

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

that are often conceived of as the archetypical subject of ekphrasis. However, R.'s use of the term is perfectly consistent with the ancient meaning of ekphrasis which encompassed any type of subject as long as it appealed to the reader's imagination through the quality of vividness (*enargeia*). Moreover, as R. points out, the category of ekphrasis of the *tropos*, the 'manner in which' something is made or done, is particularly relevant to these accounts.

The analyses in this and the following chapters reveal the ancient technical texts to be fruitful sources for exploring the possibilities of ekphrasis and *enargeia*. R.'s analysis is alive to the complexities of the relationship between description and its subject, in particular to the way in which any single entity lends itself to multiple verbal representations depending on the aims and context of the author and the nature of the audience. Some of the ekphrastic techniques identified in this chapter, and later in the book, are familiar from rhetorical ekphraseis of places and buildings (the *periegesis*, the construction narrative) but R. highlights other methods, like the description of a system of aqueducts by Frontinus and Vitruvius' account of a traction device by tracing the path taken through these entities by the quasi-personified water or cable ('the rope's eye view', p. 127).

As these examples suggest, R. is well aware that the boundary between narration and description as generally defined in modern theory is often hard to identify. In order to account for some of the narrative aspects of her texts, she proposes a new coinage, 'parekphrasis', to include the stories of invention, details of 'what it is like to use' or to see the object as distinct from 'ekphrasis' that 'tells how something works or how it is made' or what it looks like (pp. 128–9). This coinage reflects the perennial difficulties of drawing a hard and fast line between an ekphrasis of any subject and its context. However, many of the passages cited as examples of 'parekphrasis' are instances of standard ancient ekphrasis which often writes viewer response, for example, into the evocation of its subject. Despite this quibble, the discussion of 'parekphrasis' contains many illuminating analyses, drawing together technical and poetic texts, showing how, for example, Ovid's use of analogy to help his reader visualise the wings made by Daedalus mobilises the same intellectual processes that enable us to conceive of complex phenomena from the observation of simpler ones.

R.'s material in fact allows her to mediate between the ancient and the modern senses of 'ekphrasis': like paintings and statues, the machines described in technical ekphraseis were material objects whose aesthetic qualities and impact on viewers could be noted and, like works of art, these machines were also bearers of encoded knowledge (technical, literary, cultural) made explicit in the ekphraseis. 'Technical ekphrasis' also has important features in common with rhetorical ekphrasis as defined in antiquity. One is its demand that readers contribute to the actualisation of the text, mobilising their prior knowledge, another is the appeal to senses other than vision, finally there is the cognitive role of the mental images evoked by an effective ekphrasis.

In this respect, the final two chapters, and the conclusion with its discussion of the 'Limits of description', are particularly rich in suggestions. The first of these, 'Description and Instruction', addresses the ways in which texts articulate the knowledge embodied within the mechanical artefacts. As R. points out, this quality brings these technical ekphraseis into contact again with ekphraseis of works of art in that both direct the reader's viewing and provide access to the guiding principles behind the object. Other texts invite the reader to engage imaginatively in the construction or use of a machine, an approach that R. aptly labels 'generative'. A series of deft analyses and a case study of military machines highlight the use of the first person plural and the second person singular to draw in the audience, asking them not just to visualise the machine and its construction but also to think about holding and manipulating it. The result, R. claims, is the creation of

'lived-in space' shared by author and reader in front of the imagined machine, the virtual equivalent of Josephus' skilled deserters.

The final chapter 'Knowledge and Artifact' explores the ways in which 'virtual witnessing', a term borrowed from the history of early modern science, is used to bring about an understanding of more general principles. Focusing on Ptolemy's *Harmonics* and Hero's *Pneumatica*, R. sees in the latter's work a series of artefacts of increasing complexity, designed to take the reader through the discipline while both aim to demonstrate the abstract knowledge to which their instruments gave access and thus to raise the status of their respective arts. The final chapter engages with a question that is often in the reader's mind, namely, the limits of these verbal accounts which, like any form of ekphrasis, cannot make present the totality of their subject. One thinks again of Josephus' rebels who only mastered their machines after repeated practice gave them the required bodily knowledge.

The book is carefully produced. A more detailed general index would have been welcome, as would translations of all the Greek and Latin texts. These, though, are minor issues with a work that makes significant contributions on several fronts, opening up a whole body of literature and an area of ancient intellectual culture to a wider audience, providing new perspectives on the function of verbal evocation and its representation of embodied knowledge with implications for the understanding of ekphrasis and its relation to cognition in many other contexts.

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## EMPIRE OF THE SENSES – SENSES OF THE EMPIRE

BETTS (E.) (ed.) *Senses of the Empire. Multisensory Approaches to Roman Culture*. Pp. xvi + 227, ills, colour pls. London and New York: Routledge, 2017. Cased, £110. ISBN: 987-1-4724-4629-9.

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The French philosopher M. Merleau-Ponty argued that the physiological body was 'the universal measurement', one which allowed us access to the experiences of other cultures. The problem, of course, is that every culture gives its bodies a different scale against which physical experiences are interpreted and judged. This, as B. notes in her introduction, represents the fundamental problem of sensory studies: how is it possible to recreate the ways in which other cultures have experienced and understood the world. The title refers to D. Howes's reader on sensory studies, *Empire of the Senses* (2005), which called for a sensory revolution in the analysis of culture. This collection of essays, which brings together a wide variety of approaches to this 'sensory turn' in relation to the Roman world, stems from a conference held in 2013. The result is a high-quality, lively and inventive collection of essays, which will do much to stimulate further study in this field.

The introduction raises some of the theoretical issues involved in applying the sensory approach to the ancient world; these are then explored in a dozen chapters encompassing a wide range of contexts. The range covered by the essays is extremely broad, both temporally and geographically, and inevitably there are gaps, but overall the feel of the collection is very well-balanced. R. Laurence discusses the soundscape of the ancient city to highlight