AUTHORITY IN ANCIENT SCIENCE

KÖNIG (J.), WOOLF (G.) (edd.) *Authority and Expertise in Ancient Scientific Culture*. Pp. xii + 473, fig. Cambridge: Cambridge University Press, 2017. Cased, £105, US$135. ISBN: 978-1-107-06006-7.
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This third volume in a series on ancient science considerably expands our understanding of how authority and expertise might be created and defended, contested or destabilised in ancient scientific texts. The collection focuses on works of prose (and a few poems) authored during the Hellenistic, Late Republican and Imperial periods, 'because the techniques of self-presentation and authorization are at their richest and most variable in the globalized intellectual culture of the Roman Empire' (p. 3). In contrast to what might be perceived as narrow temporal restrictions, the editors deliberately understand the word 'science' as comprehending the 'whole industry of knowledge ordering', therefore considerably broadening the scope of the volume. The result is seventeen excellent chapters exploring the concepts and postures of authority adopted by authors on topics as far-reaching as medicine, astronomy, mathematics, architecture, philosophy, jurisprudence, rhetoric, historiography, agriculture, generalship, geography and divination. This 'capacious' view of the sciences is welcome because it illuminates rhetorical, epistemic and social affiliations (and sometimes the surprising lack thereof) between an astonishing number of texts and domains of expertise. So, too, this decision creates space for more nuanced accounts of the many and variable strategies authors might deploy in fashioning themselves as experts, pushing beyond the by-now-familiar emphasis on agonism and polemic in a world lacking accrediting institutions.

The volume is organised thoughtfully with clear connections between chapters and very few typographical errors. While readers are certain to quibble with specific readings in chapters germane to their own areas of expertise, this volume is an important contribution, not only to the history of ancient science but, to the extent that it often purports itself to be a model of interdisciplinary study, to the field of Classics as a whole. Ancient 'science' was never neatly siloed off from other modes of enquiry or literary production. On the contrary, they were entangled, and this important volume gives prominence to the messy work of ordering knowledge as it spilled into every corner of the ancient world. Because of the large number of contributions and their high quality overall, in the remainder of the review I offer only brief summaries of their principal arguments.

In Chapter 1, 'Introduction: Self-Assertion and its Alternatives in Ancient Scientific and Technical Writing', König situates the volume's approach to the rhetoric of scientific authority relative to the work of G.E.R. Lloyd and P. van der Eijk and justifies the volume's generically inclusive approach to scientific writing. In the second half of the chapter, two case studies of Plutarch and Philostratus demonstrate how authors might cultivate authority through self-effacement or ambivalence towards excessive intellectual competition, in addition to impressive displays of learning and innovation.

In Chapter 2, 'Philosophical Authority in the Imperial Period', M. Trapp shows that, in the Empire, challenges to philosophical authority might emerge from various points: between sects, from other professionals and political institutions/figures. This is in part due to the ambitious scope of the domains of knowledge that philosophers staked out as proper to the *ars vivendi* (embracing everything from metaphysics to ethics). Trapp goes on to survey the various stances that Imperial philosophers adopted to project both epistemic and moral authority to their peers as well as the ways these postures might effectively challenge political authority.

Chapter 3, 'Philosophical Authority in the Younger Seneca', complements the preceding chapter in examining the calculated mobility of Seneca's identity as a Stoic in a world in which Stoic philosophy was suspect. Here H. Hine builds on growing agreement that the Stoicism of Seneca's writings was more labile and multifaceted than monolithic. Accordingly, Seneca's self-presentation as a philosophical authority hangs on factors like genre and addressee. His prose works are therefore better evaluated on a spectrum of those explicitly engaged in the project of philosophising (e.g. *Letters*) and those that do so more covertly (e.g. *Consolations*).

In Chapter 4, '*Iurisperiti*: "Men Skilled in Law"', J. Harries examines how Imperial Roman jurists negotiated the delicate balance between their expert authority and the *de facto* power of the Emperor. She suggests that, practically speaking, the powers of the Emperor and jurists were complementary: while the Emperor was the ultimate legislator and arbiter, the *iurisperiti* ensured that he made correct legal judgements through their 'ownership' of specialised knowledge of the vast body of legal precedents and their (possible) interpretations vis-à-vis new cases. Likewise, the *iurisperiti* attempted to broadcast their cultural authority more widely by writing histories that painted jurists as part of the traditional mainstream of Roman political history.

In Chapter 5, 'Making and Defending Claims of Authority in Vitruvius' *De architectura*', D. Harris-McCoy argues that Vitruvius assimilates his editorial prowess with that of *natura* herself to promote the authoritative completeness of his work. That is, just as Nature 'synthesises' the scattered and raw *materia* of the cosmos into ordered and purposeful bodies, so Vitruvius claims the skill to arrange and 'synthesise' a mass of information from a huge variety of disciplines into his master-work about the master-discipline.

Chapters 6 and 7 form a natural pair in their treatments of military manuals. Both M. Formisano ('Fragile Expertise and the Authority of the Past: the "Roman" Art of War') and A. König ('Conflicting Models of Authority and Expertise in Frontinus' *Strategemata*') home in on the tensions between theoretical knowledge and practical experience in teaching the art of war. While Formisano takes up the historical dimensions of this tension in the formal military treatises of the Greek Onasander and the Roman Vegetius, König explores the very possibility of writing such an 'art' in Frontinus' *Strategemata*. Both essays highlight military manuals' self-awareness as literary texts in dialogue with discourses about written authority in ways that tend to destabilise their authors' claims to expertise.

In Chapter 8, 'The Authority of Writing in Varro's *De re rustica*', A. Doody transposes similar worries about the didactic value of texts from the battlefield to the Roman farm. Here Doody illustrates how, in each of the three dialogues comprising the *Rust.*, a text consciously aligned with the elder Cato's venerable teaching text *De agricultura*, Varro gradually subverts his own claims to agricultural expertise in ways which appear to question the possibility of conveying a body of authoritative knowledge in writing. As Doody notes in the conclusion, whatever Varro's aims, this polyphony was ignored by latter agricultural writers like Columella and Pliny, for whom Varro's work joined Cato's as part of the agricultural canon.

The limitations of the written word to model the world and of the human mind to apprehend it are taken up anew by E. Kneebone in Chapter 9, 'The Limits of Enquiry in Imperial Greek Didactic Poetry'. Kneebone gathers together several Imperial didactic poems (Dionysius of Alexandria's *Periegesis*, Oppian's *Halieutica*, ps.-Oppian's *Kynegetica* and ps.-Manetho's *Apotelasmetica*) and evaluates whether the 'divine inspiration' underwriting poetic authority inoculated these authors against the kinds of epistemic worries to which prose authors were subject. Ultimately, despite conventional differences, she finds that poets were equally engaged in these debates as different authors assumed different positions on the possibility of comprehensiveness, the value of theoretical knowledge against practical experience and, above all, the limits of human perceptions about the nature of the world and the things in it.

In Chapter 10, 'Expertise, "Character" and the "Authority Effect" in the *Early Roman History* of Dionysius of Halicarnassus', N. Wiater argues that historiographical authority ought not be reduced to the historians' claims to competence or special access to knowledge of historical events. Rather, 'authority' is more properly understood as a dialectal relation between author and audience; we therefore ought to take into account how the historian positions his audience as dependent upon his evaluative skill and projects his character. The historian, then, cannot simply make top-down declarations of authority but must ensure his audience assents to it.

Chapters 11 by D. Lehoux, 'The Authority of Galen's Witnesses', and 12 by R.M. Rosen, 'Anatomy and *Aporia* in Galen's *On the Construction of Fetuses*', turn to Galen. Lehoux, alive to the suasive benefits in the construction of an audience, observes Galen's rare, but effective, habit of placing his addressees within narrated scenes of prognosis. This subtle move provides his readers with credible, direct witnesses to Galen's feats of extraordinary skill, rather than forcing them to rely solely upon the 'hearsay' of the author. Rosen focuses on *On the Construction of Fetuses*, where Galen is ultimately forced to admit an uncharacteristic agnosticism regarding the materiality of the soul, despite his exhaustive anatomical knowledge. Yet the ingenious Galen can weaponise even *aporia* against his rivals: if he cannot arrive at a conclusive inference grounded in his observational experience, the matter must lay beyond the bounds human *episteme*. Ultimately, Galen seems more credible by acknowledging the limitations of his empiricism (coterminous with human medical knowledge) and assails those who claim to know what they cannot.

In Chapter 13 L. Kronenberg returns to Varro, examining the extant fragments of *Antiquitates rerum divinarum*. Kronenberg breaks from usual readings of this text as a serious attempt to reconcile Roman civic theology with the modish philosophical scrutinising characteristic of the Late Republic. Instead she offers (an admittedly speculative) interpretation of the *ARD* as a Menippean satire meant to mock scholarly epitomes, of which Varro was, of course, the author par excellence. Such a reading nicely complements Doody's interpretation of the *De re rustica*, and together they complicate assumptions about Varro's intellectual projects.

In Chapter 14 K. Volk wades into the debate whether elite Romans of the Republic 'believed' in divination (as opposed to merely 'practising' it). Here Volk attempts to resolve Cicero's famously contradictory statements about the existence of divination in *De divinatione* and *De legibus*. Whatever Cicero's true attitudes towards divination, this chapter argues that, especially in the fraught political climate of the Late Republic, divinatory 'expertise' was widely regarded as a powerful tool. This is especially clear in the case of Nigidius Figulus, Cicero's friend, prolific scholar and aficionado of all matters divinatory, who seems to have used divination vigorously in his support of the optimate cause.

In Chapter 15 J. Wietzke thinks about scientific authority through the language of civic euergetism in Ptolemy's *Syntaxis*. Wietzke connects Ptolemy's 'zeal' with his characterisation of the *Syntaxis* as a 'synchronically' collaborative benefit to humanity as it builds upon the work of his most important predecessor, Hipparchus. At the same time, Ptolemy is careful to close off the extent of future collaborations, emphasising that his theoretical model is complete and that future astronomical observations will serve simply to validate it.

In Chapter 16, R. Netz scours non-mathematical treatises to determine whether ancient authors used the language or structure of 'fully mathematized' treatises to access the special kinds of truth-claims available to mathematical proof (the '*more geometrico*' commonly deployed in Enlightenment works on topics such as ethics). Netz's survey reveals only one such instance of borrowing (Galen in *De usu partium*). Netz concludes that this is not because mathematical writing lacked authority but because that authority was generically restricted; outside its generic home, mathematical proof was perceived as a 'vehicle of clarity, not validity'.

In 'Authority and Expertise: Some Cross-Cultual Comparisons' G.E.R. Lloyd closes the volume out by lifting many of the theses and themes explored by the contributors and comparing them with ancient Mesopotamian, Chinese and Indian practices of knowledge-ordering and authority building. In these traditions we find the familiar tensions between postures of polemical innovation and professions of allegiance to ancient (if fluid) traditions and figures.

In the final analysis, this volume succeeds in casting new and important light on the variety of strategies ancient scientific writers might deploy to claim (or disclaim) expertise, especially as those strategies were embedded within wider social and political environments. In so doing, this collection stands as an important argument and model for future interdisciplinary studies of ancient science.

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ANCIENT SCIENCE AND LITERATURE

TAUB (L.) *Science Writing in Greco-Roman Antiquity*. Pp. xvi + 193, figs. Cambridge: Cambridge University Press, 2017. Paper, £18.99, US $29.99 (Cased, £59.99, US$99.99). ISBN: 978-0-521-13063-9.

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The *Key Themes in Ancient History* series, to which this volume belongs, introduces 'basic topics' in Classics and ancient history. T.'s contribution to this series is an introduction to the field of ancient science, which distinguishes itself from other such introductions by prioritising 'the diversity of genres and the types of texts' (p. ix) employed for the communication of science in the classical world. So, where T.E. Rihll's comparable volume (*Greek Science* [1999]) organises ancient science around subject areas, and G.E.R. Lloyd's introduction proceeds chronologically (*Early Greek Science: Thales to Aristotle* [1970]; *Greek Science after Aristotle* [1973]), T.'s focus upon genre shows how literary aspects of ancient science writing situate these texts within determinate and culturally significant contexts. T.'s book thus epitomises a recent trend in the study of ancient science, which emphasises the rhetorical function and social context of literary forms used for technical topics (e.g. M. Asper [ed.], *Writing Science: Medical and Mathematical Authorship in Ancient Greece* [2013] or R. Netz, *Ludic Proof: Greek Mathematics and Alexandrian Aesthetics* [2009]). This approach welcomes newcomers to the field by placing ancient science in proximity with other, more traditionally established areas of classical scholarship, such as the study of literature, rhetoric or social and political history.

The book consists of a substantive introduction, five chapters examining major genres employed for Greek and Roman science writing (poetry, letters, encyclopaedia,

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