

powers of God, and the identification of miracles. In the last decade or so, intellectual historians have drawn back from thinking hard about these categories (perhaps because the fifteenth century is so frequently avoided by both early modernists and medievalists), but their incidence in this volume suggests to me that they deserve more critical attention.

RICHARD OOSTERHOFF
University of Notre Dame

LISSA ROBERTS (ed.), *Centres and Cycles of Accumulation in and around the Netherlands during the Early Modern Period*. Zurich and Berlin: LIT Verlag, 2011. Pp. ii + 290. ISBN 978-3-643-90095-1. €34.95 (paperback).
 doi:10.1017/S0007087412000842

Very few of today's scholars would accept a description of their own research activities purely in economic terms or metaphors. While recognizing that jobs, salaries and aspects such as status and privileges are decidedly relevant, many would also point to international exchanges, the pleasure of discovery or writing, intellectual curiosity and even such an (only apparently) outmoded ideal as 'the advance of knowledge'. Why is it, then, that the international community of historians of science seems to be so meekly resigned to the dominant use of economic metaphors for the analysis of the research practices of their early modern predecessors, whether these operated in court societies, private academies, universities or artisanal workshops?

In her stimulating introduction to the present volume Lissa Roberts rightly affirms that the case has been convincingly made 'for intimate connections between commerce and (natural) knowledge' (p. 5) in the early modern period. She stops short, however, at the question raised above, even though the whole volume is meant as an investigation of the relevance of the notion of accumulation, as applied by Bruno Latour to the history, sociology and philosophy of science, while uncoupling it from Latour's teleological orientation. Knowledge accumulation and circulation, the transformation of local knowledge into more generalized knowledge, the role of printed works in knowledge circulation, the relevance of place to the development of expertise, historical openness and contingency are themes that recur throughout the essays in this volume. Another common factor is the emphasis on the early modern Netherlands – a most appropriate 'laboratory' for this kind of investigation given the country's position as *stapelmarkt* and *entrepôt*. But this geographical setting never becomes a constraint and the authors freely range through other parts of Europe where relevant.

Collecting as a concept is close to accumulation, but, as Lissa Roberts argues, 'accumulation is historically understood as a step in a more extended process' (p. 8), while collecting can be understood as an end in itself. Some of the essays address both. Rina Knoeff, for instance, discusses early modern tourism and the way in which narratives linked with exhibits in anatomical cabinets (and not merely their scientific relevance) were directly pertinent to their presentation and organization. Tim Huisman explores layers of meaning connected with early modern scientific instruments and the ways in which narratives can be used in modern presentations, allowing a larger role for audience participation. Ernst Hamm analyses two Mennonite compilations – a seventeenth-century one of martyrs' lives in print, and an eighteenth-century one of scientific instruments – exploring the intricate and not always easy relations between accumulation, economic gain, natural philosophy and the particular religious creed of the Mennonites. Johan de Jong discusses accumulation of labour, materials, designs and know-how in the shipyards of the Dutch East India Company.

Accumulation in text and printed image is of central importance to the essay by Ben Schmidt on seventeenth- and eighteenth-century Dutch works that depict and describe the exotic world. In his investigation of the making of global knowledge by the Dutch, commodification and accumulation are almost indistinguishable; commercial metaphors abound. Pete Langmann (discussing Francis

Bacon's *New Atlantis*) and Arjen Dijkstra also focus on printed works, but in a very different way. Langmann investigates apparent parallels between the approaches of Bacon and Latour, while Dijkstra is interested in the way in which printing itself, a local academic context, and the astute as well as fortunate circulation of an astronomical observation helped propel its Dutch provincial author to relative fame.

Two of the best essays are by Karel Davids and Alette Fleischer. Fleischer's contribution about the Cape of Good Hope and the Dutch East India Company's garden analyses accumulation of knowledge and naturalia within the context not merely of expropriation of land from the indigenous population but also of mediation, negotiation and the 'middle ground'. Karel Davids's wide-ranging comparison of Dutch and Spanish global networks of knowledge from the late sixteenth to late eighteenth centuries shows an impressive command of the Spanish literature (too often partly ignored in English-language publications). He shows how state and power structures, economic factors and internationally operating organizations (such as religious orders) interacted in different ways within these two networks. While confirming several findings of Harold Cook, María José López Piñero and others, he also suggests adjustments to their interpretations and shows different nuances precisely by this comparison. Especially important is his final section on how these 'national' global knowledge networks interacted—an area that definitely deserves further investigation.

At the level of the individual essays this volume therefore has much to offer. Whether the concept of accumulation has actually contributed much to the insights presented in the individual essays remains a moot point. By now Latour's work has obviously been digested and incorporated—the best praise he could have had. But there has also been much valid criticism by various historians, and the adjustment of his sociological concepts—some of which (such as immutable mobiles) have a definitely dated and mechanistic sound to them—does not seem to result in any clearer orientation. Instead of looking back on such rather strange-looking concepts, it might be worthwhile to look in the other direction: more critical reflection on the peculiarly French character of Latour's centre/Paris–periphery/provinces model of concentric knowledge circles (in which centre and periphery interact but the peripheries never seem to do so), and on the economic metaphors that dominate the current historiography of science, might point to just such a new orientation. As Karel Davids indicates, perhaps the most fascinating research can now be done if we look at the interaction between 'systems' and widen our own field of metaphors to include not just commerce, gain, profit or exchange, but also power, honour, pleasure and curiosity.

FLORIKE EGMOND
University of Leiden

JOHN C. POWERS, **Inventing Chemistry: Herman Boerhaave and the Reform of the Chemical Arts.** Chicago and London: The University of Chicago Press, 2012. Pp. viii+260. ISBN 978-0-226-67760-6. £26.00 (hardback).

doi:10.1017/S0007087412000854

Whilst at dinner, an eminent teacher–scholar asked which pudding he should have that would best keep him awake, as he had a long evening ahead of marking papers. The next day also would be busy with a PhD student meeting and a seminar presentation. After debating the merits of sticky toffee pudding versus cheesecake, we all recommended he could have anything he wanted, as long as a double espresso accompanied it. How little has changed. As John Powers's meticulously researched study demonstrates, Herman Boerhaave was a similarly dedicated professor, renowned for his work ethic, punishing schedule and legions of protégés, though his Calvinist piety would probably have limited his indulgence in sweets.

Boerhaave was also not only diligent but brilliantly innovative, inventing a new 'philosophical chemistry' that not only served the pedagogical needs of his medical students, but also reframed