spectacular, if occasionally dizzying, tour of these iconic monuments to Spanish science – as well as its specters, shadows, and phantoms –Pimentel returns us to that classic site of Spanish art and science, the Museo del Prado, where he takes us on a brilliant, guided visit alongside Miguel Ángel Blanco, curator of *Historias Naturales*. It would be impossible to describe Blanco's interventions in this space, just as it is difficult to express how deftly Pimentel weaves the history of the institution – and the nearby botanical gardens – into the narrative of this path-breaking exhibition, which has the Villanueva building as its epicenter. From petrified wood to stuffed animals, Blanco created new inhabitants for this iconic museum, forcing the observer to confront challenging material juxtapositions. Similarly, Pimentel has taken Blanco's expedition and shaped it carefully to perform a ghostly intervention as the final chapter in his own narrative, leaving the reader with searing – and soaring – questions about the relationship between art, science, and memory.

Throughout *Fantasmas*, Pimentel insists on the "spectral" quality of Spanish science: how iconic figures and visual imagery fade from view just as often as they emerge and remain visible to sustain our attention. But for this reader, the cadavers and other figures that Miguel de Unamuno might describe as being of "carne y hueso" are the true protagonists of this work, while Juan Pimentel is their able dissector, pulling apart the fibrous muscles and gangly limbs of a national corpus to find new connections, new ligaments, new understandings. One of the few privileges of growing older as a historian is to be able to observe the development of a colleague's

intellectual skills in real time. This book is not only a testament to this moment in the history of science; it is a monument to a career. There are few books in the history of science that, while written for an audience that is not exclusively composed of academic readers, capture the major methodological advances of the past thirty years across a range of fields. I encourage readers of all backgrounds and expertise to read Juan Pimentel's *Fantasmas de la ciencia española*; their preconceived ideas about the boundaries between art, science, and the Iberian contributions to these twin fields – like phantom-ghosts from beyond the material world – will quickly, and magically, melt from view.

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