

Article

Writing, Preserving, and Disseminating Scientific Knowledge: Some Remarks on Manuscripts and Other Writing Supports in Ancient Greece*

Lorenzo Perilli | Rome

In the study of written culture and its circulation, *specialist knowledge* rather than literary texts, due to its peculiarities, deserves a closer scrutiny. By specialist knowledge I mean the knowledge of scientists: mathematicians as well as engineers, architects as well as physicians. In the field of science, perhaps even more than in any other, the vicissitudes of the textual transmission have substantially reduced the amount of the originally existing material to a tiny fraction. For the ancient time before the age of Plato we often only have scraps of information. In some fields, such as those of ancient engineering or architecture, we know very little about how technical knowledge was handed down from one generation to another, but the consensus is that this kind of knowledge was transmitted orally. Even for such an important field like mathematics — relevant in every aspect of the life of the Greeks, from temple planning and building to music, theology and philosophy — we only begin to have substantive information starting from the age which followed Plato, i.e., around the end of the fourth cent. BCE. Almost nothing is known of the first paramount results and how they were achieved: so many efforts were devoted by scholars e.g. to the reconstruction of the fundamental and pre-platonic notion of incommensurability, but we still don't have any direct information on its initial history in the fifth cent. BCE (Theaetetus, Hippasus of Metapontum). There is one field we have more information on than any other: medicine. In this case we are provided with a mass of material, but we still

need to look for convincing interpretations of the historical information we have access to.

Loose sheets or papyrus rolls?

How did ancient scientists and authors work when it came to writing? Did they write personal notes first, and then copy them or had them copied on a different support at a later stage? How easy was it for them to obtain papyrus rolls, sheets, tablets, parchment? How much was the result of their work influenced by the difficult working conditions they faced?¹ According to ancient sources the Greek historian Thucydides, in the fifth century BCE, wrote his work on the war between Athens and Sparta starting from personal notes, which he used in order to record the main facts and words; he himself gives information on his working method. However, since we are used to thinking of ancient Greek books as being written directly on papyrus rolls, one may wonder (as William K. Prentice put it in an article published in 1930), how was it possible to continually revise a text, to collect documents and information gradually in order to insert them into the manuscript and work them in later, if the manuscript was a papyrus roll? Should we conclude that the authors wrote on flat sheets which could be kept together in a box; loose sheets which could easily be altered, replaced, or arranged differently?²

This seems to be the case not only for Thucydides or for other authors who needed to work in archives and libraries,

* This article is a follow-up to some previous research of mine, whose results are scattered over several publications. See Perilli 2006a, 2006b, 2007, 2009. Here I wish to briefly summarize some of my former conclusions, while trying to give a few further hints on the practice of writing and its relation to the material support for script – be it a manuscript or a wax tablet, stone or metal –, the ways of preservation and circulation of written knowledge, and the intended addressee. The text was delivered as a lecture at the Centre for the Study of Manuscript Cultures in Hamburg in June 2012, it underwent only minor changes and a limited bibliographic enrichment. I would like to thank CSMC as well for having received a Petra Kappert Fellowship during the summer of 2013.

¹ Tiziano Dorandi has investigated this issue at length, see the following footnote.

² The article of Prentice ('How Thucydides wrote his history') is mentioned by Dorandi at the beginning of his first intervention on this topic: 'Den Autoren über die Schulter geschaut' (1991) and in his later works it is also quoted e.g. by Potter 1999, 114, who however sticks to the wrong (or at least, only partially right) belief of individual sheets later glued together to make a roll. It has been demonstrated that the different sheets out of which a papyrus roll was made were often already glued together before the act of writing. See Dorandi, l.c., and his later works, especially *Nell'officina dei classici: come lavoravano gli autori antichi* (2007).

transcribe testimonies, record them and write down notes themselves, but also for doctors, who needed to record the information patients gave them in a chart, log the relevant ones in a sort of clinical register with the aim of preserving everything relevant to the present case while at the same time creating an archive of clinical records to be consulted later for similar cases. This kind of writing was naturally shorthand, rich in abbreviations, deprived of any literary style; it required no ornaments and had to stick to facts instead. In the case of medicine, this situation is mirrored in the more technical works of the so called *Corpus Hippocraticum*, a collection of about 70 works attributed to Hippocrates since the fifth century BCE onwards. We can visualize the doctor writing his notes on wax tablets at the patient's bedside; he only had a limited amount of space at his disposal and later needed to transfer this material to a different surface, more apt for archival storage and preservation. Such tablets have been found among the remains of ancient medical sanctuaries.³

The text transfer from one support to another must have been fundamental when, sometime around the 2nd century CE, the complete alphabetization of lists and lexica, similar to that of modern dictionaries, was introduced. From this age onward we have four main examples of this new, revolutionary system for the retrieval of information:

1. *Pap. Oxy. 1802*, with a series of about twenty items of a lexicon written in Greek and also containing transliterated words from Near Eastern languages;⁴
2. Valerius Harpocration's *Lexeis of the ten orators*;
3. Galen's *Hippocratic Glossary*;
4. Galen's pharmaceutical treatises, where drugs and treatments are ordered according to the alphabet.

Card box and alphabetization

Alphabetical order based solely on the first or the first two letters of a word has an older origin and is found at least since the third century BCE (*Pap. Hibeh 175*, British Library, 260–240 BCE, remains of a lexicon), maybe even before with the *Glossai* of Zenodotus of Ephesus⁵. The systematic use of full alphabetic order was a paramount novelty which has remained in use for two thousand years as the most effective system for information retrieval. Before the age of

computers, ordering a mass of written material according to the alphabet was a demanding task. In modern times the main instrument was the card-box, where cards could be filed and easily moved to a different place. How was alphabetization achieved in antiquity? Papyrus rolls do not seem to be apt for such a task. One had to copy every list at least twice, probably even three times, but in the case of complex lists this might not have been enough. Adding a number in front of each item would of course help for the second stage, but inserting a new item after the first copy was done would be an impossibility without copying the whole list again. An easier solution would be to have short lists of few items, each on a different sheet, or at least all the words beginning with the same letter on a single sheet. This would work in case of a short text.

How did the author work in the case of long and detailed treatises such as Galen's pharmacological works? In *De simplicium medicamentorum temperamentis ac facultatibus* (see XI 811, 10ff. K.) Galen offers an almost perfectly ordered sequence of items; in this case, however, different from his own *Glossary* or in Harpocration's *Lexeis*, each item consists not of a few words or lines, but of one or more pages; each new paragraph assumes the role of an item, its first word being taken into account for the alphabetization. Each item — namely each paragraph, or chapter — was presumably written on a different sheet; the sheets could then be filed and at a later stage arranged according to the alphabet or to different criteria. The single 'cards' will eventually have been copied into a continuous text as known to us. This is beneficial to understanding some characteristics of Greek medical texts (for instance, the additive or catalogue-like structure of some texts in the Hippocratic collection, see below), and suggests that there must have been different kinds of archival systems, such as repositories and libraries which may have been the case with the sanctuaries of the god of medicine and other sites. On the other hand, doctors and their assistants needed to write and use individual clinical records, which could be consulted when confronted with an unusual case or a peculiar disease.

Terminology

Let us go back to the notion of books, scribes and libraries. The ancients were fully aware of the importance of writing and its instruments. An interesting testimony informs us about papyrus rolls, flat sheets, book trade and boxes in which the documents could be stored. The second century BCE grammarian and lexicographer Julius Pollux, author of the *Onomasticon*, an extremely rich thesaurus of words arranged by subject-matter, writes as follows:

³ For this interpretation of the tablets found in Greek sanctuaries of the god of medicine Asclepius, see Perilli 2009. For a detailed study of the style of Hippocrates' technical works as depending on the material conditions of writing, see Langholf 2004; also id., 1990.

⁴ Cf. Schironi 2009.

⁵ Zenodotus (second half of the fourth cent. - first half of the third cent. BCE), grammarian and superintendent of the library at Alexandria. Cf. Pfeiffer 1978; Nickau 1972.

In order to show that we are not neglecting books, one can say *bibloi*, *biblion*. In Aristophanes also booklet, *bibliदारion*. And (talking about) written sheets (*chartas gegrammenous*) Plato the comic poet said ‚making available both (writing) boards and sheets‘. On the contrary, Herodotus referred to an unwritten sheet of papyrus (*biblion*), as he said ‚writing in the *biblion*‘. And bookseller (*bibliopolen*) can be found in Aristomenes’ *Goetes*, scribe (*bibliagraphon*) in Cratinus’ *Cheirones*, bibliographos in Antiphanes’ *Sappho*. In the *Hypobolimaioi* by Cratinus the Younger (there is) library (*bibliotheke*). Antiphanes in the *Mylo* said ‚sheets glued together as a booklet‘. Herodotus says that the Ionians call the papyri (*biblous*) skins (*diphtheras*) according to an ancient usage. Such skins (*diphtheras*) they also call goatskins (*ittelas*).⁶

By mentioning some of the first comic poets this passage gives us an overview of the situation in the fifth cent. BCE, the age of Thucydides. It proves that all activities related to book production were already widespread by the time.

Oral versus written

Regarding not only poetry and literary texts, but also scientific ones, we are generally inclined to follow the traditional belief of a mere oral transmission of technical knowledge and wisdom; it has often been said and still is repeated that this kind of specialist knowledge was usually handed down privately and orally from a master to his pupil for two main reasons: firstly, acquiring technical expertise requires direct guidance by an expert and secondly, this kind of knowledge was to be only transmitted to the few who had been granted access to the limited circle of the specialists. It was secret knowledge not available to just anyone.

In my opinion the topic of the production, circulation and use of books and written texts in Greece before Alexandrian time (i.e. before the third cent. BCE) has been the object of too much scepticism. It is true that we do not have much information on this topic in the classical age, but one point is clear: if poetry was meant to be learnt by heart and orally transmitted, prose texts were *written* for a *reader* and reached their public by means of books. We have testimonies that, already in the fifth century BCE, book trade was fully developed and the birth of the specific terminology mentioned by Pollux related to books, book-writing, book-selling and book-preserving, also took place simultaneously. *Officinae* for the preparation of papyri, tablets, animal skins and all other kinds of writing support must have flourished as well as technical expertise.

The oldest support for writing: the tablet

One fundamental instrument for the practice of writing was the tablet, the wooden board. This is already mentioned in the first piece of Greek literature, namely Homer’s *Iliad*, where we find the reference to a ‘folded tablet’ (*pinax ptyktos*) carrying sad, mournful signs in the story of Bellerophon in *Iliad* VI 168–169. The name used by Homer for the tablet is *pinax*, a term not included among those listed by Pollux, presumably because there is no relation to books, as it mainly occurs at a preliminary stage of writing or with a different scope and aim — for instance, the writing of messages or letters. Wax-covered tablets had indeed a peculiar role in the practice of writing as authors could bring them along, write notes or longer texts and delete them after having copied them onto another surface, usually papyrus. We know that they remained in use for many centuries, even Charlemagne kept wax tablets, *tabulae codicellique*, under his pillow to practise writing.⁷ Papyrus rolls were the typical medium for books in their final form, ready to be archived; the tablet was the usual medium for the ad hoc writing of notes. In Hippocrates’ *Epidemics* VI 8,7 we read the rare word *pinakidion* to indicate the tablet from which the text originally came.

The kind of tablet mentioned by Homer could look like the exceptional wooden writing board found in 1984 in a Late Bronze Age shipwreck, close to Ulu Burun in south west Turkey. Wooden tablets usually vanished as they are made of organic material very difficult to preserve over the course of time. Until the Ulu Burun case there was no item known of such an old age. The shipwreck has been dated to the fourteenth century BCE; the origin of the ship is unknown, but it was presumably travelling from the eastern Mediterranean coast westward, towards Greece. As R. Payton wrote, the ship was carrying an extremely varied and rich cargo and amongst the items were fragments of a wooden writing-board set. Late Bronze Age means, in ancient Greece, Mycenaean culture — six centuries before our text of the *Iliad* and about the same time as the Trojan war.⁸

The Ulu Burun writing set consisted of two wooden boards joined together by an opening mechanism. The more common form was that of two, or more, boards opening and closing on a central hinge; the hinge of the Ulu Burun set consisted of three sections, which survived in their ivory parts. It could be easily carried and used, while the written part was protected inside. In this case, no wax was surviving on the surface of the boards and hence impossible to say whether the boards carried a text or not; the example however

⁷ *Vita Karoli*, ed. Holder-Egger 1911, c. 25, p. 30.

⁸ On the Ulu Burun wooden board see Payton 1991; Symington 1991; Mylonas Shear 1998, 187–9; also Perilli 2009, 110f.

⁶ Iulius Pollux, *Onomasticon*, ed. E. Bethe 1900, VII 210–211.

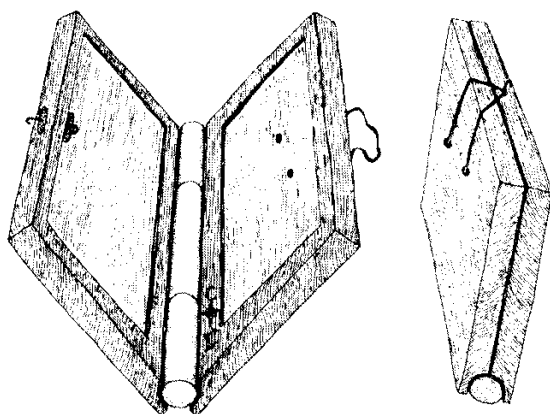


Fig. 1 The Ulu Burun writing board. Reconstruction (from: R. Payton, *The Ulu Burun writing board set*, *Anatolian Studies* 41, 1991, 105).

convincingly illustrates the most ancient mentions we have of writing in Greece and enables us to comprehend the concrete act of writing at an age when we speak of oral rather than written culture.

An extraordinary example of still surviving wooden tablets with wax-covered surface and still carrying a longer text — annotations to the text of Homer (*Scholia minora* in Homer's *Iliad*) probably written by a student in form of an exercise — are preserved at the Ägyptisches Museum in Berlin (*P.Berol. inv.* 10508, 10509, 10510, 10511+10512). This is a special case, since almost no parallel is known of wooden boards with wax and legible writing of such an extension. We are presented with several 'sheets' of what must originally have been a booklet, with text written on both sides across the short dimension and four holes arranged in two pairs on one of the longer sides, so that the tablets could be joined together. The Berlin tablets are a lot older than the Ulu Burun example and date back to the second cent. CE.⁹ Other wax tablets such as those found at Pompeii, are older than the first cent. CE, often carrying private notes or local information. They contribute to our understanding of ancient Mediterranean writing practices.

Books for learning: the private library of technical books

With regards to the classical age in Greece, we learn e.g. from Plato that books were widely circulating between the end of the fifth and the beginning of the fourth cent. BCE. One of the most important testimonies to this point is that of

⁹ Informations on the tablets can be found on the website of the Aristarchus Project at the University of Genoa, Italy (www.aristarchus.unige.it/scholia/papiriList.php), and in the online *Catalogue of Paraliterary Papyri* of the University of Leuven (cpp.arts.kuleuven.be). Images are in Criboire 1996, tables 45ff.

Xenophon who tells us about the library of Euthydemus, a contemporary of Socrates and already famous by that time. The text is extremely interesting, and reads:

[Socrates:] 'Tell me, Euthydemus, am I rightly informed that you have a large collection of books written by the wise men of the past, as they are called?'

'By Zeus, yes, Socrates,' answered he, 'and I am still adding to it, to make it as complete as possible.'

'By Hera,' retorted Socrates, 'I do admire you for valuing the treasures of wisdom above gold and silver. For you are evidently of opinion that, while gold and silver cannot make men better, the thoughts of the wise enrich their possessors with virtue.'

Now Euthydemus was glad to hear this, for he guessed that in the opinion of Socrates he was on the road to wisdom.

But Socrates, aware that he was pleased with his approbation, went on to say: 'Tell me, Euthydemus, what kind of goodness do you want to get by collecting these books?'

And as Euthydemus was silent, considering what answer to give, 'Possibly you want to be a doctor?' he guessed: 'Medical treatises alone make a large collection.'

'Oh no, not at all.'

'But perhaps you wish to be an architect? One needs a well-stored mind for that too.'

'No, indeed I don't.'

'Well, perhaps you want to be a good mathematician, like Theodorus?'

'No, not that either.'

'Well, perhaps you want to be an astronomer?' And as he again said no, 'Perhaps a rhapsodist, then? They tell me you have a complete copy of Homer.' [...]

Then Socrates exclaimed: 'Surely, Euthydemus, you don't covet the kind of excellence that makes good statesmen and managers, competent rulers and benefactors of themselves and mankind in general?'

'Yes, I do, Socrates,' answered Euthydemus, 'that kind of excellence I greatly desire.'¹⁰

What is typical in the library of Euthydemus, according to what Xenophon tells us, is that he collected not just literary books but mainly *technical* books, and when Socrates asks

¹⁰ Xenophon, *Memorabilia* IV 2, transl. Marchant.

him ‘why are you collecting these books’, the first question he asks is, ‘do you want to become a doctor, since you have collected so many medical books?’ Medicine leads, then come other technical disciplines, architecture, mathematics, astronomy, finally also epic poetry. This is what Socrates calls ‘books written by the wise men of the past’: that is, manuscripts with technical contents in form of papyrus rolls. We also have information concerning attempts of laying out real libraries — maybe the sophist Hippias had one, Plato probably too, and we know that Aristotle’s collection of books served as a model for the Alexandrian library. Of course one cannot simply dismiss the idea that knowledge circulated also by means of oral transmission, but the construct consists of three parts: oral teaching from a specialist, written materials and experience.

Making books accessible: the temple

The story of Euthydemus confronts us with the notion of ‘library’ which reminds us of a modern private library. There are, however, other vicissitudes which deserve to be mentioned here in order to get a more complete picture. The case of the philosopher Heraclitus is well known. According to several testimonies, and among them that of Diogenes Laertius (*Vit. Heraclit.* 5),

There is a book of his extant, which is about nature generally, and it is divided into three discourses; one on the universe; one on politics; and one on theology. And he deposited (*anetheke*) this book (*biblion*) in the temple of Diana, as some authors report, having written it intentionally in an obscure style, in order that <only> (*monon*, inserted by H. Diels) those who were able men might have access to it, and that it might not be exposed to ridicule at the hands of the common people.

I believe we can do without the ‘only’, inserted by Diels, who was probably led to this conjecture by the old yet presumably wrong idea that Heraclitus was willing to hide his writings. Here we are told that Heraclitus deposited his book in the great temple of Artemis, the Artemisium at Ephesus, one of the largest temples of the sixth century BCE and one of the Seven Wonders of the ancient world. Ancient temples were regularly used for storing treasures and public documents and as we see from this case they were also open to private individuals. This information has often been interpreted as an attempt from Heraclitus to protect his book by making it inaccessible (this is for instance the interpretation of the Christian authors, who despised Heraclitus); but it seems to be much more plausible that the dedication of his book to the goddess be tantamount to publishing it and to making his thoughts publicly available.

Why take up the challenging task of writing a book if it had to be kept out of the reach of any potential reader?

It is not without meaning that many later philosophers, among them Socrates, knew that book. It has been observed that back to the time of Plutarch, if not later, the little book of Heraclitus was available in its original form to anyone. Three elements are to be highlighted in Diogenes’ text as mentioned above: the book is ‘set up’ in the temple; it must be accessible; it is intended for those who are able to fathom its content, and to this aim the text is written in an obscure style, in order to exclude common people. Was the book hidden, than there would have been no need to write it in an obscure style. On the contrary, since everybody had access to it, Heraclitus used a difficult language in order to exclude those whom he considered not able to understand what he was talking about. We should bear in mind that Heraclitus came from a wealthy and powerful family. It is not a matter of *restrictions* here (‘*only* those who...’): the very act of depositing a book in the temple means to make it accessible to everybody, although not everybody will comprehend its message. Archaeological excavations may help us in getting an idea of what these kinds of libraries looked like, since rooms devoted to the storage of books have been identified among the remains of several temples and other ancient buildings.

Another, less known but more important example can be of help. With Heraclitus, we have been talking about a philosophical book. The case of Eratosthenes, the famous mathematician and scientist, brings us closer to more esoteric disciplines such as mathematics and geometry, science at the utmost of its technicality. Among the most important achievements of Eratosthenes in the third cent. BCE was his solution to one of the three great mathematical problems of antiquity: that of doubling the cube. The most famous Greek mathematicians had already attempted to solve this problem, and some of them, like the Pythagorean Archytas, had proposed very interesting but difficult solutions. A letter, supposedly written by Eratosthenes, informs us that he wrote an epigram relating to his own mechanical solution to the problem of doubling the cube and that he also invented a mechanical device to make things clearer. Eratosthenes — so we are told — raised a votive monument which consisted of a bronze exemplar of his mechanical device set atop a stele with an explanatory inscription engraved below. This text was dedicated to Ptolemy III (Euergetes).

The relevant part of the text reads as follows:

The bronze mechanical device was part of the votive (?) offering (*anathema*), and was attached by soldering to the upper end of the stele; underneath was a shorter description

of the demonstration, together with a drawing (*schema*), and followed by an epigram.¹¹

In the epigram, we read the story of the problem. At the end of the 27 verses, the ‘copyright’ is asserted:

[...] let anyone who sees this offering say ‘This is from Eratosthenes of Cyrene.’

We are not told where the stele and the mechanical device were installed and since we are apparently dealing with a votive offer, scholars have premised they were set up in a temple or sanctuary, this being often the case with *anathemata*, offerings. As the text continues, it seems like these kinds of offerings of technical knowledge and objects were common. Eratosthenes made thereby both the technical explanations and the mechanical device public, while at the same time asserting his rights to the discovery. The reference to ‘anyone who sees’ informs us that the text and the device were open to the public, and reminds us of Heraclitus ‘have access to’; the term *anathema* has its Heraclitean counterpart in the verb derived from the same root which in Heraclitus referred to the book. With Eratosthenes, we are informed about an episode taking place in the second half of the third century BCE, almost three centuries later than Heraclitus.

I am inclined to believe that, when Heraclitus went to the temple of Artemis, he met someone who was in charge of receiving his book, as any other offering. This person presumably had to record the person offering and the object in a register; in the temple there was a room, perhaps even a building, devoted to preserve these kinds of objects and to make them available to those who wanted to see or use them; one could probably also make copies of texts. And there must have been a staff, in charge of preserving and managing the materials which were given to them.

Medical books and the sanctuaries of the god of medicine

We can now move to a field on which we have more information, the field of medicine. Evidence of libraries in this case comes from two kinds of sources: archaeological evidence, and related inscriptions, together with a few remarks in literary sources concerning such inscriptions; and, in addition, the records of cures in the temples of the god of medicine Asclepius.¹² From several inscriptions, we are informed about the existence of libraries in medical

sanctuaries.¹³ But we still need to understand content, use and destination of such libraries.

A preliminary chronological partition in three periods can be of help. The first period is the one before Alexandrian time, followed by the Hellenistic or Alexandrian era, and finally by the Imperial Roman period. These are very different from one another. We have considerable knowledge about libraries in the Imperial period (first cent. BCE – third cent. CE), and libraries in Alexandrian times; we know, however, very little about pre-Alexandrian libraries. This first period, namely the beginning of book collection, is for us of the greatest interest, mostly concerning technical and medical books. Scholars have sometimes interpreted these temple libraries as containing religious literature and especially literary writings, what the French call ‘belles lettres’; that is, on the one hand, books used by the priests for rituals and for religious purposes; on the other hand, books for the general audience of patients for their entertainment and leisure. Such a surprising interpretation is clearly connected to a certain idea of medicine as a form of knowledge which was circulated orally through the relationship linking a pupil to his master, and to an idea of the possible, or impossible, relationship between medical activity and religious practice in the sanctuaries. I don’t believe in this interpretation, which has been first introduced by archaeologists when medical sanctuaries were excavated at the beginning of the twentieth century, and also quite recently by other scholars. Inferring that temple libraries contained books to be used by patients and visitors entails the notion of a widespread literacy, assuming people were able to read books by themselves, but we know that literacy was rather limited instead, especially among the lower social classes who were the main, although not the only, users of healing sanctuaries. The existence of a library devoted to these users is improbable, at least before Roman times. I am convinced that these libraries mainly contained medical writings.

It will be useful for our purpose to distinguish between books and texts, and between a library and a repository — the latter being the first embryo of what will later become an archive with its organizational features, transforming ‘boxes’ of loose sheets into a structured and indexed arrangement of related or connected items. Throughout antiquity, books and texts of various kinds coexisted. An effective definition referring to sacred books by Albert Henrichs reads as follows:

We can define a text as a verbal communication, either oral or written, and a book as an organized written text, or a collection of texts, identified by a title and originally inscribed on papyrus or parchment. Rolls and codices — the

¹¹ Eutocius, *In Archimedis de sphaera et cylindro* 88,3ff.

¹² I have dealt with this topic in the contributions mentioned in the references and will not repeat my arguments here.

¹³ Perilli 2006a.

ancient forerunners of our books — served as repositories for written texts whose survival depended on the durability of the inscribed surfaces that transmitted them. Typically, *texts* copied and recopied on perishable materials such as papyrus or parchment had a much longer lifespan than the so-called *books* that contained them. Books existed for the sake of texts, not the other way around. In principle, books were more dependent on texts for their existence than texts were on books. Shorter texts were routinely recorded on material unsuitable for books, such as stone, wood, metal, and pottery. Longer texts could most easily be accommodated on papyrus or parchment, the very materials from which books were made, and this was actually the case when a text was bound to be stored in an archive. [...] Whatever the precise relationship between ancient texts and books, it was surely one of mutual dependence in which the book helped to perpetuate the text while the text imposed its imprint on the book.¹⁴

Similar to sacred texts, medical writings depended both on the written word and on memorization and oral transmission within the circle of the initiated. Aristotle at the end of his *Nichomachean Ethics* reminds that medical books are useful only to the learned and of no use to those lacking experience and the ability to make proper use of them:

Men do not appear to become physicians on the basis of text-books. Yet they attempt to describe not only the general means of treatment, but also how one might be cured and how one should treat each patient, distinguishing their habits of body; these things appear to be useful for the experienced, but they are useless for those who are unskilled in the subject.¹⁵

Aristotle is referring here not to the more theoretical and general books on medicine — say, Hippocrates' *On ancient medicine* —, but to those technical writings which include treatments and means of cure for each individual patient. 'Books are reminders for people who have learned, but for the uneducated they are gravestones', so reads a saying attributed to the famous doctor Diocles of Carystus (fr. 6 van der Eijk), of approximately the time of Aristotle.

That medicine could only be learnt directly from a master, an experienced doctor, and that it had to be learnt in the field by accompanying a doctor during his visits — this is true, but is only a part of the picture. The so-called Hippocratic *Oath* is the most typical example of the relationship between master and pupil in a closed society, access to which was granted only to chosen applicants. But writing and script must also have played an important role in the codification and transmission of medical knowledge, and not only in later times: otherwise,

no use could be grasped from the Hippocratic technical treatises in the form in which we have them.

The act of writing and the features of the text

There are two issues we should focus on. Firstly, there existed repositories, and later archives, in sanctuaries which contained medical texts (i.e., notes, descriptions of clinical cases, perhaps short works) — rather than books, to stick to the important distinction we have drawn before. These repositories plausibly contained, or contained also, texts which were needed for medical practice: they can be regarded as the first examples of 'scientific' libraries in ancient Greece. Secondly, we can observe that some features of Greek medical writings are strongly dependent on the former autonomous existence of bits of texts which have been later put together to form a treatise as we know it. In this picture, the written medium acquires a more important role. Several treatises of what is called the Hippocratic collection feature clearly distinct textual units which are composed more or less methodically, sharing a common topic; but these textual units are usually arranged chaotically within the treatise, as Volker Langholf puts it in an illuminating article.¹⁶ They look like separate pieces, like self-contained bits of a treatise, showing what has been called an additive or catalogue-like structure; they often show no proper ending, and seem to finish abruptly as if the bottom of the writing support (the tablet) had been reached; sometimes the same bits of text happen to be repeated in various works, in the same or in a diverse position: the different tablets, or the single sheets of papyrus might have been stored in a box or otherwise archived, and could be used and reused individually, each time in a different context or sequence. This is what every good philologist would perhaps regard as an interpolation, as a text introduced into a work by a later hand; but the notion of interpolation would be inadequate in the case of medical texts, where these features of the text can reveal something of its origin and structure. A result of Langholf's analysis is that these single units of text often have the same length or a multiple of this length; corresponding to the amount of words which could be written on a tablet with an average of 2800 characters.

Sacred places and the dissemination of knowledge

In order for us to understand the role of sacred precincts and their repositories and libraries for the preservation and

¹⁴ Henrichs 2003, 210f.

¹⁵ Aristotle, *Nichomachean Ethics* 1181b2–6.

¹⁶ Langholf 2004.

the spreading of knowledge, it is important to know that they were managed by the political authorities of the city and not by the priests. This is confirmed by Aristotle, who explicitly states that the keys of the sanctuaries were held by the *prytanes*, the public authorities, and this undoubtedly means a direct control exerted on the sanctuaries by the city. The sanctuaries, as we are told in the *Athenian Constitution*, stored both the treasure of the city and the official written documents:

(The President of the Prytanes) keeps the keys of the sanctuaries in which the treasures and public records of the state are preserved, and also the public seal.¹⁷

Since this kind of control was stated in the Athenian constitutional law, it undoubtedly means that sanctuaries, including healing sanctuaries, had an overall social role, acted as a meeting point and one where public documents, decrees, laws, had to be made public and advertised.

Typical for the worship of the god Asclepius at Epidaurus, Pergamum, and at other centres was its being rich in texts focussed on the issues of health and pain relief. Such texts are a good source of material: we find inscribed tales of healing stories, which cover the whole area of ancient Greece geographically, crossing genders and economic groups.

The most famous collection of texts are the so called Epidaurian miracle inscriptions, which have been found inscribed on four huge *stelai*, with ca. 70 stories of miracle healings due to the intervention, direct or indirect, of Asclepius as a god of medicine. These Epidaurian inscriptions of miracles and cures preserve tales or traces of tales recounting a great variety of problems and solutions, of prayers and desires and of gratifications on the part of the god. Further examples come from other locations; most interesting are the inscriptions from the sanctuary of Lebena, on the island of Crete, a much shorter corpus than that of

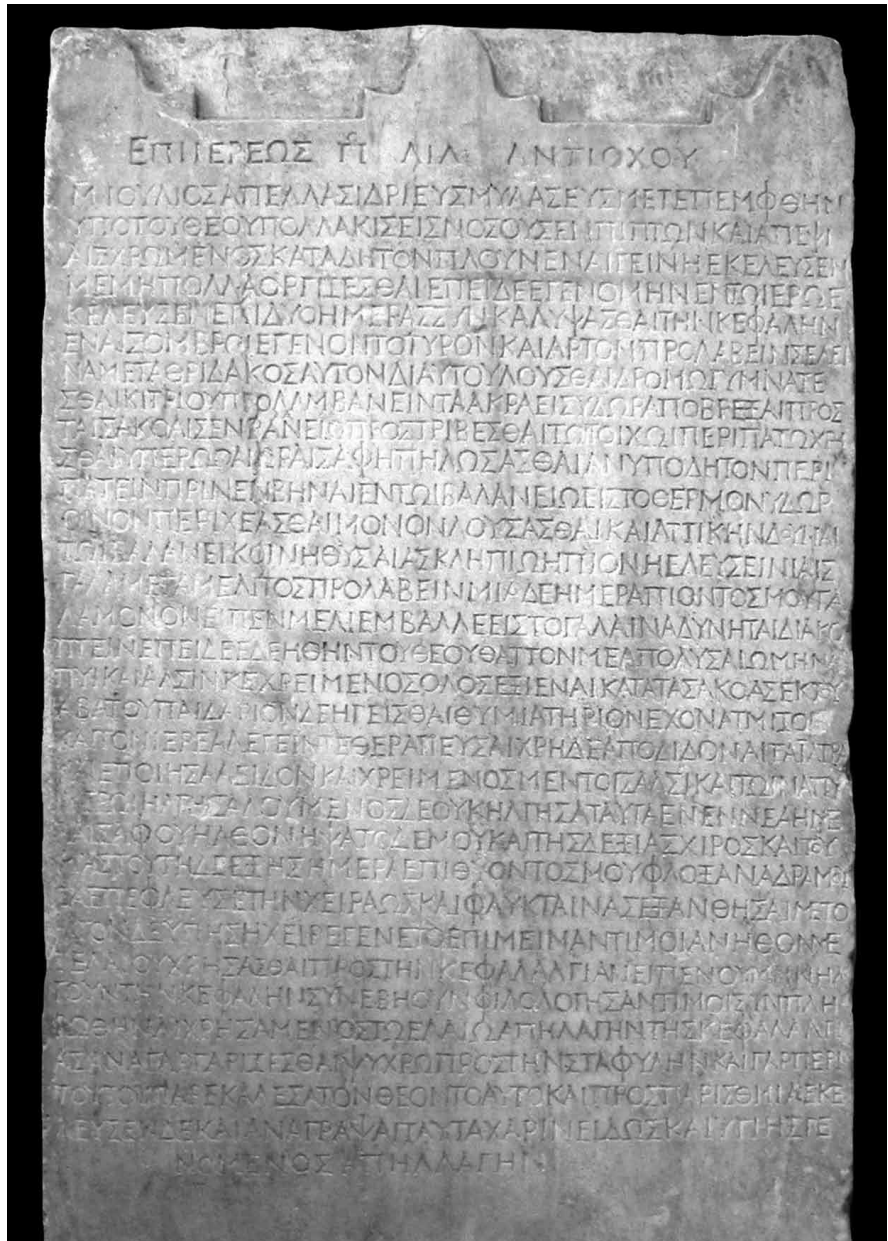


Fig. 2: *Inscriptiones Graecae* IV 2, 1, no. 126.

Epidaurus, but clearly attesting to a more rational and less 'divine' attitude.¹⁸

Sanctuaries, miracles and medical practice

The first issue which requires elucidation is that healing sanctuaries were a place for the actual practice of medicine on the part of doctors, and not only for religious rituals and prayer. One example may suffice. A very peculiar inscription, coming from the second Epidaurian stele (nr. 27), is typical because it tells us of a patient who has not enough faith and tries to run away, while the god lets his assistants catch him; the operation is described, and finally the patient is set free

¹⁷ Aristotle, *Athenian Constitution* VI, 44,1, transl. F.G. Kenyon.

¹⁸ Selected examples of the Epidaurian and other inscriptions, as well as bibliographical references, are mentioned in the Appendix to Perilli 2006b.

and can go away, but, as the text reads, ‘all the floor was covered with blood’. This is a very unusual situation, since blood, as well as childbirth, was not allowed in a sacred place:

A man with an abscess within his abdomen. When asleep in the temple he saw a dream. It seemed to him that the god ordered the servants who accompanied him to grip him and hold him tightly so that he could cut open his abdomen. The man tried to get away, but they gripped him and bound him to a door knocker. Thereupon Asclepius cut his belly open, removed the abscess, and, after having stitched him up again, released him from his bonds. Whereupon he walked out sound, but the floor of the Abaton [i.e., *the sacred precinct, accessible only to the authorized*] was covered with blood.¹⁹

This is the only testimony offering such a realistic description and it is clear evidence that medicine was practiced in sanctuaries.

There are other texts coming from sanctuaries, of which the most famous example is probably the inscription of Apella (fig. 2), a later text of the second cent. CE, accurately describing the treatment of a patient, a text first studied in detail by Ulrich von Wilamowitz-Moellendorf (1886, 116–124). It says:

I, Marcus Iulius Apellas, an Idrian from Mylasa, was sent for by the god, for I was often falling into sickness and was suffering from dyspepsia. In the course of my journey, in Aegina, the god told me not to be so irritable. When I arrived at the temple, he told me for two days to keep my head covered, and for these two days it rained; to eat cheese and bread, celery with lettuce, to wash myself without help, to practice running, to take lemon peels, to soak them in water, near the *akoai* in the bath to press against the wall, to take a walk in the upper portico, to take some passive exercise, to sprinkle myself with sand, to walk around barefoot, in the bathroom, before plunging into the hot water, to pour wine over myself, to bathe without help and to give an Attic drachma to the bath attendant, in common to offer sacrifice to Asclepius, Epione and the Eleusinian goddesses, to take milk with honey. When one day I had drunk milk alone he said, ‘Put honey in the milk so that it can get through’. When I asked of the god to relieve me quickly I thought I walked out of the abaton near the *akoai* (?) being anointed all over with mustard and salt, while a small boy was leading me holding a smoking censer, and the priest said: ‘*You are cured but you must pay up the thanks-offerings*’. And I did what I had seen, and when I anointed myself with the salts and the moistened mustard I felt pains, but when I bathed I had no pain. That happened within nine days after I had come. He touched my right hand and also my breast. The following day as I was offering sacrifice the flame leapt up and scorched my hand, so that blisters

appeared. Yet after a little the hand got well. As I stayed on he said I should use dill along with olive oil against my headaches. I usually did not suffer from headaches. But it happened that after I had studied, my head was congested. After I used the olive oil I got rid of the headache. To gargle with a cold gargle for the uvula — since about that too I had consulted the god — and the same also for the tonsils. *He bade me also inscribe this*. Full of gratitude I departed well.²⁰

The text clearly differs from those recording Asclepius’ healings at Epidaurus: no miracle, no dream, no vision, and a series of rather common prescriptions with just a nuance of religion. One may recall a passage from Plato’s *Charmides* (158b–c) concerning magic and medicine: ‘If you have this gift of temperance (*sophrosyne*) already, and are temperate enough, in that case you have no need of any charms, whether of Zalmoxis or of Abaris the Hyperborean, and I may as well let you have the medicine for the head at once; but if you have not yet acquired this quality, I must use the charm before I give you the medicine’. Marcus Apella didn’t go by himself to the sanctuary but was called by the god — a rather interesting feature —, who gives him a lot of simple dietary prescriptions, rather well known — cheese and bread, herbs, and then exercise, baths, and so on. In the middle of the text we read that the god says to the patient ‘you have been cured, now you have to pay’ — a rather concrete god. In the last line, we are informed that the god ordered the patient to write down these things, before leaving the sanctuary; this is also typical, since those who read these inscriptions, which were usually placed on the walls of the sanctuary or close to the entrance, must be led to believe that they come from the god in person. However, here we have no miracle, but only typical medical prescriptions like those found in the medical texts of the same age.

These kinds of texts must have been part of the archives of sanctuaries. They were most probably not written by the patients themselves, as has usually been claimed, but by a scribe, possibly by one of the so-called *grammateis* who were active in the sanctuaries together with the *ieromnemes*, those who among other things were in charge of keeping the records of what went on within the precinct, including the inventories of which some important examples are still extant.

Such texts also had some circulation, and this is one of their most important feature, since it attests to the spreading of this kind of knowledge. The most striking example is that of Aristagoras of Troezen, a woman who had a worm in her belly, and dreamt of the god while sleeping in the sacred precinct of Asclepius in Troezen:

¹⁹ *Inscriptiones Graecae* IV 2,1, no. 122, § 27.

²⁰ *Inscriptiones Graecae* IV 2,1, no. 126, Epidaurus, transl. Edelstein 1945, 248; italics are mine.

It seemed to her that the sons of the god, while he was not present but away in Epidaurus, cut off her head, but, being unable to put it back again, they sent a messenger to Asclepius asking him to come. Meanwhile day breaks and the priest clearly sees her head cut off from the body. When night approached, Aristagora saw a vision. It seemed to her the god had come from Epidaurus and fastened her head on to her neck. Then he cut open her belly, took the tapeworm out, and stitched her up again. And after that she became well.²¹

This text is especially important because it is also transmitted by a literary source, namely the work entitled *On the nature of animals* by Aelian, in the second cent. CE. In IX 33, Aelian has the same story with several important changes: he asserts that an historian of Rhegium, named Hippys, from the fifth or the fourth cent. BCE, had narrated the story of a woman with a worm, whom the cleverest of physicians failed to cure:

Then she came to Epidaurus and begged the god that she might become free of the ailment that lived within her. The god was not present. The attendants at the temple, however, made the woman lie down where the god was accustomed to heal the suppliants. And the woman rested quietly, as prescribed, while the servants of the god made the preparations for her cure. They removed her head from her neck. One stretched on his hand and pulled forth the worm, an animal of great size. But fit together and attach her head to its original joint, they could not do. The god then approached and was provoked at them because they set themselves to a task beyond their wisdom. But with a certain effortless divine power he himself attached her head to her body and raised up the stranger-woman.²²

In Aelian's version there is no name of the woman, who is not in Troizen but in Epidaurus, while, as in the inscription, the god is away. One could say much about these parallel texts; what we need to highlight here is only the importance of having two very different sources recording the same story, although with some changes. As far as I know, this is the only case of that kind. These inscriptions, or records of miracle cures, *probably the original tablets* rather than the inscribed stones, were accessible in some way and could be read and transcribed.

Inside and outside: circulation of texts

Another example deserving mention is the case of Hippocrates, *De natura hominis* chapter 11 (192,15–196,5 Jouanna). This text is very similar to chapter 9 of the *De ossium natura* (IX 174–8 Littré) also attributed to Hippocrates

²¹ *Inscriptiones Graecae* IV 2,1, Epidaurus, no. 23, transl. Edelstein, and Edelstein 1945, 234.

²² Translation in Edelstein, and Edelstein 1945, 221.

by the ancient tradition, and is mirrored in chapter 3 of book 3 of Aristotle's *Historia animalium* (512b-513a).²³ It is a description of blood vessels. While the first two texts are quite close to each other, Aristotle introduces some changes and uses Hippocrates' description of the bigger vessels in order to explain blood vessels in general. Did these authors copy from each other? Or did they rather — at least Aristotle and the author of *De natura hominis* — have access to a compilation of materials of various kinds, or perhaps to individual tablets or papyrus sheets, containing only that part of text, namely the description of blood vessels, which the Hippocratic author records in its entirety while Aristotle uses only the lines he deemed appropriate for his argument? The latter hypothesis seems to be more plausible.

This could perhaps also add to rescuing the historical value of another passage which is well known but usually neglected, namely a few lines from Plinius' *Natural history* (XXIX 1,4). They inform us that Hippocrates called medicine back to light by copying what had been written in the temple of the god Asclepius by those who had been freed from disease. Plinius adds that Hippocrates, 'having burnt the temple, made use of them in instituting that medicine which is called "bedside" medicine'. That 'Hippocrates' — this label meaning the historical Hippocrates or the doctor in general — had knowledge and made use of the texts preserved in sanctuaries, is possible, and is restated by a testimony by Strabo (XIV 2,19), who says that Hippocrates' dietetics were derived mostly 'from the cures recorded on the votive tablets'. Both Plinius and Strabo inform us that the ancient believed in a tight and direct connection between temple medicine and the so-called rational medicine, and deemed it likely that Hippocrates, that is, the doctors of the time, had access to the collection of written materials of temples and sanctuaries.²⁴

Document repository

There are also other sources concerning the story of Hippocrates who writes down the content of the tablets and records kept in the archives of Asclepius' sanctuaries. In the *Life of Hippocrates* by Soranus, or Pseudo-Soranus, an interesting word occurs (4 = 450 West.): *document repository* at Cnidus. The word used for the repository, i.e. *grammatophylakeion*, indicates a place for keeping *grammata*, namely written records. This is not a library; as Greek lexicography tells us, in the beginning *grammatophylakeion* simply means the

²³ Hippocrates, ed. Jouanna 2002, 118–124; Perilli 2004, 96f.

²⁴ Plinius' (as well as Pseudo-Soranus' *Life of Hippocrates*) mention of Hippocrates burning the temple of Asclepius at Cos may be interpreted as a later alteration, linking the figure of Hippocrates to the destruction possibly caused by the fires and earthquakes which devastated the island in the classical age, as happened for instance after the Spartan invasion in 411 BCE.

box, the chest where the records were stored, and only later this term was used to mean the archive. This corresponds with the idea of clinical records, of case histories written in sanctuaries because of their usefulness, since doctors faced with so many patients (in Epidaurus there were more than 160 dormitory rooms) and could not treat each patient as a new case and had to rely on previous experience instead, namely on cases recorded in written form. This is attested for ancient times in Egypt, in Mesopotamia and the Near-Eastern

of medicine Asclepius had a perfect Egyptian counterpart in the god Imouthes / Imothep; and the miracle inscriptions of Epidaurus have their Egyptian counterparts represented by Egyptian inscriptions with tales of miracles performed by the god which are similar in tone and content. In both cases we have the god who works wonders, worshippers who make offerings at the shrines, recording the works he performs; sometimes the sick were healed, sometimes they were addressed by the god. One must also notice that besides



Fig 3: Imouthes, Paris, Louvre (Ptolemaic Age, 332–30 BCE).

countries, as well as in Greece, basically every country where medicine played an important social role.

This takes us back to the beginning of the story, to the box of Thucydides and his collection of notes, and to an idea of writing which is at times rather different from the one we are used to, namely that of papyrus rolls and long, continuous texts.

Religion and writing: Greece and Egypt

Just a short reference to one among the many similarities we can recall between Greece and Egypt. The Greek god

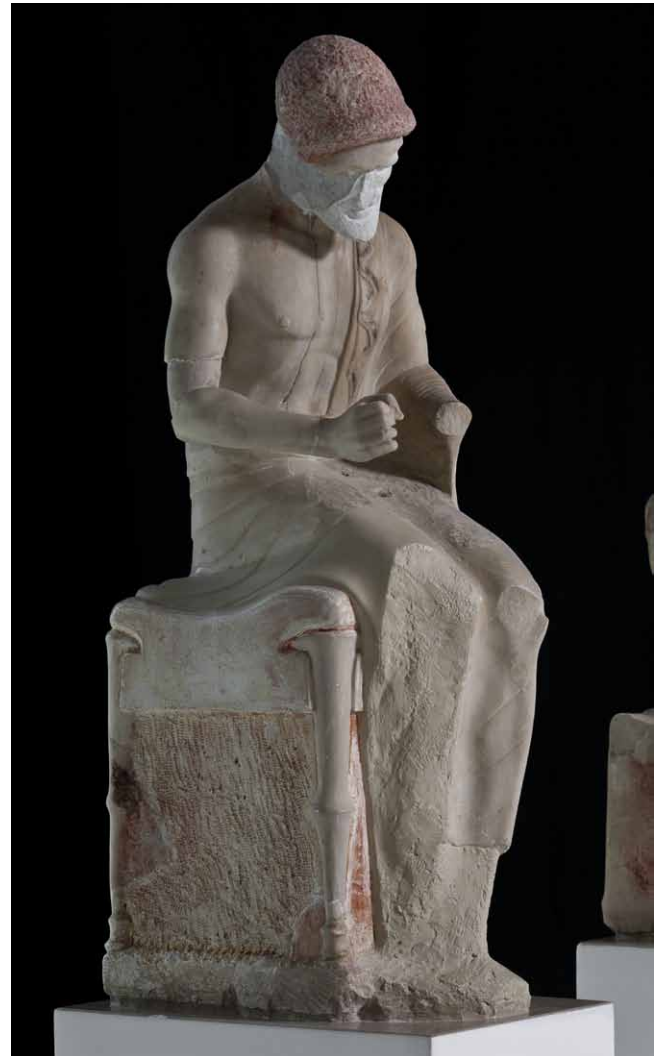


Fig 4: Scribe (6th cent. BCE) , Acropolis Museum, Athens.

his role as a god of healing, Imouthes, the counterpart of Asclepius, was also a god of writing. Many statuettes of the god (the most famous being that of the Musée du Louvre in Paris) portray him as a young man seated with a papyrus scroll on his knees, a representation similar to that of professional scribes in Greece, seated and holding a tablet (fig. 4).

The scribal image of the god of medicine Imouthes (fig. 3) continued through the ages, and the papyrus that he was holding turns into a tablet. These gods were connected to medicine as well as to oracles and dreams which formed

part of the spiritual life in their cults. Medical help might also have been provided by these gods. From among the debris of the area behind the temple of Epehus at Memphis, in Egypt, in a large deposit of anatomical casts of Ptolemaic date, fragments of a Greek medical text have been found,²⁵ which may suggest that the priests, or priest-doctors just like those in Mesopotamia, did not rely on the power of dreams and oracles alone, but had other and more concrete instruments for their work. The temple of Memphis was one of the best known, and is mentioned several times by Galen, who writes about remedies ‘written on the walls’ of the temple or preserved in its inner precinct, in the *adyton* (the same as the *abaton*), which is the name given by the Greeks to the Egyptian House of Life, the place where medical records and texts were written and stored. It is interesting that the Greeks gave the House of Life, the storage place for medical and perhaps religious texts, the same name that they gave to the sacred precinct of Asclepius’ sanctuary; this points to the Greek *abaton* not only as the place for patients to lay and receive the vision of the god, but also as the place for the secret records of doctors and priests, which were a peculiar kind of text, intimately connected to both medical and religious knowledge: this was a secret lore, which had to be transmitted only to the initiated, to people who were part of the ‘family’, as we know for instance from the pseudo-Hippocratic Oath.

Like in Egypt and Mesopotamia, it was typical for Greek medicine to be based on written material, to have case histories, medical records written and consulted by doctors, and eventually transcribed. It can often be demonstrated that these texts, before being assembled together, came from different sources, were originally written on separate writing supports, namely individual tablets. They are often made up of short sentences like the records of a doctor in the course of his activity; we can think of doctors writing down some notes during their visits or dictating their observations to somebody else, to an assistant, who wrote them in a tachygraphic way, with abbreviations and sigla, and not in a literary form. As Volker Langholf has aptly demonstrated, the features of these texts probably depended on the material technique and on the act of writing.

I am convinced that such an intimate link between medicine and the medium of writing existed already since the beginning of the fifth century BCE. This must have been the case for other technical disciplines too: it is difficult to imagine how the highly technical mathematical knowledge could be shared and transmitted other than in written form; how the technicalities of architecture

and engineering, of the theory of ratios and proportion which were necessary for building a temple, could be learnt and put into practice without having the support of technical written texts to be consulted in every single case. Unfortunately, we have no information on this; the case of Heraclitus and Eratosthenes, that of Asclepius’ sanctuaries, together with others, can perhaps help to shed some light on the way in which technical and scientific knowledge was preserved and circulated in the western part of the ancient Mediterranean world.

REFERENCES

- Aelianus, *On the Characteristics of Animals (De natura animalium)*, 3 vols., with an English transl. by A. F. Scholfield (London 1958–59; Loeb Classical Library 446, 448, 449).
- Aristoteles, *Ethica Nicomachea*, recognovit brevique adnotatione critica instruxit I. Bywater, (Oxford 1988, 20th ed. = 1890). Aristoteles, *Nicomachean Ethics*, transl. by T. Irwin (Indianapolis 1999).
- , *Nicomachean Ethics*, transl. by T. Irwin (Indianapolis 1999).
- , *Athēnaiōn Politeia*, ed. Mortimer Chambers (Leipzig 1986).
- , *The Athenian Constitution*, transl. by F. G. Kenyon (London 1914).
- Cribiore, Raffaella (1996), *Writing, Teachers, and Students in Graeco-Roman Egypt* (Atlanta).
- Diocles of Carystus, *A Collection of the Fragments with Translation and Commentary*, ed. by Philip J. van der Eijk, 2 vols. (Leiden 2000–2001).
- Diogenes Laertius, *Lives of Eminent Philosophers*, ed. with introduction by Tiziano Dorandi (Cambridge 2013).
- Hermann Diels (1879), *Doxographi Graeci* (Berlin 1965).
- Dorandi, Tiziano (1991), ‘Den Autoren über die Schulter geschaut’, *Zeitschrift für Papyrologie und Epigraphik*, 87: 11–33.
- (2007), *Nell’officina dei classici: come lavoravano gli autori antichi* (Rome).
- Edelstein, Emma J., and Edelstein, Ludwig (eds.) (1945), *Asclepius. A Collection and Interpretation of the Testimonies* (Baltimore).
- Einhardus, *Vita Karoli Magni*, cur. Oswald Holder-Egger, post Georg Heinrich Pertz, rec. Georg Waitz (Hannover 1911).
- Eutocius, *In Archimedis de sphaera et cylindro*, in *Les oeuvres complètes d’Archimède, suivies des Commentaires d’Eutocius d’Ascalon*, trad. du grec. en français avec une introd. et des notes par Paul Ver Eecke (Liège 1960).

²⁵ Thompson 1989, 208.

- Galen, *De simplicium medicamentorum temperamentis ac facultatibus* in *C. Galeni Opera omnia*, ed. cur. C. G. Kühn, vol. 11–12 (Hildesheim 1965 = Leipzig 1826).
- , *Linguarum seu dictionum exoletarum Hippocratis explicatio in C. Galeni Opera omnia*, ed. cur. C. G. Kühn, vol. 19 (Hildesheim 1965 = Leipzig 1830).
- Harpocration, Valerius, *Lexeis of the Ten Orators*, ed. by John J. Keaney (Amsterdam 1991).
- Henrichs, Albert (2003), “‘Hieroi Logoi’ and ‘Hierai Bibloi’: The (un)written Margins of the Sacred in Ancient Greece”, in *Harvard Studies in Classical Philology*, 101: 210f.
- Hippocrates, *De natura hominis*, ed., trad., et comm. par Jacques Jouanna, (Berlin 2002, 1st ed. 1975; Corpus Medicorum Graecorum).
- , *De ossium natura*, in *Oeuvres complètes d’Hippocrate* trad. par Émile Littré, vol. 9, 162–197 (Amsterdam 1962 = 1861).
- , *Epidemie libro sesto*, ed. D. Manetti and A. Roselli (Florence 1982).
- , *Epidemics*, ed. and transl. by Wesley D. Smith, vol. 7 (Cambridge, Mass. 1994; Loeb Classical Library 477).
- Iulius Pollux, *Onomasticon*, ed. E. Bethe, in *Lexicographi Graeci. recogniti et apparatu critico instructi*, vol. 9 (Leipzig 1900).
- Langholf, Volker (2004), ‘Structure and Genesis of some Hippocratic treatises’, in H. F. J. Horstmanshoff, M. Stol (eds.) (2004), *Magic and rationality in ancient Near Eastern and Graeco-Roman medicine* (Leiden), 219–275.
- (1990), *Medical Theories in Hippocrates. Early Texts and the ‘Epidemics’*, (Berlin, New York).
- Mylonas Shear, Ione (1998), ‘Bellerophon Tablets from the Mycenaean world? A tale of seven bronze hinges’, *The Journal of Hellenic Studies*, 118: 187–189.
- Nickau, Klaus (1977), *Untersuchungen zur textkritischen Methode des Zenodotos von Ephesos* (Berlin).
- Payton, Robert (1991), ‘The Ulu Burun Writing-board Set’, *Anatolian Studies*, 41: 99–106.
- Perilli, Lorenzo (2006a), “‘Il dio ha evidentemente studiato medicina’”. Libri di medicina nelle biblioteche antiche: il caso dei santuari di Asclepio’, in A. Naso (ed.), *Stranieri e non cittadini nei santuari del Mediterraneo antico*, Proceedings of the International Conference, Udine, 20–22.11.2003 (Florence), 472–510.
- (2006b) ‘Asclepio e Ippocrate: una fruttuosa collaborazione’, in A. Marcone (ed.), *Medici e società nel mondo antico*, Proceedings of the International Conference, Udine, 4–5.10.2005 (Florence), 26–54.
- (2007), ‘Conservazione dei testi e circolazione della conoscenza in Grecia’, in A. Andrisano (ed.), *Biblioteche del mondo antico. Dalla tradizione orale alla cultura dell’impero* (Rome), 36–71.
- (2009), ‘Scrivere la medicina. La trascrizione dei miracoli di Asclepio e il Corpus Hippocraticum’, in Ch. Brockmann, W. Brunschön, O. Overwien (eds.), *Antike Medizin im Schnittpunkt von Geistes- und Naturwissenschaften*, Internationale Fachtagung aus Anlass des 100-jährigen Bestehens des Akademievorhabens Corpus Medicorum Graecorum/Latinorum, (Berlin, New York), 75–120.
- Pfeiffer, Rudolf (1968), *History of Classical Scholarship: from the Beginnings to the End of the Hellenistic Age* (Oxford).
- Plinius, *Natural History*, vol. 8, *Libri XXVIII - XXXII*, with an Engl. translation by W. H. S. Jones, (Cambridge, Mass.; London 1963, Loeb Classical Library).
- Potter, David S. (1999), *Literary Texts and the Roman Historian* (London).
- Prentice, William K. (1930), ‘How Thucydides wrote his History’, *Classical Philology*, 25: 117–127.
- Schironi, Francesca (2009), *From Alexandria to Babylon : Near Eastern Languages and Hellenistic Erudition in the Oxyrhynchus glossary (P.Oxy. 1802 + 4812)* (Berlin – New York; Sozomena. Studies in the Recovery of Ancient Texts, 4).
- Soranus, *Life of Hippocrates*, in Johannes Ilberg (ed.), *Sorani Gynaeciorum Libri IV, de signis fracturarum, de fasciis, vita Hippocratis secundum Soranum* (Leipzig 1927).
- Strabo, *Geographica*, mit Übers. u. Komm. hrsg. von Stefan Radt (Göttingen 2002–2011).
- Symington, Dorit (1991), ‘Late Bronze Age Writing-boards and their Uses: textual evidence from Anatolia and Syria’, *Anatolian Studies*, 41: 111–23.
- Thompson, Dorothy J. (1989), *Memphis under the Ptolemies* (Princeton, 2nd ed. 2012).
- Wilamowitz-Moellendorff, Ulrich von (1886), *Isyllos von Epidauros* (Berlin).
- Xenophon, *Memorabilia*, ed. and transl. by E. C. Marchant, in *Xenophon: in Seven Volumes*, vol. IV, 2 (Cambridge, Mass. 1968).

PICTURE CREDITS

Fig. 1: © The British Institute at Ankara

Fig. 2: © Berlin-Brandenburgische Akademie der Wissenschaften, Archiv der Inscr. Graecae; Photo: H. R. Goette

Fig. 3: © bpk | RMN – Grand Palais | George Poncet

Fig. 4: © Acropolis Museum, Athens