

– The author

Mark A. Waddell, *Jesuit Science and the End of Nature's Secrets* (Burlington, VT: Ashgate, 2015), 214 pp.

The monograph *Jesuit Science and the End of Nature's Secrets* constitutes an ambitious effort to reassess the works of Jesuit natural philosophers from the seventeenth century. It takes as its starting point the emphasis placed on visualization in Jesuit education and meditative exercises. Visualizing the unseen, like the horrors of Hell, lay at the core of Jesuit spirituality, historian Mark A. Waddell reminds us. Studying a range of books written primarily by Jesuits of the generation after Galileo Galilei, Waddell points to a particular role of the visual in these Jesuits' scientific experimentation and argumentation, particularly when confronted with the seemingly inexplicable, or 'Nature's Secrets'. These secrets included topics like magnetism, witchcraft, the 'weapon salve', the fish called remora, the effects of music and a host of others.

The book consists of six chapters, some of which have previously been published in various journals or anthologies. A recurrent theme is how deftly certain Jesuit natural philosophers sought to undermine the Aristotelianism they officially supported, without provoking the Society's censors in doing so. Another theme is the author's search for a peculiar Jesuit epistemology, in which the experiment played an important, yet different role than most historians of science have hitherto acknowledged.

A scholar with one foot in the camp of Neo-Latin philology and another in the history of Jesuit science is responsible for this review. When asked to give my opinion on a book on Jesuit science for a history of science journal, I felt that I should do so from the historian's point of view. However, when reading the book, which is permeated by the best academic prose one can think of, and whose thesis is clearly stated at the outset and consistently followed through to the end, my first observation relates to the footnotes. Whenever I glanced down a page to check the primary source, I was bewildered to discover how often the author's seemingly impeccable English renderings of Niccolò Cabeo, Athanasius Kircher, Giorgio de Sepi, Gaspar Schott, and other representatives of seventeenth-century Jesuit science, were simply not true to the originals.

The first instance of such a difference came early in Chapter 1, where Waddell misinterprets 'Hinc schola Academica, quae Acatalepsiara ex professo tenuit, et homines ad sempiternas tenebras damnavit' (actually a quote from Francis Bacon) as meaning 'This Academic school, which avowedly held [the doctrine of] Acatalepsy, has damned humankind to perpetual shadows' (p. 18). *Hinc*, however means 'hence, therefore'. In its context, the sentence should read something like 'This is how there came about an academic school, which ...'. Waddell has further misquoted *Acatalepsiara* as 'Acatalepsiara' (sic), admittedly a small error, but one that forced this reader to browse the Internet in search of a digitized version of Bacon's book, which immediately solved the riddle. The next Latin quotations appear on p. 33, again with minor errors. From there onwards, Waddell turns increasingly towards traditional hermeneutics, i.e. reading original sources, summarizing them and quoting and presenting his exegesis. Whereas his way of drawing inspiration from Lorraine Daston, Katharine Park, Stuart Clark and other eminent historians of science is up-to-date and convincing, his linguistic competence is not. I will return to his Latin competence, or rather lack thereof, below. Meanwhile, I cannot bring myself to stop short of another disappointing observation.

– The author

The status of English as a *lingua franca* of academia has led to a certain neglect of scholarly output in languages other than English in recent decades. This is fine as far as Francis Bacon or Isaac Newton are concerned. Yet it is disappointing to find almost no trace of Italian-language scholarship in a book explicitly devoted to Cabeo, Kircher, de Sepi and Schott – all of whom were active in Italy and have indeed been studied by Italian scholars (see for example the anthology edited by G.P. Brizzi and R. Greci, *Gesuiti e Università in Europa*, Bologna 2002). Furthermore, Kircher and Schott spent parts of their careers in German-speaking territories, and there are examples of recent German scholarship (e.g. the doctoral thesis on Schott's *Magia universalis* by D. Unverzagt, Berlin 2000 or the study of Kircher's scientific practices and epistemological stance by T. Leinkauf, Berlin 2009), which seem to have evaded Waddell's radar. Curiously, Waddell characterises Schott as 'largely unknown' and describes this Jesuit's move from Rome back to Würzburg as a displacement to 'the northern hinterlands' (p. 161), as if Europe north of the Alps constituted some sort of Siberian exile! In fact, German-language Europe was fully integrated in the contemporary *Respublica litteraria*, with professors of physics at numerous Jesuit institutions. Schott, one could argue, was far from isolated in Bavarian Würzburg, rather he found himself in the midst of a flourishing intellectual environment where natural philosophy was on the rise (Schott's correspondence from the 1660s, recently published by H.-J. Vollrath et al., Würzburg 2014, bears witness to this).

It is also somewhat puzzling, the way in which Waddell repeatedly draws parallels to contemporary developments within the Royal Society of London or to individual representatives of British science. The Royal Society was certainly an important institution in contemporary Europe, but how about the Accademia del Cimento of Florence or the Académie Royale des Sciences of Paris? Waddell has surprisingly little to say about such examples of continental science. Instead, he analyses striking parallels – and unsurprising differences – between Jesuit natural philosophy and British empiricism. This might prove efficient as a pedagogical tool and serve as an inspiration for further research. It is sad, however, that in using this tool, Waddell avoids mentioning what is already known – and has indeed been thoroughly analysed by historians of science in other tongues than Waddell's own – about contemporary clusters of natural philosophy that stood far closer to the protagonists of his book in terms of geography, confessional creeds and intellectual culture.

Sloppiness in dealing with original quotes may be forgiven if the general argument is strong and convincing. In analysing illustrations, frontispieces and the like, Waddell is often persuasive. However, take for example Chapter 6, which is wholly devoted to an examination of Gaspar Schott's two books *Magia universalis* and *Technica curiosa*, neither of which appears to be available in English translation. As a consequence, Waddell has studied the originals. Unfortunately, in his effort to do so, he has fallen victim to many misunderstandings. To flag just one random example: on p. 169, Schott is quoted as having said, 'Et nè Artem Natura vincere videatur, eadem etiam, & magis prodigiosa, saltem magis concinnè ac jucundè, per Artem repraesentare docemus'. Waddell's translation is as follows: 'And lest Nature should seem to have conquered Art, and by means of a prodigious magic, or at least an elegant and delightful magic'. Note, however, that Schott writes *vincere* (to conquer), not *vicisse* (to have conquered). More importantly, there is no mention whatsoever of *magia*, only the adverb *magis* (more). A more accurate translation should read something like this: 'And in order not to have Nature

– The author

seem to conquer Art, we proclaim Her (i.e. Nature) to be both more prodigious, and certainly more succinctly and delightfully represented, by means of Art'. The 'art', which according to Schott is to 'represent nature', is simply the art of laboratory experimentation, not magic.

Arguably, scientific Neo-Latin from the seventeenth century can offer an easier read than its ancient model, thanks to the use of diacritical markers. For example, the spellings *quòd* and *quàm* signal that these are conjunctions and adverbs ('because' and 'than' respectively), instead of forms of the relative pronoun, which were invariably spelled *quod* and *quam*. Thus, when Schott in an intriguing passage on the effects of music writes, 'Saepe enim absoni admodum hominum & animalium concentus, Instrumentorumque soni, plus aures delectant, animum recreant, quàm Musica Angelicae aemula; non quòd illa quàm haec suavior, sed quòd rarior', anyone who is familiar with Neo-Latin will recognize that there are no relative pronouns in that sentence. Waddell does not (see p. 173). If he had translated correctly, his discussion would have taken a different route. (Here is my attempt: 'The highly disharmonious voices of humans and animals, and also the sounds of instruments, are often more pleasing to the ears and refreshing to the mind than music that emulates that of the angels; not because the former is sweeter than the latter, but because it is more rare'.)

There are examples of Waddell hitting the mark. Sometimes, he does transcribe an original correctly and – with his masterful English style, for which many of us foreigners can merely envy him – exposit its meaning both correctly and convincingly. The book's Introduction and Conclusion are highly recommendable. However, the flaws in between are too many and too grave. Given his dubious understanding of the primary sources, the entire fundament on which Waddell's argument rests, shatters.

In short, *Jesuit Science and the End of Nature's Secrets* deals with an interesting epoch in European intellectual history. It draws inspiration from the best historians of science in the Anglophone world and some French scholars as well. However, its author displays a disappointing neglect of highly pertinent scholarship in Italian and German, and somewhat oddly points to contrasts between Jesuit natural philosophy in the heart of Catholic Europe and empiricist attitudes in a different context entirely, namely, Anglican Britain. In doing so, he rarely mentions contemporary developments in contexts that lay much closer to Italy and southern Germany, where the main protagonists of his book operated. While the author demonstrates a firm grip on the best methodologies of contemporary history of science, in his eagerness to study Latin originals that are clearly beyond his linguistic qualifications, he has stumbled and fallen into too many pitfalls. Mark A. Waddell's book may indeed serve as an inspiration and guideline for further research, but one would hope to see more interdisciplinary studies involving not only methodologically sophisticated historians, but also scholars with a firm grip on seventeenth-century Latin.

Per Pippin Aspaas

UiT The Arctic University of Norway