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Writing Science

Medical and Mathematical Authorship in Ancient Greece

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“Writing Science”? The title of this volume is ambiguous. In the term ‘writing science’, ‘science’ can function as the object, as in ‘writing novels’. The term claims that representation implies constructive aspects and that, to a certain extent, science is the product of these constructive aspects. But what is it to write ‘science’? Admittedly, historians of ancient science still debate whether what they investigate really is ‘science’ or something else. On the other hand, the object’s verb presents less of a challenge: whatever one names the object of practice for such individuals as Galen and Euclid, Geminus and Diogenes of Apollonia, Ptolemy and Diophantus, Hero and Dioscurides, ‘Hippocrates’ and Hippocrates, Apollonius of Perge and Apollonius of Citium, Ptolemaïs and Hypatia, to name but a few, these different individuals all can certainly be designated as writers. And, as writers, their study profits from perspectives that bring approaches from literary criticism, in its widest possible meaning.

One can also understand ‘writing science’ as ‘the (part of) science that writes’, where ‘science’ is the subject and writing is one practice among others within the realm of science. Among the many myths of science there is the one, still widespread, that ‘writing up’ is not truly part of it. Thus, science writing has not been in the focus of traditional history or philosophy of science which both have largely concentrated on either practice or abstract argument. Things began to change, however, due to what has later been called ‘social constructionism’ and to some influential studies that have demonstrated that the representation of results is itself a constructive practice, which, sometimes, even fashions these results. It is fair to say, I believe, that writing is one representational practice in science among others.

The contributions that follow will address both aspects of ‘writing science’. Science writing is a field that, except for a long-standing, but moderate interest by linguists, for the most time has found itself repeatedly on the wrong side of boundaries that have become permeable only in the more recent past. One such boundary is that between ‘literature’ and other forms of writing. Science writing has not been part of the traditional canon of literary criticism, ancient or modern. With regard to ancient Greek and Latin texts, things have admittedly been less strict, mainly because such a large chunk of extant ancient literature belongs to medicine, mathematics and astronomy, to name but a few fields of science, that even purely liter-

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1 See, e.g., Lloyd 2009, 152–159; Ritter 2009, 83 f., and the contributions of E. Cancik-Kirschbaum and J.f. Quack in Pommerningen & Imhausen 2010. Even in ancient studies, one feels the repercussions of the ongoing debate on how to demarcate ‘science’ (for which see Taylor 1996).

2 See two influential discussions of these questions in Holmes 1987, esp. 222–226, and Lynch & Woolgar 1990, 2–14.
ary critics could not afford ignoring, e.g., Aristotle, Archimedes, or Galen. Nonetheless, the discussion of ancient science writing has suffered from certain problems that are specific to Classics: one is canonization which then provokes certain predispositions towards the canonized texts. Accordingly, in Classics and related disciplines, three approaches have dominated the study of such texts. The first, which we might call ‘textual’, has aimed at providing editions and translations, worked on textual traditions, dictionaries, has attempted to ascertain contextual meaning, etc. The second that has its roots in humanistic readings of ancient authorities is what we can call the ‘realist-humanist’: readers understand the texts as mere receptacles of facts and arguments, that is, they judge them according to their content of and relation to ‘reality’ or ‘truth’ as allegedly provided by modern science. If an ancient author is clearly wrong (e.g., Aristotle on the heart’s anatomy, Eratosthenes on the circumference of the earth), the realist-humanist either remains puzzled and passes over the lapse in embarrassed silence; or, often by seeking to excuse his author, he asks for possible cultural reasons of ‘getting it wrong’, which then leads into the third and last approach. The third approach that emerged in the 70s, and, thanks largely to the ground-breaking work of Geoffrey Lloyd as a scholar and a teacher, has increased in momentum ever since, one might call ‘cultural’. Ancient science writing is seen as a cultural practice that modern scholars can only understand in its social context, carefully avoiding anachronistic perspectives, but using any number and method of comparative approaches.

All these approaches continue to thrive and, needless to say, they all contribute equally to our knowledge of and about this body of literature. Most scholarly work done today on ancient science probably combines elements of at least two of these three approaches. Compared, however, to contemporary discussion of, say, ancient historiography or epic, approaches that one might call ‘literary-aesthetic’ are, for the most part, missing. Mathematicians can discuss or, rather, acknowledge the beauty of Euclidean or Archimedean proof, but where is the classicist who would pin down the concept, and explain it in non-mathematical terms, comparing it with contemporary concepts of beauty in, say, visual art? Galen is a great and

3 A glance through the excellent bibliographical essay that concludes Cuomo 2007 (203–210) will provide an impression of how the three are inter-related with respect to the study of ancient technology.

4 Perhaps especially in Germany, where the disciplinary traditions of ‘Medizingeschichte’ and ‘Mathematikgeschichte’ have been institutionally annexed to the schools of medicine and mathematics, respectively.


6 See my brief discussion of emerging ‘error studies’ in history of science in Asper 2012, 47 f.


9 Netz 2009, esp. 174–229, has provided a brilliant attempt to do exactly this.
versatile writer and, whenever it suits his purposes, he will construct sparkling, usually somehow self-centered, stories about failure and success or about Greece and Rome, but until recently, these stories were not even collected, let alone analyzed, neither for themselves nor in the context of imperial prose. Another problem that has made it difficult for a discourse about science writing to emerge is the modern institutional divide between literary, philosophical, medical, and mathematical traditions, scholarly communities, and even venues of publication. Scholars who specialize, even from a cultural point of view, in ancient mathematics, rarely compare their findings with research on ancient medicine, and vice versa. As writers, however, all these authors concerned had to face similar challenges and found certain responses to them that we can still compare.

This volume will probably not change the course of ancient science studies, but it may show that among the most integrative and fruitful problems of the field is the one of writing science: it will not only provide approaches apt for addressing the whole range of ancient texts regardless of their thematic content, but also bring these research fields back in touch with what happens in literary studies. Therefore, this volume, which is part of a rather recent, but quickly developing sub-field of Classics that one could call ‘comparative studies in ancient science writing’, pleads for an integrated approach to these texts. Such an approach crosses the boundaries of discipline, ancient or modern, and borrows freely from, among others, comparative literature, history and philosophy of science, and STS (science and technology studies).

What do these approaches add to the way ancient scientific texts have been read in the cultural mode as sketched out above? It is, I think, by now commonly accepted, that science writers ancient and modern seek to persuade their audiences and will employ whatever device comes handy to reach that goal. In addition to analyzing the design and impact of such textual devices which has been the focus of the rhetoric-of-science current within STS, there are especially two areas where approaches towards science writing in contemporary cultural studies could

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10 Mattern 2008 has done much to fill this gap with respect to medical case histories.
11 For the last two and their programmatic differences see Hess 1997, 2f.
12 Hankinson 1998, 69 (on Plato’s charge against the Sophists): “Scientists will seek to persuade people of the truth of their positions, and it is neither surprising nor intrinsically reprehensible if they employ rhetorical techniques to do so.”
13 Emerging in the late 70s, as seen, e.g., in Gusfield 1976 and Kelso 1980, ‘rhetoric of science’ was sketched out as a field and a research program by Gross 1990, esp. 202–205. Cf. his summary (2006, 3–45) with Zerbe’s (2007, 59–65) who has, however, a more practical concern: “Why is scientific discourse not a major concern of rhetoric and composition as a whole?” (37).
help us to understand the ways in which ancient 'rational-practice texts'\textsuperscript{14} work: first, authorial self-representation and the construction of authority, which is, naturally, somehow connected to the ways social authority in general is constructed in the society under investigation.\textsuperscript{15} Second, the workings of narrative as it impacts both the organization of empirical data and its representation in writing.\textsuperscript{16} A third potentially fruitful area is the impact of metaphor on terminology and, more generally, the ideology of terminology.\textsuperscript{17} Obviously, these areas partly overlap. Most of the following papers have a strong interest in what we might call 'authorship studies'. The strategies and devices of authorship are neither wholly dependent on the objects of presentation nor wholly independent of them (genre, e.g., provides some constraints). When, however, contemporary mathematicians such as William Thurston or Michael Atiyah wonder about rhetorical strategies in mathematical writing,\textsuperscript{18} these strategies have nothing intrinsically mathematical to them.

Authorship, that is, writing science as an aspect of 'doing science', seems to me to be a concept that could be capable of bridging the different aspects, practical and constructive, of writing science. Plus, it effortlessly puts writing science in the context of writing, even literature. Moreover, this might be the area where we and our students as (emerging) writers in the humanities can learn the most from ancient science writers.

Finally, it may appear to some readers that notions such as 'science', 'medicine', 'mathematics', etc., come with some anachronistic baggage, because they are almost completely 'etic'.\textsuperscript{19} Most, if not all, authors collected in this volume would agree. Cultural comparison, however, needs some over-arching frame which usually is the one of the observer who compares. In the cases of medicine and mathematics, and also of astronomy, there is, I believe, sufficient overlap of ancient practices with their modern namesakes to allow a commonsensical use of these notions without further qualms.\textsuperscript{20} 'Science', however, although it is certainly an etic concept through and through, when including mathematics and, partly,

\textsuperscript{14} I borrow the expression from Ritter 2009, who coined it for a number of ancient Mesopotamian domains that exhibit parallel formal structures, namely medicine, divination, mathematics, and law (93).

\textsuperscript{15} For modern scientific authority, see, e.g., Ziman 1984, 70–80.

\textsuperscript{16} On 'authorial authority' see, e.g., Gross 2006, 106 f.; on narrative in science and narratology in science studies see Merz 2010 and my 2011 essay on narrative and (ancient) mathematics (esp. 4); a specifically rich area is narrative medicine, for which see Mattern 2008, 27 f.

\textsuperscript{17} See, e.g., Graves 2005, 143–189.

\textsuperscript{18} Thurston 1994, 163: "I also threw out prize cryptic tidbits of insight, such as 'the Godbillon-Vey invariant measures the helical wobble of a foliation', that remained mysterious to most mathematicians who read them.", thus providing illustration to Davis & Hersh 1987, especially p. 60 (quoting from a jocular list of different ways of proving, which at that time circulated among Yale's graduate students). See also M. W. Hirsch (in Atiyah et al. 1994, 186 f.) on "narratives" in mathematics.

\textsuperscript{19} For the distinction of 'emic' vs. 'etic' see Goodenough 1970; Harris 1976.

\textsuperscript{20} See Lloyd 2009, chs. 2 and 4 and his use of the term 'discipline'.

even philology, may appear sufficiently fuzzy to use it again. Fuzzy concepts have, at least in cultural studies, often proved to be the most productive ones.

This volume collects fifteen essays from experts in the field of ancient science and/or its literature. In their respective areas, all offer approaches to questions of presentation and, especially, of authorship. The collection's first section ("Comparisons") opens with three papers that offer comparative perspectives on ancient Greek science and its literature.

1. In his introductory piece, Paul T. Keyser ("The Name and Nature of Science: Authorship in Social and Evolutionary Context") gives an account of what ancient Greek science actually is, inspired by both Jacobs's systematic approach and evolutionary theory, enriched by the enormous resources of Keyser's recently published encyclopedia of ancient scientists.21 'Science' emerges as a human tool in Darwinian struggles for survival, and thus comes itself under evolutionary pressure. Keyser explains his claim and its ramifications in three case studies, the first investigating the history of a mathematical problem, the second of wound-treatment in Egypt and Greece, and the third looking at artillery. One might wonder whether the emergence and change of established forms for writing about science would also be explainable by the same evolutionary framework,22 certainly with respect to the impersonal tradition of knowledge, but especially, when the literary success of individual scientists is concerned.23 Keyser's account of Greek science calls for comparative accounts of non-Greek traditions. The two following contributions sketch out two very different areas in which such comparisons are highly rewarding:

2. Karine Chemla explains concepts of authorship and authority in ancient Chinese mathematical writing, and Thorsten Fögen discusses the clash of Greek and Roman knowledge-traditions in Pliny the Elder. Chemla's contribution ("Ancient Writings, Modern Conceptions of Authorship. Reflections on Some Historical Processes that Shaped the Oldest Extant Mathematical Sources from Ancient China") focuses on the notion of the 'author' in the Nine Chapters on Mathematical Procedures, and how this notion is actually a function of its two most ancient commentators' concepts of canonicity. Chemla demonstrates that editing was the act which produced the mathematical classic. She extends her approach to Greek mathematical classics such as Euclid's Elements. To see the commentator as the agent of retrospective authorship could also provide a fruitful perspective on medical and philosophical commentators in imperial Greece, as well as modern commentaries, especially of fragmentary authors. The resulting figure is an almost

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22 See my 2007a, 376 ff., where, after a brief flirt with evolution I opt for the theoretically more inclusive frame-concept of differentiation à la Niklas Luhmann.
23 To a certain extent, Harold Bloom's dire concept of what he calls 'anxiety of influence' (1973) seems to apply to at least some science writers in antiquity (see Asper 2007a, 360–363, on Galen).
paradoxical one: the commentator constructs his author and, then, derives his own authority from the constructed classic.

3. Construction of authority is also the topic of Thorsten Fögen’s paper (“Scholarship and Competitiveness: Pliny the Elder’s Attitude towards His Predecessors in the Naturalis Historia”) who looks at Pliny the Elder’s comparative evaluation of Greek and Roman writers in botany and medicine. Since these are, at least in books XIX and XXX of the Naturalis historia, his predecessors, the piece becomes also a case-study of how to present oneself within the context of an already established field (one of the foremost challenges of modern scholarly writing, as well, although it usually is at least partly eased by formalization). Pliny emerges as a “shrewd strategist of self-advertisement” (Fögen) who stages his predecessors as sign-posts on the way to his own scholarly authority. Although often judged as inadequate and uncritical, in this respect Pliny is fully on a par with modern science writing.

The second section is devoted to medical writing (“Greek Medical Writing”), the field which, within the confines of ancient Greek science, emerged quite early as one of literary and cultural studies, perhaps not least due to its amazing wealth of texts.

4. Heinrich von Staden (“Writing the Animal: Aristotle, Pliny the Elder, Galen”) approaches the field from an unusual perspective, looking at how Aristotle, Pliny, and Galen write on animals. Analyzing non-human animals poses a host of problems, such as epistemological or linguistic challenges and questions of genre. Writers respond to these difficulties by developing different strategies, among them visualization, figurative responses to namelessness, impersonality or an authorial persona. Such a doubly comparative perspective brings out the characteristics of these three science writers very well: unlike Aristotle, Pliny and Galen need, on top of all the issues that counted for Aristotle as well, to construct authorial relations to political rulers, part of which might be a strong claim of originality. Pliny invents, e.g., a new category of authority, namely quantification of both sources and output. As is well acknowledged by now, Galen is a “master narrator ... of the authorial self” (von Staden). Von Staden shows how this is true even when only Galen’s discourse on animals is concerned.

5. There is common agreement that the basic unit of modern communication in science, the research article, emerged in certain institutional contexts in the late 17th century. It seems that the closest one comes to an ancient equivalent is the

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24 That is, abstract conventions that govern the distribution of content into separate areas of the text, such as footnotes, introductory passages on the ‘problem’s history’, IMRAD (‘Introduction, Methods, Results, and Discussion’, see, e.g. Zerbe 2007, 151 f.), formulaic deixis, etc.
25 The same holds for Latin medical literature which has been studied with an interest in the construction of authority; see, e.g., von Staden 1994 on Celsius, Doody 2009 on the Medicina Plinii, and in general Hine 2009 on Latin scientific and technical texts.
26 See, for example, the pivotal articles of Shapin 1984 and Dear 1985, focusing on Boyle and the Royal Society, and Holmes 1991, 167 ff., on the Académie des Sciences.
‘treatise’, a rather fuzzy genre. Philip van der Eijk who was among the first to think systematically (and comprehensively) about genre in ancient medical writing (see his often-quoted essay of 1997), gives an example of how a medical author makes his apparition in a treatise (‘Galen and the Scientific Treatise: a Case Study of Mixtures’), thus both describing the genre and authorial practice of constructing a medical ego’s authority. Van der Eijk situates the problem within the longstanding discussions about Aristotle’s pragmateiai and the logoi of the Hippocratic Corpus, which both also often go under the name of ‘treatise’. Van der Eijk suggests that Mixtures has a definite Aristotelian ring, that is, it was crafted as part and product of an Aristotelianizing aesthetics that coincides with Galen’s attempt to appear as a true and worthy follower of Aristotelian doctrine. Among the many strategies of creating authorial presence in such texts is also a ‘rhetoric of confidence’ which, as the treatise proceeds, assures the reader with ever increasing suggestiveness that the author is right. Van der Eijk concludes by pointing out that Galen adds to the inherited tool-box of rhetorical devices that are typical for treatises, providing a whole new range of rhetorical tools which make the text much more personal than is typical for treatises both of Galen’s past and present. Galen thus emerges as a writer whose authorial practice is in harmony with his scientific claims.

6. Science writing in antiquity has a philological side which is the focus of papers by Ralph Rosen and Ineke Sluiter. Rosen (“Galen on Poetic Testimony”) opens up yet another aspect of the many-faceted Galen, namely his habit of quoting poets and criticizing the quotes of literature by others as parts of scientific argument. Put differently, besides writing ‘literature’ himself, how does Galen use ‘literature’ when discussing medico-philosophical issues? Rosen illustrates Galen’s ideas of how not to use poetic testimony, including allegorical readings of myth, with examples mostly taken from De Placitis Hippocratis et Platonis. Rosen shows how Galen betrays a clear concept of the rhetoric of science and argument as separate from its practice, and how he manipulates the divide according to the changing intentions of his criticism.

7. Sluiter’s paper (“The Violent Scholiast: Power Issues in Ancient Commentaries”) leads us deeper into the struggles for meaning that ancient science writing exhibits when reading canonic authors. These struggles become most evident in the powerful tradition of writing commentaries, which is, I think, now so obsolete in science that it emerges as one of the major issues in understanding especially imperial and late-antique ‘science’. Sluiter approaches the commentator from how he wields his power to actually determine what the canonic and commented-upon author has to say. Besides showing the commentator’s power in action, Sluiter also explores how notions of power, violence and interpretation per se are

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27 Netz 1998 has termed the phenomenon “deuteronomic culture” and has described it focusing on mathematical writers. His analysis, however, could be adapted to apply just as well to medicine and philology.
connected. Here, the culture of commentary which still lives in modern Classics, comes alive as providing a frame for both science and literature (Sluiter culs her examples from commentaries on Homer and the Hippocratic Corpus). These two fields are, from the perspective of the commentator, not entirely different: after all, both provide knowledge-transmission in canonical mode. In many ways, Sluiter’s paper shows parallels to Chemla’s, and comparing Greek and Chinese commentaries on science might prove a fascinating object for further study.  

8. The third section (“Greek Mathematical Writing”) opens with a rich paper by Reviel Netz on mathematical authors (“Authorial Presence in the Ancient Exact Sciences”), which brings together topics many authors in this volume touch upon separately, not least medicine, mathematics and authoriality. Mathematical writing occupies a special position within Greek literature in many respects, but especially in that, unlike most of Greek literature, it is not performative. Despite presenting an impersonal surface to the reader, mathematical writing is nonetheless the product of rigorous authorial design which appears on several levels, not least in the narrative structure of mathematical composition. Netz sketches out the peculiarities of mathematical authorship by comparing it to a new concept of ancient authorship per se, analyzing it in terms of voice and competitiveness, involving issues of canonization, textuality, and communication. The key, however, towards understanding the peculiar genre of mathematical writing and its claim to authoriality, remains the lettered diagram, “the Troy and the Corinth of a Greek mathematical text” (Netz). Due to largely social-historical reasons, amply discussed here, mathematical and non-mathematical texts exhibit a complementary character concerning the issues of illustration and performance. As Netz shows, however, mathematicians opted for an opposite model of authoriality. From Netz’s article, one learns a great deal about non-scientific ancient (and, presumably, modern) literature, too.

9. Serafina Cuomo (“Accounts, Numeracy and Democracy in Classical Athens”) contributes a paper on authors and readers of inscriptions with ‘numeric’ content, that is, accounts such as tribute lists, building inscriptions, auction lists, etc. Mostly studied by epigraphists and historians for form, content, and historical context, these texts raise, however, complex questions concerning their symbolic and informative functions, among others, their audiences’ numeracy. Cuomo, however, investigates what authorship and readership mean with regard to such texts. When applied to public monumental inscriptions in an ancient Greek polis such as Athens, Cuomo argues, authorship means political participation and, thus, the authority constructed in these inscriptions differs from textual-authorial authority by a host of largely political implications. As for readership, Cuomo argues cogently that chosen formats are to be understood as choices of manipulation of the reader-

28 See Schwab & Gaeb 2011, on philosophical commentary (Ammonius, Philoponus, and Zhu Xi).
29 Providing amplification of Netz 2009, esp. ch. 2 “The telling of mathematics”.

ship of these texts (not completely unlike choices of formats available to a modern publisher). To me, this point seems to warrant application to ancient inscriptions in general. On a more general level, Cuomo demonstrates how inscriptive numbers, often taken to be 'objective', become a means of expressing political agendas.

10. In the two remaining contributions to mathematical authorship, the topic of authority enters, as it were, through the back door. Steffen Bogen ("Diagrammatic Reasoning: the Foundation of Mechanics") discusses the function of diagrams in a context of reasoning, chiefly in mechanical texts by Ps.-Aristotle and Hero of Alexandria (diagrams play an important role also in Netz's paper). Far from being mere illustrations, Bogen argues, diagrams provide immediate insight into the foundation of mechanics, namely the fact that enforced movements in space are related. On a rhetorical level, writing diagrams highlights an author's claim to be more than just a craftsman, while reading diagrams discloses the secret workings that the machines seek to cover. Moreover, as Bogen shows, diagrams on paper also aim for an illusion, namely to convince the reader that the machine works smoothly. From such a perspective, mechanical diagrams turn, quite surprisingly, into "fantasies of power" (Bogen).

11. Alan C. Bowen ("Three Introductions to Celestial Science in the First Century BC") looks at introductory writing in hellenistic astronomy, especially at how Diodorus Siculus, Vitruvius, and Geminus present themselves to the reader as experts of theoretical knowledge regarding the heavens, and so, must navigate between astrological and astronomical concepts. Diodorus cleverly manoeuvres between Egyptian, 'Chaldaean', and Greek notions of such knowledge, for all of which he is his reader's only reliable guide; Vitruvius mainly tries to convince Augustus to accept him as an expert. Both claim utility as their main purpose, but the beneficial effects of astrology ('the Chaldean science') are more important than the explanatory powers of Greek theoretical astronomy. In both cases, part of constructing an expert authority is the layout of a new kind of celestial science, namely a combination of native Greek and 'Chaldaean' elements, and their experts who are mainly seen as practitioners as opposed to traditional theoretical astronomy. Unlike Diodorus and Vitruvius, Geminus employs a rhetoric of impersonality which corresponds to his perspective on astronomy as a body not of useful, but of empirically true propositions about celestial phenomena. Here, just as in modern science writing, the rhetorical benefits of personal versus impersonal writing come well into view (see also Brooke Holmes’s paper, summarized below).

The fourth and final section ("Science Writing as/and Literature") cuts across disciplines. Its four contributions look at different fields of science writing by

30 Or to a Presocratic philosopher having a choice between either prose or poetry (see Asper 2007b, 98–100).
31 For impersonality in modern science writing, see, e.g., Gross 1990, 70–74 on "the support of privileged ontology" (quote 73), in ancient Greek mathematics, see Asper 2007a, 125–135.
engaging issues taken from main-stream literary criticism and pursuing them in science writing: e.g., genre, narrative strategies, and fictionalization.

12. Liba Taub ("On the Variety of 'Genres' of Greek Mathematical Writing: Thinking about Mathematical Texts and Modes of Mathematical Discourse") proceeds from the assumption that choosing a form for what the author has to say is one of the parallels of modern and ancient science writing. After giving short introductions into why both the classificatory notion of 'mathematics' and 'genre' as a category pose special problems for the literary-historical critic, among such choices she discusses an empirical taxonomy which includes Euclid-style 'elements' and their standard parts, question-and-answer texts, commentary, letters, and poems. What began as an investigation of form then ends as one of function, as she reads these forms into their cultural context.

13. Apostolos Doxiadis and Michalis Sialaros ("Sing, Muse, of the Hypotenuse: Influences of Poetry and Rhetoric on the Formation of Greek Mathematics") first sketch out the uniqueness of 'Greek-style' mathematics as text, mainly by comparing it to Egyptian, Mesopotamian, and Chinese mathematics, and then discern a parallel in the development of Greek rhetorical practice. The two threads come together when proof in geometry or philosophy turns out to show remarkably similar structures to those of rhetorical demonstration. Some of these Doxiadis and Sialaros can even identify in earlier Greek traditions, especially regarding "Ringkomposition" and "Chiasmus". Both mathematics and rhetoric thus emerge as specialist discourses, the unique features of which are based on pre-existing traditional communication, most importantly, story-telling. Suddenly, one sees very different forms of authority (narrative, scientific, juridical) as different aspects of one and the same cultural function.

14. My own contribution ("Making up Progress – in Ancient Greek Science Writing") focuses on different ways of creating a narrative of progress. Among, chiefly, medical, mathematical, and technical writers I find three forms of such stories: the first tells of progress as a story of steady growth that continues, potentially, forever; the second constructs progress from its ending, which mostly consists in the achievements of the author himself; the third one tells a story of return, according to which true progress means going back to the achievements of the past. Writers tell these storied accounts of progress with certain agendas in mind, which ultimately have to do with the authors' relation to their readers on the one hand and authority-granting points of reference on the other. In the realms of progress, it becomes instantly clear how narrative is a part of science and its presentation.

15. Proceeding from the impressive passage in Thucydides that describes how especially physicians died in the plague, Brooke Holmes ("In Strange Lands: Disembodied Authority and the Role of the Physician in the Hippocratic Corpus and Beyond") analyzes the disembodied voice of Hippocratic treatises, mainly by comparing the Odyssey and didactic poetry. Just as Netz did concerning mathemati-
cians, Holmes explains a silence. Medical authority rests on standing outside the physical forces described in *Airs Waters Places*, whereas Odysseus has "skin in the game" (Holmes). Holmes discusses the asymmetry of the clinical encounter as crucial for the bodiless authorial role. The Hippocratic Corpus, however, also mentions aspects of medical practice and practicing physicians both in the deontological treatises and beyond, where knowledge-based self-presentation is complemented by physical and ethical aspects. Holmes shows clearly how impersonality and authority are intertwined in ancient and, by implication, also in modern science writing.

Authorial practice can also be seen as making choices; texts are sums and products of choosing between alternatives. Where choice is possible, temptation comes in which authors have to resist or give in to. I have always been especially bad in resisting authorial temptation, and thus I conclude by cheerfully repeating and adapting a quote which has already been used in this context: 32 "Let a thousand writing-ancient-science flowers bloom!"

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### Bibliography


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32 By Cuomo in her 2007 (p. 166). That Mao Zedong in his original slogan only spoke of a hundred flowers, does not need to concern us. It seems perfectly reasonable to raise the number, both because the actual campaign’s function and turnout was anything but cheerful (see Meisner, M. 2007. *Mao Zedong: A Political and Intellectual Portrait*. Cambridge, 130–134) and because a hundred writing-ancient-science flowers would be far too few.

* Thanks to Anna-Maria Kanthak and Stephen Kidd who have greatly improved this text.


