

## TEXTS AND APPLICABILITY

FORMISANO (M.), VAN DER EIJK (P.) (edd.) *Knowledge, Text and Practice in Ancient Technical Writing*. Pp. xiv + 282, figs, ill. Cambridge: Cambridge University Press, 2017. Cased, £75, US\$99.99. ISBN: 978-1-107-16943-2.

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This volume, resulting from a 2011 Berlin conference, presents twelve papers on ancient technical-scientific writing that converge around a single question: ‘to what extent does the principle of practical applicability determine the specific nature of [a] text?’ (p. 2). The authors thus open up the issue of the applicability of expertise to textual analysis, drawing diverse answers to that question from an array of texts on subjects ranging from architecture to zoology. The volume is thus defined by the diversity of its contributions – their subject, focus, theme and conclusions – and in them readers with diverse interests in technical-scientific writing will find plenty that will engage them.

The volume opens with two introductions by the editors. In the first, v.d.E. briefly surveys the volume and some of its core topics: distinctions between theory and practice; definitions of practical art; oral versus written instruction; the *Sitz im Leben* of text. In the second, F. offers a critical review of recent work on ancient technical-scientific writing, which will orient new readers to key issues and provoke debate among those already familiar with them. F. wants to advance scholarship beyond questions isolating rhetoric and form, which implicitly assume problematic distinctions between the ‘literary’ and ‘non-literary’, proposing instead a Bakhtin-inspired hermeneutic that pursues a ‘poetics of knowledge’ pervading texts by virtue of their very textuality. F. does not fully develop the agenda here, but focusing on this volume’s concerns, he proposes that aspects of text that point to applicability should be understood as a mere ‘gesture towards the extra-textual reality’ (p. 19). The apparent bridge between text and technical practice is thus a device that redirects the text back onto itself or facilitates unexpected, non-technical applications; F. develops these claims through two examples, analysing Diderot and D’Alembert’s *Encyclopédie* and Onasander’s *Stratêgikos*. I will return to F.’s discussion at the end of this review.

Most of the contributions are aligned with F.’s goals, at least broadly. The papers are arranged by ‘subject matter’ (p. 7), but since almost every one of them covers a different subject, this arrangement does not readily facilitate synthesis. Below I regroup them according to four themes (not mutually exclusive) to suggest how papers on distinct subjects might profitably be read in conversation with one another. I begin with one, however, that is an effective primer for the whole volume: surveying writings on mechanics, M. Asper draws out four ‘acts’ that such texts purportedly enable readers to do: (1) actually build machines; (2) have comprehensive, systematic knowledge of construction; (3) decide which machines to build; and (4) explain scientifically how and why machines work. While Asper does not offer final conclusions, he raises fundamental questions about what constitutes applicability and thus provides a helpful, methodological complement to the papers that follow.

Every paper discusses the formal features of texts, but several, echoing part 1 of Asper’s discussion, are united in targeting those features that seemingly promote the use of texts and their contents. E. Romano analyses Vitruvius’ *De architectura* and finds evidence for practical instruction in the preponderance of building terminology and specific advice, though this is complicated by Vitruvius’ shifting addressee. She concludes that Vitruvius blends theory and practice, promoting architecture as an ‘art of the possible’ (p. 66), in

which an ideal reader-builder will implement theory within material and circumstantial constraints. K. Geus investigates what Claudius Ptolemy means in signalling the εὐχρηστία of his *Introduction to Geography*, locating this ease-of-use in Ptolemy's habit of simplifying mathematical procedures and values, such as rounding the number  $\pi$  to 3, though Geus acknowledges that such manoeuvres still assume readers with above-average mathematical competence. He concludes that εὐχρηστία was part of Ptolemy's strategy to secure authorial immortality. L. Totelin argues that sexuality pervades ancient cosmetology, evident from 'repulsive' ingredients (dung, burnt animal parts) that nevertheless connote fertility and the beautifying application of cosmetics around the face and genital region. She speculates plausibly that cosmetic treatises, with their titillating details and associations with gynaecological treatises and sex manuals, were (mis-)used as pornography. Totelin makes a secondary but important argument that cosmetic treatises construct an unreal, male gender as much as they do the female. Two appendices compile the contents of Statilius Crito's lost *Cosmetics* and a list of recipes attributed to female authors. C. Reitz offers a sensitive analysis of Columella's rhetorical strategy in *De re rustica* 10, concluding that parallel tensions between tradition and experimentation align his agricultural and poetic programmes. But tradition is key: citations and allusions to earlier poets, chiefly Virgil, grant the work an *ornatus* that appeals to readers who cultivate *urbanitas* even at their estates.

A second recurring theme, central to two papers and in keeping with Asper's second 'act', is the systematisation of knowledge: texts may organise and define what a τέχνη can do without precisely teaching readers how to do it. P. Pérez Cañizares's solid discussion of Hippocratic therapeutic texts establishes exactly that. Treatises, for instance, that describe how to extract nasal polyps assume that readers have expertise acquired through oral or practical instruction. The text rather reminds and reassures readers that this kind of therapy is within the power of medicine. G. Graßhoff analyses the theory underlying *παραπήγματα*, calendars that predict weather and other events according to the regular appearances of stars, arguing that Ptolemy's *Phaseis*, in particular, compiles data from earlier authorities to present as comprehensive and systematic a *παραπήγμα* as possible. Graßhoff concludes that *παραπήγματα* provide 'hybrid practical knowledge' (p. 215) to specialists and lay persons, which informed decision-making in conjunction with other information sources.

A third theme is transformation, whether the transformation of texts into new forms or the evolution of our cognition manifested in text. R. Kaiser, theorising 'allelopoiesis' (p. 73) in a Renaissance reception context, explores how the scholar-architect Giovanni Giocondo (1433/5–1515) transformed Julius Caesar's description of the Rhine bridge (*B.G.* 4.16–19) in his 1513 treatise *Expositio pontis*. Giocondo emends Caesar's compressed account and explicates it through illustration and commentary, thus positioning it within humanist concerns for systematic theory and practice. Kaiser concludes, however, that Giocondo's aim was not for readers to apply the text towards actual construction, but to affirm the feasibility and historical existence of Caesar's bridge. G. Boter discusses the relationship between Epictetus' *Discourses* and Arrian's *Encheiridion*, arguing that while the former provides the ethical-philosophical content for the latter, Arrian's handbook is not just a patchwork of its source material but an original literary work. The *Encheiridion* is thus shaped by Arrian's own authorial choices and directed towards Stoics as well as lay readers. P. Li Causi introduces and applies Umberto Eco's cognitive-semiotic theory to explore how we use texts in processing empirical and imagined phenomena. He pursues the ever-changing 'cognitive type' of the unicorn through Ctesias, Biblical translation, Marco Polo and YouTube as it survives ever-negotiable properties and the mainstream recognition of the rhinoceros, narwhal and mutant roe deer.

While several papers discuss ethically-oriented texts, two especially far-reaching and illuminating contributions directly address a fourth theme, the moral impact of texts. As A. Sharrock points out, Ovid's *Ars amatoria* stands out for purportedly teaching what was illegal at the time of its composition. Sharrock analyses the poem's rhetoric of utility through its constructions of author and addressee, arguing that Ovid, like Quintilian, promotes a kind of moral education, seducing readers into an erotic mindset: one should feel like a lover, but should one act accordingly? Sharrock is sceptical of Ovid's attempts to dissociate art from action (delivered from exile via poetry, of course, to enact his recall), and concludes by considering the medieval reception of the *Ars amatoria* as a poem with ethical consequences, some perhaps even conducive to marriage. B. Holmes observes that nature's failure to provide humans with full knowledge of the means of life motivates didactic programmes in general and, in particular, the books on medicine in Pliny's *Natural History*. She argues that Pliny, rather than offering practical expertise, holds up animals that exhibit intuition of natural sympathies and antipathies (nature did not fail *them*) as instructive sources of knowledge, orienting him to Stoic and other intellectual currents. Holmes further shows that for Pliny, knowledge transmission is corrupted by luxury and greed, which makes human ignorance as much a cultural failing as a natural one. The generosity of Pliny's text, then, has epistemic and moral applications, mimicking nature's abundance freely and counteracting 'the meanness of his own age' (p. 247).

Such are four themes that connect papers on otherwise diverse subjects. Most papers will find an audience primarily of specialists, but Sharrock's and Holmes's essays should appeal to wider readerships. Totelin's paper would be excellent for undergraduates studying gender issues in antiquity. Some papers might have engaged more directly with the questions and themes posed by the editors: Boter and Graßhoff offer detailed discussions of content, but only obliquely address applicability. Reitz's analysis of Columella's *ornatus* implicitly maintains the divisions between 'literary' and 'non-literary' without taking into account F.'s critique. Such disunities do not themselves detract from these individual contributions, but they keep the volume from becoming more than the sum of its parts (a tall order for any collection).

The volume's formal presentation is generally good. Typographical errors and inconsistencies are few, but problems occasionally arise with the visual apparatus or its lack. Graßhoff's figures 11.3 and 11.5 do not include the colour or more complex details referred to in the text; more care might have been invested in preparing these for publication.<sup>1</sup> It is also unfortunate that Kaiser's chapter does not actually feature Giocondo's bridge illustrations, since the visual elements are crucial for the discussion, and few readers will have ready access to them.

To conclude, I return to F.'s introduction and the volume's fundamental orientation: F. is rightly dissatisfied with distinctions between the 'literary' and the 'non-literary', but rather than abolish such frameworks altogether, we might redraw them along different lines. F. and the contributors consistently imagine an audience of *readers*, but questions about the extent to which technical-scientific texts fit within ancient performance cultures, and which of their aspects made them suitable (or not) for the symposium or *recitatio*, have recently been opened and warrant further study (see e.g. R. Netz, 'Authorial Presence in the Exact Sciences', in M. Asper [ed.], *Writing Science* [2013], pp. 217–53). Ambiguity

<sup>1</sup>Graßhoff's bibliography also features an inaccuracy worth correcting: A. Jones's translation of Ptolemy's *Phaseis*, which Graßhoff uses extensively, is not the article cited as Jones 2004, but an unpublished, privately circulated document. Unauthorised versions can be found online.

may shade distinctions between the performative and non-performative, but such analyses are based on historical practices and avoid the value judgements that F. rightly finds problematic. We no longer deny that ‘non-literary’ scientific authors made (their own) aesthetic choices. But what would it take to get Ptolemy invited to more and different parties?

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## FEATURES OF TECHNICAL EKPHRASIS

ROBY (C.) *Technical Ekphrasis in Greek and Roman Science and Literature. The Written Machine between Alexandria and Rome*. Pp. x + 336, figs. Cambridge: Cambridge University Press, 2016. Cased, £74.99, US\$120. ISBN: 978-1-107-07730-0.

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According to Flavius Josephus (*BJ* 5.268 and 359), the Jewish rebels defending Jerusalem against the Roman army in 70 CE had access to captured ballistic machines, but were unable to turn this alien technology against their enemy until deserters with direct practical experience demonstrated and gradually transmitted this skill. This episode does not feature in R.’s book, which focuses on the use of verbal description, and occasionally schematic images, to transmit knowledge of the construction and use of such machines from an expert to a reader removed in time and place. However, the contrast between this written ‘technical ekphrasis’ and the direct physical demonstrations and practice mentioned by Josephus underlines the challenge faced by authors of technical texts. R.’s study shows, among other things, how authors used language to evoke not just the sight of such a machine but the physical experience of building and using it.

The book offers a rich and nuanced analysis of the rhetoric of technical writing: how authors construct their own personae and their readers, how the knowledge encoded within siege machines, buildings, automata and the like is displayed in verbal form to an absent reader and how that reader is called upon to play an active part in the communication of knowledge. Though the focus is on technical authors such as Philo Mechanicus, Hero, Vitruvius, Biton, Ptolemy, Apollodorus, Athenaeus Mechanicus, not all of whom will be familiar to readers, R. makes a constant effort to bind these unfamiliar texts into their cultural contexts and to draw illuminating parallels with more widely known technical works like Galen’s medical writing and Pliny’s prose as well as with poetry and historiography.

The first two chapters place the technical material in context, first within the full range of technical and literary texts in which descriptions of technical artefacts are found and then within their broader cultural contexts. These introductory chapters have the effect of leading the reader from the more familiar to the less well known and of situating the texts within wider cultural trends such as Hellenistic ‘realism’ and ‘Imperial’ systematisation of knowledge.

The definition of ‘technical ekphrasis’ is the subject of the third chapter, ‘The ekphrastic complex’. The subject matter of these ekphraseis – moving assemblages of wood and bronze, cords and springs, valves and levers – is very different from the works of visual art