

or not written works enter renowned collections or institutions. Beeley traces the ways these decisions are ultimately built on networks of relationships. And, as Julia A. Schmidt-Funke explores in ‘Urban fabric and knowledge of nature’, these relationships can be fraught. Schmidt-Funke looks at learned societies that emerged in Danzig and Frankfurt: cities that were thriving commercial centres with their own hierarches and structures that learned societies by turns courted and counterpointed by offering alternatives.

The questions of enquiry and categorization within learned societies as their collecting practices moved to a more ‘scientific’ approach are captured in the next trio of chapters, by Kim Sloan, Dustin Frazier Wood and Roos. They unpick the work of individual collectors, such as Hans Sloane (Sloan), while tracing the ideas about knowledge production and the shift from antiquarianism to natural philosophy and science (Wood). That shift would not have been possible without the consideration taken by learned societies, such as the Egyptian Society, to position themselves within wider scholarship (Roos).

Overall, this volume skilfully maps out a history that remains directly relevant to contemporary questions in the use of history-of-science collections specifically and museum collections in general. It is therefore fitting that the final chapter addresses fragmentation in the digitization of early modern collections. Examining the Royal Society’s digital collections, Louisiane Ferlier gives a balanced account of both the potential and the hazards of digital collections in making collective wisdoms accessible to the public. She notes that the basic work of sorting and categorizing has not changed in centuries, whether dealing with material or digital objects. Ferlier reminds readers that much like in the early modern academy, contemporary collection practices are also going through a period of transformation. Whether or not we choose to learn from the useful insights contained in this volume remains to be seen.

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Mackenzie Cooley, *The Perfection of Nature: Animals, Breeding, and Race in the Renaissance*

Chicago: University of Chicago Press, 2022. Pp. 334. ISBN 978-0-226-82228-0. \$112.50 (cloth).

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In this study, Mackenzie Cooley traces one of the strands of thought that has informed modern thinking about race. She does this by offering a detailed study of both contemporaries’ practice of, and the theoretical knowledge that they produced and possessed relating to, the breeding of plants, animals and humans. As the title suggests, the book deals with the Renaissance period, with the majority of the source material deriving from the sixteenth century. Geographically, Cooley’s study centres on Spain and its empire, whether in the Americas or parts of Europe such as the Kingdom of Naples, offering possibilities for exploring how the relationship between metropole and colonies mediated the creation of new knowledge.

The Perfection of Nature is divided into four parts, 'Knowing and controlling animal generation', 'A divergence in breeding', 'A brave new natural world' and 'Difference in European thought', each consisting of two chapters. The opening chapter is primarily concerned with the practices of horse breeders, especially those connected to the courts of early modern Italy. Here Cooley discusses ideas that informed breeding practices and begins her discussion of the concept of *razza* – which in this context referred to the lineage and breeding of the horses – and the influence of environmental factors such as location, pasturage and climate. This theme is expanded in the second chapter, which investigates how noble families laid claim to specific *razze* through a process that Cooley likens to the modern branding of goods. It also begins to consider how this term gradually became used to describe human difference. These ideas are further explored in the book's second part. The third chapter discusses concepts of *razza* in European courts, situating breeding practices within the courtly culture of collecting and gift exchange. Cooley describes the fascinating, yet deeply unsettling, example of Isabella d'Este's efforts to breed a 'race of dwarves', whom she sent as gifts just as she would valuable animals or artefacts. The final chapter in this section uses a comparison with Meso-American ideas of breeding to contextualize and cast new light on the distinctively European idea of *razza*. A key theme in this chapter is the imposition of European ideas of selective breeding and heredity onto a culture already possessed of its own conceptual structures and language.

The book's third part develops Cooley's exploration of ideas of race and breeding in Spain's Central American colonies. Following the conquest of the Americas, Spaniards encountered animals that were recognizable to them, such as dogs, and those that were not, notably camelids. Spanish and Meso-American dogs were able to breed, thus forming *mestizaje* or mixed animals, a conceptual vocabulary later applied to humans. Making sense of camelids caused Europeans conceptual problems, and they sought to understand these curious creatures by classifying them in relation to the functions performed by European animals such as sheep or mules. The final section looks at the efforts of two Europeans to deal with the conceptual problems raised by breeding. Chapter 7 provides a stimulating discussion of the Spanish Jesuit missionary José de Acosta's natural-historical studies. Drawing on the belief that the ancestors of all surviving animals and humans were carried in Noah's Ark, de Acosta sought to explain how the Americas could be settled by humans and how they could be populated by animals that were both different from and similar to those found in Europe. He explained this by positing the existence of land bridges between the New and Old Worlds that had enabled migration, but also a belief that animals that were unsuited to the environments of the region in which they arrived died out. The final chapter considers the work of Giambattista Della Porta on physiognomy, which sought to connect ideas of breeding and environmental influence with physical appearances and human character and behaviour.

As this brief overview of the content of Cooley's book suggests, in addition to matters of breeding and inheritance, the issue of the environment as an influence shaping diversity amongst plants, animals and humans is a recurring theme. It connects such diverse topic as horse breeding, explanations for the diversification of fauna in the post-Noachian era and the theoretical underpinning of physiognomy and related arts, including chiromancy. It is, therefore, surprising that early modern theoretical understandings of environmental influence do not warrant more sustained discussion in Cooley's book. In Chapter 1, for example, there is a section discussing theories of generation derived from Aristotle and Galen. Cooley acknowledges that these ideas had minimal influence on horse breeders' practice, but she makes no mention of the Hippocratic tradition of airs, waters and places that underpinned conceptions of environmental influence which, she shows, did.

Cooley's tendency to downplay ideas of environmental influence also has an impact on the work's historiographical framing. As scholars such as Claire Weeda have shown, these ideas – rather than notions of inheritance – formed the core of medieval explanations for ethnic variation among humans. They continued to be influential through the early modern period. Even if interest in the specific art of physiognomy waned during the seventeenth century, the theoretical constructs and natural-historical practices by which it was undergirded were not, as Cooley contends (p. 221), displaced by new mechanical philosophies. Indeed, as studies such as Suman Seth's work on race, colonialism and medicine have shown, these principles continued to be influential until the nineteenth century. Although Cooley does stress the importance of the interplay between nature and nurture, paying greater attention to contemporary ideas about environmental influence and its historiography might have served to contextualize and highlight the novelty of the concepts that she identifies and ably discusses.

Cooley's work explores an admirable range of topics, draws on a formidable array of sources and deploys diverse methods to produce its arguments. It also displays an admirable commitment to drawing on research from disciplines that rarely feature in historical studies, such as palaeozoology. The resulting book provides a valuable, readable and thought-provoking contribution to discussions of the origins of modern conceptions of heredity and race.

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Marci R. Baranski, *The Globalization of Wheat*

Pittsburgh: University of Pittsburgh Press, 2022. Pp. 256. ISBN 978-0-8229-4734-9. \$55.00 (hardcover).

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Marci Baranski's *The Globalization of Wheat* is a determined book with a clear target audience. The book is earnest and revealing in the way that Baranski shares her own personal trajectory from biochemistry undergraduate who idolized Norman Borlaug to historian and international-development biologist who has written a highly critical account of the established orthodoxy of Borlaug's research and contributions to wheat production around the world. *The Globalization of Wheat* is a bold invitation to her international-development colleagues to consider a similar intellectual shift. Baranski clearly identifies those international-development practitioners who comprise the book's target audience, along with plant breeders, agronomists and other field-adjacent scientists. As someone with a foot in both worlds, Baranski's intention is to thoughtfully bridge the growing academic literature on the Green Revolution with the work of development practitioners and scientists, who, she notes, largely still celebrate the contributions of Borlaug and pursue his goal of achieving wide adaptation through plant breeding.

Borlaug is the main character, wheat is the subject, and wide adaptation is the central concept in Baranski's book. Research and experimentation in wide adaptation in wheat centres on genetic qualities such as daylight insensitivity, dwarfing and rust resistance.