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Matyáš Havrda, Pauline Koetschet

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Matyáš Havrda, Pauline Koetschet
Galen, *On Demonstration*

Scientia Graeco-Arabica



Herausgegeben von
Marwan Rashed

Band 43

Matyáš Havrda, Pauline Koetschet

Galen,
On Demonstration

Reconstruction of a lost treatise
from Greek and Arabic sources

With English translations by
Pauline Koetschet, Matyáš Havrda, and Sean Coughlin

DE GRUYTER

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Foreword

Galen's *On demonstration (Dem.)* comprised fifteen books. Had it survived, it would have filled two massive volumes of the Teubner Library, some eight-to-nine hundred pages in total. But it has not survived (as far as we know) and what we have instead is a tiny fraction. Direct quotations from the treatise, whether preserved in Greek or in Arabic, cover approximately one percent of the original bulk; and if we include material whose attribution to *Dem.* is conjectural, we will not get beyond five percent even on the most optimistic scenario. Yet our information about its contents is much more complete and nuanced than it was in 1895 when Iwan von Müller made the last attempt to put all the testimonia together. We now have more than twice as much material as he did, thanks mainly to research in Arabic sources, which has yielded more than fifty testimonia unknown to von Müller. Moreover, the conjectural but widely accepted link between *Dem.* and (at least parts of) the so-called eighth *Stromateus* by Clement of Alexandria gives us an unprecedented insight into its style and structure. A few other Greek fragments have been brought to light, notably a reference (and possibly more) in a text from the Alexandrian Neoplatonist school called *All the kinds of syllogism*. Of course, our knowledge of *Dem.* is still fragmentary and the gaps are looming large. But it is time to revisit von Müller's pioneering attempt and give a fresh overview and interpretation of the evidence available to us. We believe and hope that more material will emerge in due course, especially in the Arabic manuscripts, and our grasp of this mysterious text will continue to be refined.

In this book we present the fruit of our collaboration, which began in 2019 and brought together two lines of research that we had been pursuing for the previous decade or so. Our collaboration combined two distinct but interdependent perspectives that were both vital to the task we set out to do: the perspective of an expert on late ancient and medieval Arabic philosophy focused on the reception of Galen in the Arabic-speaking milieu; and that of a historian of Greek philosophy, whose primary focus was Galen and his methodology of science. The book consists of two parts: the introduction (Part 1), and the collection of the testimonia, accompanied by notes and a translation into English (Part 2). The introduction falls into five chapters. In the first, we briefly discuss the Greek and Arabic sources of *Dem.* in the chronological order; in the second, we review the history of modern scholarship; in the third, we consider the title, datation, purpose, and intended audience of *Dem.*, as well as its genre; in the fourth, we reconstruct its structure and contents; and finally, in the fifth, we look at the Arabic testimonia – their sources, language, and doctrinal content – against the backdrop of Arabic philosophy. The collection of the testimonia is divided into seven sections, designated as A–G. The first section contains general and unlocated testimonia, i.e. those that refer to *Dem.* in general terms or cannot be plausibly located in a specific book. The arrangement of the following sections reflects the presumed sequence of topics in *Dem.* They contain the Arabic, Greek, and (in two cases) Latin material with textual comments, notes, and translation.

The book is a joint work, but the responsibility for its individual parts is divided as follows. Pauline Koetschet has written chapter 5 and co-written chapter 1 of the introduction, and produced the edition of the Arabic material, mostly based on the first-hand study of manuscripts. Matyáš Havrda has written chapters 2–4 and co-written chapter 1 of the introduction and produced the edition of the Greek and Latin material, mostly based on modern editions. English translations are pieced together from a variety of sources, but most of them are the result of a collaboration that, apart from the editors, included Sean Coughlin. For details about the edition and translations see introduction to Part 2.

We are indebted to our respective home institutions – Matyáš Havrda to the Institute of Philosophy of the Czech Academy of Sciences and Pauline Koetschet to the National Center for Scientific Research (CNRS) and the French Institute for the Near-East (Ifpo) – for providing facilities for our work. Preliminary results of our research were presented at seminars organized by the Institut für Orientalistik of the University of Vienna and the Institute of Philosophy of the Czech Academy of Sciences, as well as at the 11th colloquium of the International Society for the History of Arabic and Islamic Science and Philosophy (SIHSPAI). We are grateful to the participants of these events for their useful comments, especially István Bodnár, Riccardo Chiaradonna, Klaus Corcilius, Christian Gastgeber, Orna Harari, Marwan Rashed, and Elvira Wakelnig. Other colleagues who have given us advice on various aspects of our work over the years include Jonathan Barnes, Philip van der Eijk, Kosta Gligorijevic, Jim Hankinson, Ben Morison, and Christina Savino. We are particularly grateful to Riccardo Chiaradonna, who read the first part carefully and gave us valuable comments, and Marwan Rashed, who accepted the book in his series and contributed advice on the Arabic testimonia. He is also the editor of the *Doubts about Galen* and the *Solution to the Doubts about Galen*, and thereby engaged closely with these texts. Iktimal Rajab, who is the co-editor of Abū al-'Alā' ibn Zuhr's *Solution to the Doubts about Galen* with Pauline Koetschet, read through all the Arabic testimonia. Robert Bostock revised our English in the first part of the book. Pavel Nývlt provided us with editorial assistance and compiled the index of citations. Finally, our thanks are due to De Gruyter's Torben Behm and Florian Ruppenstein for the exceptionally fast and thoughtful preparation of the manuscript for printing. The book has been produced with the generous support of our national research funders, Czech Science Foundation¹ and Agence nationale de la recherche².

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Abbreviations

<i>ad loc.</i>	<i>ad locum</i>
<i>add.</i>	<i>addidit</i>
Aët.	Aëtius, <i>Placita philosophorum</i>
Ar.	Arabic
Alex. Aphr.	Alexander of Aphrodisias
Arist.	Aristotle
C	Coughlin
CAG	Commentaria in Aristotelem Graeca
CCTC	Cambridge Classical Texts and Commentaries
CGT	Cambridge Galen Translations
Clem. Alex.	Clement of Alexandria
CMG	Corpus medicorum Graecorum
<i>corr.</i>	<i>correctum</i>
<i>del.</i>	<i>delevit</i>
DL	Diogenes Laertius, <i>Lives of Eminent Philosophers</i>
fol.	folio
Gal.	Galen
H	Havrda
K	Kühn (1821–1833)
Ko	Koetschet
<i>lac. ind.</i>	<i>lacunam indicavit</i>
LCL	Loeb Classical Library
<i>lect. ... def.</i>	<i>lectionem...defendit</i>
LS	A. A. Long & D. N. Sedley, <i>The Hellenistic Philosophers I–II</i> (Cambridge: Cambridge University Press 1987).
LSJ	H. G. Liddell, R. Scott & H. S. Jones (eds.), <i>A Greek-English Lexicon: ninth edition, with a revised supplement</i> (Oxford: Oxford University Press 1996).
ms.	manuscript, <i>liber manu scriptus</i>
mss.	manuscripts
<i>om.</i>	<i>omisit</i>
PhA	Philosophia Antiqua
Philo Alex.	Philo of Alexandria
Plat.	Plato
prooem.	<i>prooemium</i>
s.v.	<i>sub voce</i>
SAM	Studies in Ancient Medicine
<i>sec.</i>	<i>secuta, secuti, secutus</i>
<i>secl.</i>	<i>seclusit, secluserunt</i>
Simpl.	Simplicius
SM	Galen Scripta minora
<i>suppl.</i>	<i>supplevit</i>
SVF	Hans F. A. von Arnim (ed.), <i>Stoicorum veterum fragmenta</i> (Leipzig: Teubner 1903–1924)
W	Wakelnig



Part I **Introduction**

1 The sources of *On demonstration*

On demonstration (hereafter abbreviated as *Dem.*) is reconstructed from a multiplicity of sources, Greek and Arabic, starting from Galen and his near contemporaries and ending with Ibn Rušd and Maimonides in the 12th century. Many of these testimonies are mediated by other sources, now lost, most notably perhaps some works by Alexander of Aphrodisias. Of authors quoting from *Dem.* who apparently had access to the original text, or some of its parts, the latest are dated to the 6th century (the Alexandrian Neoplatonists), although we know that more than half of the treatise was still available in the 9th century, when it was translated into Syriac and Arabic. The last author who seems to quote directly from the Arabic translation is Abū al-'Alā' ibn Zuhr in the 12th century. In what follows, we offer a brief chronological overview and evaluation of all the sources we draw on in our reconstruction.

Galen

Galen refers to *On demonstration* about forty times in twenty different works. This alone indicates how much importance he attached to the treatise. In his late bibliographic essays, and throughout his *oeuvre*, he explains why. He regards *Dem.* as a starting point for the study of his medical works, as well as the medical doctrines of other schools (A4, see also A6–7).³ He describes it as a compendium and training tool of “logical”, “rational” or “demonstrative” methods intended for students of medicine.⁴ His references to *Dem.* naturally occur for the most part in methodological sections of his works, for instance in the first book of *The therapeutic method (MM)* or the second book of *The doctrines of Hippocrates and Plato (PHP)*. The tenets invoked involve the method for dealing with a particular issue set up for inquiry, variously called τὸ ζητούμενον, τὸ προκείμενον, πρᾶγμα/σκέμμα, τὸ προβεβλήμενον, τὸ πρόβλημα, etc. They include instructions about the order of inquiry, in which the starting point is the notion of the thing being sought – a notion agreed on by everyone – followed by the definition of the substance of the thing in question (A16–A19). They also include instructions about demonstrations and their premisses, namely, the requirement for these premisses to be scientific and appropriate (A20–A26); and about the first principles, which are things evident to the intellect or sense-perception (A12–A16). They also include remarks about induction (A27–A28).

³ Throughout the book, we refer to the testimonia of *Dem.* under the section letter (A–G) and the testimonium's number within that section in the present collection. For instance, A4 is testimonium 4 in section A.

⁴ See A4, A7, A13, A16, A18, and A28. We will discuss the intended audience and the purpose of the treatise in more detail below (Chapter 3).

Apart from this methodological content, referred to in brief and general terms, Galen also mentions specific issues discussed in *Dem.*: embryology (B3); generation and corruption (C1); objects of vision (D1–D3); causes of vision (G10, G25–G27); the elements (G1, G2); and syllogisms (F2, F5). These references, too, are brief and, taken by themselves, provide meagre and inconclusive evidence about the actual contents of the treatise.

Clement of Alexandria (2nd–3rd centuries)

This early Christian writer, one of the founding fathers of “Christian philosophy”, was Galen’s younger contemporary, active in Alexandria towards the end of the 2nd century (the first book of his *Stromateis* was written after 192 and he probably died before 221). He never mentions Galen by name, but an argument has been made that he used *Dem.* (or its parts, or an abridged version of it) as a source for the composition of philosophical notes preserved, along with other material, under the title “The eighth *Stromateus*”.⁵ For the sake of convenience, we refer to these notes, covering pages 346^v–361^r of the Florentine manuscript Plut. 5.3, as *Liber logicus*.⁶ After a brief (Christian) introduction (α), they include discussions about demonstration (β), the method of discovery (γ), two sections about ἐπιλογή (δ, ζ), and chapters on division and definition (ε), the categories (η), and causes (θ).⁷ Although it has been argued that the whole of *Liber logicus* could be based on *Dem.*, the argument is more compelling (and more commonly accepted) in relation to sections β and γ than to the rest of the material.⁸ We have found the internal and external evidence for these two sections strong enough to warrant including them among the testimonia of *Dem.* To distinguish them from direct testimonia, however, we mark them with an asterisk.⁹ Additional evidence from Nemesius allows us to locate the source of these testimonia within the first three books of *Dem.*¹⁰

5 See M. Havrda, “Galenus Christianus? The Doctrine of Demonstration in *Stromata* VIII and the Question of Its Source,” *Vigiliae Christianae* 65 (2011), pp. 343–375; idem, *The So-Called Eighth Stromateus by Clement of Alexandria: Early Christian Reception of Greek Scientific Methodology* (Leiden: Brill 2016), pp. 34–50.

6 For the text, see Havrda, *The So-Called Eighth Stromateus*, pp. 86–127.

7 See Havrda, *The So-Called Eighth Stromateus*, pp. 27–28.

8 This corresponds to *Lib. log.* (= *Strom.* VIII) 2.3.1–5.15.1 (81,9–88,33 Stählin–Havrda). See further below, pp. 17–18.

9 See below, B6* and B7*. For the Galenic parallels, see the comments on the Greek text.

10 For sections β and γ of *Lib. log.* (= B6* and B7* of the present collection) as drawing on one (or more) of the first three books of *Dem.*, see below, pp. 35–37.

Alexander of Aphrodisias (2nd–3rd centuries)

Alexander, too, was Galen's younger contemporary, with a *floruit* of ca. 200.¹¹ He refers to Galen by name (*In Top.* VIII.5, 549,24 Wallies) and Galen is probably his polemical target in the last part of his *De anima*, which discusses the location of the ruling part of the soul (*De an.* 94–100 Bruns–Sharples).¹² In his (lost) commentary on Aristotle's *Physics*, Alexander countered Galen's criticism of Aristotle's argument in *Phys.* VII.1 on the prime mover.¹³ A more detailed version of Alexander's polemic against Galen about the unmoved mover (whether from the *Physics* commentary or from an independent treatise, as the Arabic tradition suggests) is preserved in an Arabic translation.¹⁴ Further, there is a report by Ibn al-Nadīm (10th century) that Alexander wrote a treatise against Galen on time and place, issues dealt with in Aristotle's *Physics* IV.¹⁵ Some scholars believe that a part of this treatise is identical with Alexander's *On time*, a short polemical text edited by A. Badawī (which, however, never mentions Galen by name).¹⁶

¹¹ See D. Frede, "Alexander of Aphrodisias," in E. N. Zalta (ed.), *The Stanford Encyclopedia of Philosophy* (Winter 2017 Edition), <<https://plato.stanford.edu/archives/win2017/entries/alexander-aphrodisias/>>.

¹² T. Tieleman, "The Hunt for Galen's Shadow: Alexander of Aphrodisias, *De An.* pp. 94.7–100.17 Bruns Reconsidered," in K. Algra, D. T. Runia, and P. W. van der Horst (eds.), *Polyhistor: studies in the history and historiography of Greek philosophy presented to Jaap Mansfeld on his 60th birthday*, (Leiden: Brill 1996), pp. 265–283. For Alexander's reception of Galen see the bibliography in P. N. Singer, "Galen and the philosophers: philosophical engagement, shadowy contemporaries, Aristotelian transformations," in P. Adamson, R. Hansberger, and J. Wilberding (eds.), *Philosophical Themes in Galen* (London: Institute of Classical Studies 2014), pp. 7–38, here pp. 21–22 n. 43.

¹³ This is reported by Simplicius, *In Phys.* VII.1 (1039,13–1040,12 Diels); and confirmed by a Byzantine scholion on Aristotle's *Physics*, published by Marwan Rashed: see M. Rashed, *Alexandre d'Aphrodise, Commentaire perdu à la Physique d'Aristote (Livres IV–VIII): Les scholies byzantines*, de Gruyter 2011, p. 424, schol. 432.

¹⁴ Alexander's polemic against Galen regarding on the first mover is preserved in two partly overlapping manuscripts Istanbul Carullah 1279 and Escorial 798; the texts are edited and translated by N. Rescher and M. E. Marmura, *The Refutation by Alexander of Aphrodisias of Galen's Treatise on the Theory of Motion* (Islamabad: Islamic Research Institute 1965).

¹⁵ This is reported by Ibn al-Nadīm, *Kitāb al-Fihrist* 7.1 (253 Flügel), referring to Alexander's treatise against Galen on time and place. See also E3.

¹⁶ A. Badawī, *Commentaires sur Aristote perdus en grec et autres épîtres*, Beirut 1971, 19–24. The text is preserved in the Arabic manuscript Tashkent 2385. For its supposed connection with Alexander's polemical treatise against Galen, see R. W. Sharples, "Alexander of Aphrodisias, *On Time*," *Phronesis* 27 (1982), pp. 58–81, here pp. 72–73; P. Adamson, "Galen and al-Rāzī on Time," in R. Hansberger, M. A. al-Haytham and C. Burnett (eds.), *Medieval Arabic Thought: Essays in Honour of Fritz Zimmermann* (London: Warburg Institute 2012), pp. 1–14, here p. 6 and n. 28; A. Lammer, *The Elements of Avicenna's Physics: Greek Sources and Arabic Innovations* (Berlin/Boston: de Gruyter 2018), pp. 23–24. See, however, S. Pines, "A Tenth Century Philosophical Correspondence," *Proceedings of the American Academy for Jewish Research* 24 (1955), pp. 103–136, here pp. 111–112 n. 43, according to whom everything points to these works not being identical. G. Théry, who edited Gerard of Cremona's Latin translation of *On time*, suggests that it could have been an excerpt from Alexander's *Physics* commentary: see G. Théry, *Autour du décret de 1210: II, Alexander d'Aphrodise, Aperçu sur l'influence de sa noétique* (Kain: Le Saulchoir 1926), p. 97.

Other fragments of Alexander's polemic against Galen have been preserved in Arabic.¹⁷

None of these reports and translations refer to Galen's *Dem.* Nevertheless, it is significant that the main topics of these polemics – time, place, and the unmoved mover – were all discussed in that treatise. For time, there is evidence in Simplicius (E1a), which – as is generally accepted – extends also to place. There is no evidence that Galen dealt with these issues anywhere else, and so it is almost certain that Alexander's background text was *Dem.*¹⁸ The situation is somewhat different with the unmoved mover, since Galen wrote a separate treatise on this topic, and Alexander may have drawn his arguments from that work.¹⁹

Alexander's treatise *On time* responds to various anonymous objections against Aristotle's definition of time as "the number of motion with respect to the earlier and the later". Irrespective of whether it forms part of Alexander's polemic against Galen about time and place mentioned by Ibn al-Nadīm, the very fact that Alexander wrote that polemic makes it plausible to suppose that some of the objections addressed in *On time* are Galen's. Some of them do in fact resemble Galen's objections against Aristotle's definition of time in E1–E4.²⁰ If they do go back to Galen, then their source is most likely *Dem.* We regard the Galenic provenance of these passages as less certain than in the case of B6* and B7*. Nonetheless, it is plausible enough in our view to merit their inclusion as presumed testimonia in section E.

Themistius (317–ca. 388)

Themistius mentions Galen three times in his paraphrase of the fourth book of Aristotle's *Physics*, citing and criticising Galen's polemic against Aristotle on time and place (E1, E2, E6). Unlike Simplicius, who refers to *Dem.* in a parallel passage (E1a), Themistius never cites the source of his information. As noted by R. B. Todd, his paraphrase generally appears to be "fairly close" to Alexander of Aphrodisias' *Physics* commen-

17 Cf. A. Pietrobelli, "Galen's Early Reception (Second–Third Centuries)," in P. Bouras-Vallianatos and B. Zipser (eds.), *Brill's Companion to the Reception of Galen* (Leiden: Brill 2019), pp. 11–38, here pp. 21–22.

18 Cf. H. B. Gottschalk, "Aristotelian Philosophy in the Roman World from the Time of Cicero to the End of the Second Century A.D.," in W. Haase (ed.), *Aufstieg und Niedergang der Römischen Welt* II.36.2 (Berlin/New York: de Gruyter 1987), pp. 1079–1175, here p. 1168; M. Rashed, "Alexandre d'Aphrodise et la 'Magna Quaestio'. Rôle et indépendance des scholies dans la tradition byzantine du corpus aristotélicien," *Les études classiques* 63 (1995), pp. 295–351, here pp. 322–323.

19 See further below, pp. 59–60.

20 See R. Chiaradonna, "Le traité de Galien *Sur la démonstration* et sa postérité tardo-antique," in R. Chiaradonna and F. Trabattani (eds.), *Physics and Philosophy of Nature in Greek Neoplatonism* (Leiden: Brill 2009), pp. 43–77, here p. 56 n. 65; Adamson, "Galen and al-Rāzi on Time," pp. 6–7; Sharples, "Alexander of Aphrodisias, *On Time*," pp. 64–66. See further below, pp. 56–57.

tary,²¹ and it seems a reasonable guess that his knowledge of Galen is mediated by Alexander.²²

Nemesius (late 4th century)

In his treatise *On the nature of man*, the bishop of Emessa refers to Galen or his works numerous times.²³ These references include one precious quotation from the third book of *Dem.* (B2) and a testimonium regarding ἀποδεικτικοὶ λόγοι, which arguably concerns the same treatise and the same book (B5).²⁴

Simplicius (ca. 480–560)

Simplicius' voluminous commentaries on Aristotle contain a mere seven references to Galen, six of them in the *Physics* commentary. One of these probably refers to *Mixtures* (*In Phys.* II.3, 325,23–26 Diels) and the remaining five to passages where Galen criticizes Aristotle on time, place, and the unmoved mover.²⁵ Passages on time and place are the same as those quoted by Themistius (E1 and E2); indeed, one of them (E2a) refers to Themistius and his response to Galen's critique. Yet unlike Themistius, Simplicius specifies that the passage comes from the eighth book of *Dem.*, which indicates that he was not dependent on Themistius for information about it.²⁶ Thus he either had direct access to *Dem.* or knew about it through a different intermediary. Since he quotes exactly the same passages as Themistius, and does not refer to *Dem.* anywhere else in his works, it appears more likely that he quotes these passages from an intermediate source, probably the same source that Themistius himself used. Once again, Alexander is the most plausible candidate.²⁷ As far as the passage on the unmoved mover is concerned, Simplicius almost certainly quotes it from Alexander, whose response to Galen's criticism

21 Cf. R. B. Todd, "Introduction," in R. B. Todd, *Themistius on Aristotle Physics 4* (London: Bloomsbury 2003), pp. 1–5, here p. 2.

22 See Rashed, "Alexandre d'Aphrodise et la 'Magna Quaestio'," pp. 322–323; Chiaradonna, "Le traité," p. 57 with n. 66.

23 Cf. R. W. Sharples and P. J. van der Eijk, "Introduction," in R. W. Sharples and P. J. van der Eijk, *Nemesius On the Nature of Man* (Liverpool: Liverpool University Press 2008), pp. 1–32, here pp. 12–13; P. Bouras-Vallianatos, "Galen in Byzantine Medical Literature," in P. Bouras-Vallianatos and B. Zipser (eds.), *Brill's Companion to the Reception of Galen* (Leiden: Brill 2019), pp. 86–110, here pp. 86–88.

24 See below, pp. 35–37.

25 E1a, E2a, E6a. For the unmoved mover, see Simplicius, *In Phys.* VII.1 (1039,13–15 Diels); the passage is quoted below, p. 60 n. 276.

26 Cf. Chiaradonna, "Le traité," p. 54.

27 For Simplicius' use of Alexander, see S. Menn, *Simplicius On Aristotle Physics 1–8: General Introduction to the 12 Volumes of Translations* (London et al.: Bloomsbury 2022), pp. 13–14. For Alexander as the

immediately follows. It is an open question whether the testimonium goes back to *Dem.* or to Galen's separate treatise about the unmoved mover.²⁸

Alexandrian Neoplatonists (6th century)

Simplicius' knowledge of *Dem.* seems to depend on the commentary tradition on Aristotle's *Physics*, most probably Alexander of Aphrodisias. There is no other mention of *Dem.* among the Athenian Neoplatonists. In contrast, there are several indications that the treatise, or its parts, was available in the Alexandrian Neoplatonist school in the 6th century. There is an extensive quotation from book four in John Philoponus (C4). There is also a reference to *Dem.* in the anonymous treatise *All the kinds of syllogism* (F4), preserved in Parisinus graecus 2064, a 10th–11th-century manuscript containing, among other texts, Ammonius' commentary on *Prior analytics*. Jonathan Barnes and Benjamin Morison, who have recently reedited the text, suggest that "it is a sequence of extracts from an essay which was written in the 'school of Ammonius'. That essay," they add, "was itself derivative, some of it at least coming from much older writings (and notably from Galen's *On proof*)."²⁹ Next, there is a puzzling note in 'Elias', a 6th-century commentator from the school of Olympiodorus, according to which Galen reduced the number of Aristotelian categories to five (A30). Elias' testimonium has no parallel in Galen's extant works and its veracity has been questioned.³⁰ Yet Elvira Wakelnig has drawn our attention to a passage in Ibn al-Ṭayyib's commentary on the *Categories* (11th century), where a similar reduction is attributed to Galen and specifically linked to *Dem.* (A29). We may add that three other reports of Galen's views, which cannot be traced back to any known work, are found in the Alexandrian Neoplatonists. Two of them appear in David's commentary on Porphyry's *Isagoge* and one in Olympiodorus.³¹ It is possible (and there are some inconclusive indications to this effect) that some of them at least go back to *Dem.*³²

source of both Themistius and Simplicius, see Rashed, "Alexandre d'Aphrodise et la 'Magna Quaestio'," pp. 322–323; Chiaradonna, "Le traité," p. 57 and n. 66.

²⁸ See further below, pp. 59–60.

²⁹ J. Barnes and B. Morison, *Galen, Introduction to Logic*, forthcoming with Oxford University Press. The quotation is from the introduction to the Appendix, which includes the edition and commentary of *All the kinds of syllogism*.

³⁰ See C. Prantl, *Geschichte der Logik im Abendlande*, II (Leipzig: S. Hirzel 1855), p. 564; I. von Müller, "Über Galens Werk vom wissenschaftlichen Beweis," *Abhandlungen der königlichen bayerischen Akademie der Wissenschaften, philosophisch-historische Klasse* 20 (1895), pp. 403–478, here p. 451.

³¹ David, *In Porph. Isag.* 19 (154,30–31 Busse) and 21 (163,22–24 Busse); Olympiodorus, *Proleg.* 1 (4,15–18 Busse).

³² See below, pp. 48–50.

Ḥunayn ibn Ishāq (809–873)

Ḥunayn ibn Ishāq was the main translator of Galen's treatises from Greek into Syriac and to Arabic.³³ He is the author of the Syriac translation of *Dem.*, which was then translated into Arabic in his circle. In his *Epistle*, a text he wrote to outline the translations of Galen that were produced in his circle or that he knew of, he sheds light on the complex transmission of *Dem.* in Arabic.³⁴ Apparently, in spite of Ḥunayn's continuous efforts, *Dem.* has never been made available to Arabic readers in its entirety.

Ishāq ibn 'Alī al-Ruhāwī (9th century)

Al-Ruhāwī was a 9th-century physician, described by Ibn Abī Uṣaybi'a in his book *Classes of physicians* as well-versed in the Galenic corpus. He mentions the treatise *The conduct of the physician (Adab al-ṭabīb)*,³⁵ from which our two testimonia are extracted,³⁶ as well as several compendia of Galenic texts. *The conduct of the physician*, the only text to survive, is a deontological treatise which sets out certain rules of conduct and generally describes the behaviour expected, and the knowledge required, of the physician.

Abū Bakr al-Rāzī (865–925)

Until recently, the majority of the Arabic fragments of *Dem.* had been extracted from Abū Bakr al-Rāzī's *Doubts about Galen*, a medico-philosophical treatise in which Rāzī engages with around a hundred passages from more than twenty Galenic treatises, on topics ranging from the eternity of the world to the different types of pulse.³⁷

Rāzī is a central figure in the history of Islamic philosophy and science. Whereas his medical treatises are well preserved and bear witness to his thorough knowledge

33 See for example U. Vagelpohl, "The User-Friendly Galen: Ḥunayn ibn Ishāq and the Adaptation of Greek Medicine for a New Audience," in P. Bouras-Vallianatos and S. Xenophontos (eds.), *Greek Medical Literature and Its Readers. From Hippocrates to Islam and Byzantium* (Abingdon/New York: Routledge 2018), pp. 113–130.

34 Ḥunayn ibn Ishāq, *Epistle on what was translated* 115 (47–48 Bergsträsser) = A2.

35 For a full translation of this treatise, see M. Levey, "Medical Ethics in Medieval Islam, with Special reference to al-Ruhāwī's "Practical Ethics"," *Transactions of the American Philosophical Society*, n.s. 57.3 (1967), pp. 1–100, here pp. 18–97.

36 We wish to thank Elvira Wakelnig for alerting us to these two passages.

37 See P. Koetschet, *Abū Bakr al-Rāzī: Doutes sur Galien. Introduction, édition et commentaire* (Berlin/Boston: de Gruyter 2019). The testimonia have been collected in G. Strohmaier, "Bekannte und unbekannt Zitate in den Zweifeln an Galen des Rhazes," in K.-D. Fischer, D. Nickel, and P. Potter (eds.), *Text and Tradition: Studies in Ancient Medicine and its Transmission Presented to Jutta Kollesch* (Leiden: Brill 1998), pp. 263–287, here pp. 271–274. See further below, pp. 16–17 and 79–83.

of Galenic texts, the same cannot be said of his philosophical and theological ideas. However, previous scholarship has shown that Galen's writings, and in particular *Dem.* and *UP*, also had a pervasive presence in Rāzī's philosophical ideas.³⁸ In the opening section of the *Doubts*, Rāzī describes *Dem.* as "the most exalted and the most useful of the books, after those sent by God".³⁹ In sections 2 to 6, he quotes *Dem.* in relation to various philosophical topics, going from the demonstration of the eternity of the world to the first substrate (G3), time and void (G6), and vision (G11, G13, G16, G18–G22).

Rāzī's engagement with *Dem.* is not limited to the *Doubts*. According to Bīrūnī, he was also the author of several books on logic, among which a *Book on demonstration* (*Kitāb al-Burhān*), as well as a *Book on how sign-inference proceeds* (*Kitāb fi Kayfiya al-istidlāl*).⁴⁰ Both are lost, but some fragments re-emerged in Ġābir ibn Ḥayyān's *Kitāb al-Taṣrīf* that probably comes from Rāzī's *Kitāb al-Burhān*, where references to *Dem.* were also made.⁴¹

Ps.-Ġābir ibn Ḥayyān (9th–10th centuries)

Four testimonia of *Dem.* have been identified in what is known as "the Ġābirian corpus". In his monumental work,⁴² Paul Kraus has reevaluated the traditional historiography of Ps.-Ġābir ibn Ḥayyān and showed that this corpus was, in fact, the work of several authors, most probably alchemists. According to him, the earliest works of Ps.-Ġābir may be placed in the first half of the 9th century, and by the end of the 10th century, the whole collection was established.⁴³

Two fragments (C8 and F8) are found in the *Book of morphology* (*Kitāb al-Taṣrīf*). According to our previous research, these fragments are quotations from a logical treatise by Rāzī.⁴⁴ This conclusion is in line with Kraus' dating, which dates the *Book of balances*, the collection to which the *Book of morphology* belongs, at the beginning of the 10th century.⁴⁵

38 P. Adamson, *Al-Rāzī* (Oxford: Oxford University Press 2021); Koetschet, *Abū Bakr al-Rāzī: Doutes sur Galien*, pp. xi–cxxxii.

39 Rāzī, *Doubts* 2.1 (6,15–17 Koetschet) = A3.

40 Al-Bīrūnī, *Epistle on Abū Bakr al-Rāzī's Writings*, p. 14 Kraus.

41 P. Koetschet, "Abū Bakr al-Rāzī et le signe. Fragment retrouvé d'un traité logique perdu," *Arabic Sciences and Philosophy* 27 (2017), pp. 75–114.

42 P. Kraus, *Jābir ibn Ḥayyān. Contribution à l'histoire des idées scientifiques dans l'Islam*, I–II (Cairo: L'Institut français d'archéologie orientale 1942–1943).

43 Kraus, *Jābir ibn Ḥayyān*, I, p. LXV.

44 See note 41.

45 On the datation of the *Book of balances*, see Kraus, *Jābir ibn Ḥayyān*, II, p. vii. For a discussion of the chronological relation between Rāzī's and Jābir's writings, see Kraus, *Jābir ibn Ḥayyān*, I, pp. LX–LXII.

The other two testimonia by Ps.-Ĝābir (E7 and E8) are found in the *Book of research* (*Kitāb al-Baḥṭ*), an extensive treatise devoted to the justification of theurgy.⁴⁶ According to Kraus, it is one of the last treatises of the corpus.⁴⁷ In F10, Ps.-Ĝābir mentions both Galen's book *On the first mover* – also lost – and *Dem.* A few pages later, he quotes a longer passage from *Dem.* Kraus believes that these testimonia were mediated by an intermediary source – something that is frequent in the Ĝābirian corpus. Moreover, as already mentioned, the two testimonia of *Dem.* found elsewhere in the corpus come from a source other than Galen, namely Rāzī. Kraus suggests Alexander of Aphrodisias' treatise *Response to Galen's attack on Aristotle's view that everything that moves is moved by something*, which is lost in Greek but was found and edited in Arabic after Kraus' death.⁴⁸ However, we have not been able to locate a parallel passage in this treatise, although the context is similar. Another possible source is Alexander's commentary on *Physics* VII – lost in Greek and Arabic. Two scholia of the collection gathered and studied by Marwan Rashed evoke respectively the controversy with Galen on the first mover, and the argument ascribed to Plato that the first mover is moved.⁴⁹

Abū Naṣr al-Fārābī (ca. 873–950)

Abū Naṣr al-Fārābī stands out as one of the most prominent medieval Arabic philosophers, and the best-known representative of the 'Aristotelian turn' taken by Arabic philosophy in the wake of the 10th century. He was a member of the 'School of Baghdad' which was primarily concerned with the commentaries and the teachings of the Aristotelian logical corpus. Galen, as a philosopher and a logician – and specifically his *Dem.* – represented an obstacle in the way of the Aristotelian movement. However, this did not prevent Galen's works from being extensively studied by Fārābī.⁵⁰

One of Fārābī's major contributions was his systematic exposition of Aristotle's *Organon* (including the *Rhetoric* and the *Poetics*) in treatises of various kinds. First, he wrote long commentaries, of which unfortunately only the *Long commentary on De interpretatione* survives in an extant form.⁵¹ Of his short commentaries, we have access to an extensive version of his *Short commentary on De interpretatione* and the

46 On this treatise, see Kraus, *Jābir ibn Ḥayyān*, I, pp. 142–146.

47 Kraus, *Jābir ibn Ḥayyān*, I, p. 144.

48 See Rescher and Marmura, *The Refutation by Alexander*.

49 M. Rashed, *Alexandre d'Aphrodise, Commentaire perdu à la Physique d'Aristote (Livres IV–VIII): Les Scholies Byzantines. Édition, Traduction et Commentaire* (Berlin/Boston: de Gruyter 2011), pp. 424–427 and 428–429.

50 See F. Zimmermann, "Al-Fārābī und die philosophische Kritik an Galen von Alexander zu Averroes," in A. Dietrich (ed.), *Akten des VII. Kongresses für Arabistik und Islamwissenschaft, Göttingen, 15. bis 22. August 1974* (Göttingen: Vandenhoeck & Ruprecht 1976), pp. 401–414.

51 It was translated and published by F. Zimmermann along with the short commentary on the same

Short commentary on the Prior analytics.⁵² Of his other commentaries, only fragments or indirect sources exist. The remaining fragment of his *Long commentary on the Prior analytics* was edited and published by Daneshpazuh.⁵³ According to the Alexandrian scheme followed by Fārābī, the heart of logic lay in the science of demonstration, as expounded in the *Posterior analytics*.

Four testimonia of our collection go back to Fārābī. Two of them are found directly in Fārābī's treatises (F10 and F11) and two are mediated by Maimonides (F12) and Ibn Rušd (C16), respectively.⁵⁴

Ibn Abī Sa'īd al-Mawṣilī, via Yaḥyā ibn 'Adī (873–974)

A passage on Galen's conception of time is found in a correspondence between Ibn Abī Sa'īd al-Mawṣilī and the well-known philosopher of Baghdad Yaḥyā ibn 'Adī (873–974). In this correspondence, which was first studied by Shlomo Pines,⁵⁵ the former asked the latter to give his opinion on various issues in Aristotle's *Physics*. Their discussion involved a criticism attributed to Galen of Aristotle's definition of time, with a reference to Alexander's *Treatise against Galen on time and place* (E3).⁵⁶

Abū al-Ḥassan Aḥmad b. Muḥammad al-Ṭabarī (d. around 985)

One testimonium is found in a handbook called *Hippocratic treatments* (*Al-Mu'ālaḡāt al-Buqrātīya*), which was composed around 950. It is attributed to Abū al-Ḥassan Aḥmad b. Muḥammad al-Ṭabarī, a physician in the service of the Buyid ruler Rukn al-Dawla (r. 936–972).⁵⁷ This handbook is composed of ten books, further divided into chapters. Our testimonium is located in the introductory book, where the author aims to reinforce the scientific framework of his work. Books 2 to 10 deal with the diseases of the human body, presented traditionally from the head downwards. Throughout the handbook,

treatise: F. Zimmermann, *Al-Fārābī's Commentary and Short Treatise on Aristotle's De interpretatione* (London: Oxford University Press 1981).

52 N. Rescher, *Al-Fārābī's Short Commentary on Aristotle's Prior Analytics* (Pittsburgh: University of Pittsburgh Press 1963).

53 Fārābī, *Al-Mantiqīyāt lil-Fārābī*, II, pp. 263–553 Daneshpazuh.

54 See further below, pp. 84–85.

55 Pines, "A Tenth Century Philosophical Correspondence."

56 Alexander's treatise is also mentioned in Ibn al-Nadīm, *Kitāb al-Fihrist* 7.1 (253 Flügel) = 2.609 Dodge. On this, see below, pp. 54–56.

57 We wish to thank Elvira Wakelnig for drawing our attention to this testimonium.

al-Tabari makes many references to previous physicians, and in particular to Galen, who is the most quoted author.⁵⁸

Ibn al-Ṭayyib (980–1043)

A logical passage from *Dem.* was transmitted by Ibn al-Ṭayyib.⁵⁹ Abū al-Faraġ ‘Abdallah ibn al-Ṭayyib is one of the last representatives of scholars who, following Mattā ibn Yūnus and Yaḥyā ibn ‘Adī, wrote commentaries on Aristotle’s works by studying the Greek commentaries of Late Classical Antiquity (Porphyry, Ammonius, Olympiodorus, Simplicius, Philoponus, and Elias). His testimonium of *Dem.* has a parallel in Elias, but neither its (somewhat puzzling) content nor the context in which it is preserved indicates that Elias is its source. Although Ibn al-Ṭayyib is thought to be the author of a commentary of the entire *Organon*, only his commentary of the *Categories*, as well as a summary of the commentary of the *Posterior analytics*, have been preserved.⁶⁰

Abū Sa‘īd ‘Ubaydallah ibn Buḥtīšū’ (980–1060)

Our only testimonium mentioning book eleven comes from a treatise entitled *On the fact that the physician has to consider the states of the soul and that love is an illness*, by Abū Sa‘īd ‘Ubaydallah ibn Buḥtīšū’. One of the last representatives of the Buḥtīšū’ family, a famous line of physicians, Abū Sa‘īd ‘Ubaydallah ibn Buḥtīšū’ is the author of very few treatises, even fewer of which have been edited. In the above-mentioned treatise, Ibn Buḥtīšū’ collects a large number of quotations from Hippocrates, Plato, Aristotle, and Galen.

Abū al-‘Alā’ ibn Zuhr (d. 1130)

In addition to the testimonia from Rāzī’s *Doubts*, which were already known, this collection provides us with over twenty hitherto unpublished passages coming from another and more detailed source related to the *Doubts*, namely the *Solution to the Doubts about*

⁵⁸ For a review of all the references in the treatise, see L. Ambjörn, “Book-Titles Mentioned in the 10th Century Medical Encyclopaedia *Mu‘ālaġāt al-Buqrātīya*,” *Galenos, Rivista di filologia dei testi medici antichi* 5 (2011), pp. 103–111.

⁵⁹ Again, we owe this information to Elvira Wakelnig, who also kindly provided us with the translation of the testimonium and its immediate context.

⁶⁰ C. Ferrari, “Ibn al-Ṭayyib,” in H. Lagerlund (ed.), *Encyclopedia of Medieval Philosophy* (Dordrecht: Springer 2011).

Galen by Abū al-‘Alā’ ibn Zuhr.⁶¹ Abū al-‘Alā’ ibn Zuhr was a doctor who lived in 12th-century Cordoba. He belonged to a family of physicians, the Banu Zuhr, and was the father of the well-known ‘Abd al-Malik ibn Zuhr (Avenzoar).⁶² He wrote several medical treatises, among which the *Solution*. Responding to Rāzī’s *Doubts* had become a genre in itself: Ibn Abī Ṣādiq, Ibn Riḏwān, Abū al-‘Alā’ ibn Zuhr, and ‘Abdul-Laṭīf al-Baġdādī each authored a treatise also called *Solution to the Doubts about Galen*. However, the treatise by Abū al-‘Alā’ is the only one that has come down to us.⁶³ In his *Solution*, Abū al-‘Alā’’s main line of defense against Rāzī – called “The Sophist” throughout the book – is that the latter gives a biased account of what Galen says. This prompts Abū al-‘Alā’ to systematically give a quotation of the same passage which he claims to be literal. Wherever we could compare Abū al-‘Alā’’s quotations with Arabic translations of the same passages, we found that his rendering was indeed very close to the source.

The *Solution* is divided into “questions” (*mas’ala*), each of them starting with a quotation from the *Doubts*, preceded by “the Sophist said” (*qāla al-sūfiṣṭā’ī*). As Abū al-‘Alā’ explains in the introduction, he cannot admit that Rāzī is indeed the author of these *Doubts*, considering how shameful they are. Interestingly, Abū al-‘Alā’’s quotations are introduced in defense of Galen and not in a polemical context, which is not true of most of our Arabic testimonia. In addition to enriching our knowledge of *Dem.* itself, Abū al-‘Alā’ provides us with additional information on the Arabic reception of *Dem.*⁶⁴

Ibn Bāġġa (1085–1138)

Ibn Bāġġa is a later source to *Dem.* Like Abū al-‘Alā’, Ibn Ruṣd, and Maimonides, he is an Andalusian philosopher. He wrote a *Commentary on Aristotle’s Physics*, where he refers to Galen’s theory of time (see E4).⁶⁵ Unlike Abū al-‘Alā’, his testimonium of *Dem.* does not seem to come from a direct reading of the treatise but depends ultimately on Alexander of Aphrodisias.

⁶¹ Edition of the treatise is under preparation by Pauline Koetschet and Iktimal Rajab.

⁶² To distinguish Abū al-‘Alā’ ibn Zuhr from his son, we refer to him either by the full name or as “Abū al-‘Alā’” in this book.

⁶³ Fragments of Ibn Abī Ṣādiq’s treatise survive through an indirect tradition.

⁶⁴ See below, pp. 72–74.

⁶⁵ P. Lettinck, *Aristotle’s Physics and Its Reception in the Arabic World: With an Edition of the Unpublished Parts of Ibn Bajja’s Commentary on the Physics* (Leiden/New York: Brill 1994).

Ibn al-Šalāḥ (1090–1153)

One mention of *Dem.* (F1) is found in the introduction to the logical treatise *On the fourth figure of the categorical syllogism attributed to Galen* by Ibn al-Šalāḥ, a Persian physician and mathematician.⁶⁶

Ibn Rušd (1126–1198)

Ibn Rušd (Averroes), among many other achievements, was a prolific commentator of Aristotle, which led him to engage occasionally and indirectly with *Dem.* Two testimonia in this volume come from his commentaries. In the first (C16), he quotes Fārābī as his source, whereas the second (E1b) seems to be based on the Greek commentary tradition.

Maimonides (1138–1204)

Maimonides is an indirect witness to *Dem.*, quoting an (otherwise lost) passage from Fārābī's *Long commentary on the Prior analytics*, where *Dem.* is mentioned (F12).⁶⁷

Albertus Magnus (d. 1280)

The only Latin medieval author in our collection ascribes to Galen an interesting argument about time being in the soul by virtue of the motion of the soul (E1c). However, as shown by U. R. Jeck, this passage is based on Ibn Rušd's *Commentary on Aristotle's Physics*, where a similar argument is associated with Plato, not Galen.⁶⁸ Albertus' "testimonium" thus seems to be the result of a misunderstanding or creative reinterpretation of his source, namely the Latin translation of Ibn Rušd. It was probably inspired by E1b.

⁶⁶ The treatise is edited and translated in N. Rescher, *Galen and the Syllogism* (Pittsburgh: Pittsburgh University Press 1966), pp. 52–87. On the Arabic debate on the fourth figure of the syllogism, see below, p. 87.

⁶⁷ See above, pp. 11–12 (on Fārābī).

⁶⁸ See U. R. Jeck, *Aristoteles contra Augustinum: Zur Frage nach dem Verhältnis von Zeit und Seele nach den antiken Aristoteleskommentatoren, im arabischen Aristotelismus und im 13. Jahrhundert* (Amsterdam/Philadelphia: B. R. Grüner 1994), pp. 245–249.

2 Modern scholarship

The sources

The history of the modern debate on *Dem.* is closely linked to the gradual discovery of the relevant sources. In his monumental edition of Hippocratic and Galenic works published in the 17th century, René Chartier included testimonia found in Nemesius (B2, B5), John Philoponus (C4), Simplicius (E1a, E2a, E6a), and Ibn Rušd (C16, E1b).⁶⁹ In his 1869 monograph on Al-Fārābī, Moritz Steinschneider cited passages from Ḥunayn (A2), Ibn Rušd (C16), and Maimonides (F12).⁷⁰ But a decisive breakthrough came in 1895, when Iwan von Müller published his study “Über Galens Werk vom wissenschaftlichen Beweis”.⁷¹ Von Müller’s aim was not simply to collect the available testimonia, but to reconstruct the actual contents and argument of the lost treatise. He collected thirty-one passages from Galen, nine from later Greek sources (Nemesius, Themistius, Simplicius, and Philoponus) and five from Arabic sources.⁷² However, he does not present them as a collection of numbered texts; instead, he embeds them directly in the main text of his dense prose or cites them in footnotes alongside parallels and other relevant passages from the Galenic corpus.

Von Müller’s study remains the only attempt to date to assemble all the available testimonia in one place, but the amount of relevant material has significantly increased, especially in the last few decades. In 1998 Gotthard Strohmaier published, in German translation, citations from Galen’s works in Abū Bakr al-Rāzī’s *Doubts about Galen*. He listed over twenty citations from *Dem.*, which mostly come from the fourth and the thirteenth books of the treatise.⁷³ This line of inquiry has been followed by Pauline Koetschet, who edited the Arabic text of Rāzī’s *Doubts* and discovered a wealth of other

69 R. Chartier, *Opera Hippocratis Cui et Galeni Pergameni, medicorum omnium principum*, II (Paris 1638), pp. 59–60 (Philoponus), 67–68 (Simplicius), and 70–71 (Ibn Rušd); vol. V (Paris 1639), pp. 1–3 (Nemesius). Chartier does not link all these quotations with *Dem.*, often calling them simply “fragments”.

70 M. Steinschneider, *Al-Farabi (Alpharabus): Des arabischen Philosophen Leben und Schriften* (St.-Petersbourg: L’Académie Impériale des Sciences 1869), pp. 27, 32–33, and 134.

71 *Abhandlungen der königlichen bayerischen Akademie der Wissenschaften, philosophisch-historische Klasse* 20 (1895), pp. 403–478.

72 Apart from A2, C16, E1b, and F12 already mentioned, von Müller adds G30, citing personal communication with Steinschneider. Von Müller quotes the Arabic material in Latin or Steinschneider’s German translations.

73 G. Strohmaier, “Bekannte und unbekannte Zitate in den Zweifeln an Galen des Rhazes,” in K.-D. Fischer, D. Nickel and P. Potter (eds.), *Text and Tradition: Studies in Ancient Medicine and its Transmission Presented to Jutta Kollesch* (Leiden: Brill 1998), pp. 263–287, here pp. 271–274. Strohmaier lists 24 citations, but one of them is misattributed, as it refers to Aristotle rather than Galen (S. 9,20 on p. 272), and two others are Rāzī’s interpretations, rather than citations (S. 11,2–4 on p. 273 and S. 14,9f. on p. 274).

material in a previously unpublished response to it by Abū al-‘Alā’ ibn Zuhr.⁷⁴ Abū al-‘Alā’ covers more or less the same parts of *Dem.* as Rāzī, but adds a number of illuminating details.

Arabic sources have also yielded more information about the discussion of time which, as we know from Simplicius, was located mainly (if not exclusively) in the eighth book of *Dem.* Already in 1955, Schlomo Pines drew attention to Yaḥyā ibn ‘Adī’s reference to Galen’s polemic against Aristotle’s definition of time (E3).⁷⁵ The passage refers to Alexander (probably of Aphrodisias) as its source and includes details about Galen’s position unknown from the Greek commentators. It has been studied in connection with their reports, as well as with Alexander’s *On time*, by specialists on the reception history of Aristotle’s *Physics*.⁷⁶ This research is of course of paramount importance for the study of *Dem.*⁷⁷ For, although it is never mentioned in these sources, *Dem.* was almost certainly where Galen’s polemic took place.⁷⁸ In his attempt to reconstruct Galen’s precise position regarding time (and its possible influence on Rāzī’s notion of absolute time), Peter Adamson takes account of all the material just mentioned and adduces two further parallels from Arabic sources (E1b and E4).

Yet Greek texts have also delivered new information. Studies on the so-called eighth *Stromateus* (*Liber logicus*) by Clement of Alexandria have drawn attention to the relevance of this text to the enquiry about Galen’s method, and specifically about *Dem.*⁷⁹ In 2011, one of us advanced the hypothesis that two sections in particular (β and γ of *Lib.*

74 P. Koetschet, *Abū Bakr al-Rāzī: Doutes sur Galien. Introduction, édition et commentaire* (Berlin/Boston: de Gruyter 2019); eadem, “Galien, al-Rāzī, et l’éternité du monde. Les fragments du traité *Sur la démonstration*, IV, dans *Les doutes sur Galien*,” *Arabic Sciences and Philosophy* 25 (2015), pp. 167–198.

75 S. Pines, “A Tenth Century Philosophical Correspondence,” *Proceedings of the American Academy for Jewish Research* 24 (1955), pp. 103–136.

76 See esp. M. Rashed, “Alexandre d’Aphrodise et la ‘Magna Quaestio’. Rôle et indépendance des scholies dans la tradition byzantine du corpus aristotélicien.” *Les études classiques* 63 (1995), pp. 295–351, esp. pp. 318–327.

77 Cf. R. Chiaradonna, “Le traité de Galien *Sur la démonstration* et sa postérité tardo-antique,” in R. Chiaradonna and F. Trabattini (eds.), *Physics and Philosophy of Nature in Greek Neoplatonism* (Leiden: Brill 2009), pp. 43–77, here p. 56 and n. 65.

78 Rāzī and Abū al-‘Alā’ ibn Zuhr do in fact locate Galen’s discussion of time in *Dem.* (G6 and G7); however, their statements pertain to the thirteenth book, not to the eighth, which contained the polemic against Aristotle. See below, pp. 66–67.

79 Cf. W. Ernst, *De Clementis Alexandrini Stromatum libro VIII. qui fertur* (Göttingen: Hubert 1910), pp. 11–24; F. Solmsen, “Early Christian Interest in the Theory of Demonstration,” in W. den Boer, P. G. van der Nat, C. M. J. Sicking and J. C. M. van Winden (eds.), *Romanitas et Christianitas: Studia J.H. Waszink Oblata* (Amsterdam: North-Holland 1973), pp. 281–291; T. Tieleman, *Galen and Chrysippus On the Soul: Argument and Refutation in De placitis, Books II–III* (Leiden/New York/Köln: Brill 1996), esp. pp. 20, 24–25, 30, 104, and 127; M. Havrda, “Galenus Christianus? The Doctrine of Demonstration in *Stromata* VIII and the Question of Its Source,” *Vigiliae Christianae* 65 (2011), pp. 343–375; idem, *The So-Called Eighth Stromateus by Clement of Alexandria: Early Christian Reception of Greek Scientific Methodology* (Leiden: Brill 2016), pp. 34–50.

log. = *Strom.* VIII 2.3.1–5.15.1) draw directly on *Dem.*; and a commentary on *Liber logicus*, published in 2016, added further support to this view.⁸⁰ The hypothesis has been well received.⁸¹ Another Greek source for the study of *Dem.* unknown to von Müller is the above-mentioned anonymous essay *All the kinds of syllogism*, first edited in 1899, which includes at least a reference to, and possibly also extensive material from, *Dem.*⁸²

Interpretation

Von Müller's 1895 paper is the most ambitious attempt so far to reconstruct the contents of *Dem.*, their sequence and distribution, and to grasp the overall purpose of the treatise. As far as the purpose is concerned, von Müller explains it in light of Galen's familiar story of his own education; his frustration at the failure of philosophical schools to justify their doctrines; his salvation from the Pyrrhonic ἀπορία through geometrical proof; and his desire to create, after the model of geometry, a rigorous method of inquiry applicable to medical problems.⁸³ For reconstructing the content, von Müller uses three types of source: Galen's own references and allusions to the treatise; quotations by later authors; and – most controversially perhaps – the list of works written after *Dem.*, in which, as Galen says, he “provides a broader treatment of what was discussed concisely in that work” (A9).⁸⁴

⁸⁰ The argument about these two sections is presented in Havrda, “Galenus Christianus?”; it is summarized and further complemented in idem, *The So-Called Eighth Stromateus*, pp. 34–41.

⁸¹ See, e.g., P. van der Eijk, “Galen and Early Christians on the Role of the Divine in the Causation and Treatment of Health and Disease,” *Early Christianity* 5 (2014), pp. 337–370, here p. 355 n. 47; A. Le Bouluc, “Clément d'Alexandrie,” in G. Dorival and A. Le Bouluc, *L'Abeille et l'Acier: Clément d'Alexandrie et Origène* (Paris: Les Belles Lettres 2019), pp. 13–163, here p. 127 and n. 442; T. Tieleman, “Galen's Notion of Dialectic,” in R. J. Hankinson and M. Havrda (eds.), *Galen's Epistemology: Experience, Reason, and Method in Ancient Medicine* (Cambridge: Cambridge University Press 2022), pp. 136–155, here p. 139 n. 10; R. Chiaradonna, *Ontology in Early Neoplatonism: Plotinus, Porphyry, Iamblichus* (Berlin/Boston: de Gruyter 2023), p. 126. At an international workshop dedicated to *Liber logicus*, held in Prague in April 2017 and including, among others, Jonathan Barnes, Riccardo Chiaradonna, Jim Hankinson, Katerina Ierodiakonou, and Teun Tieleman, the participants agreed that the Galen hypothesis was convincing with regard to sections β and γ. As regards the other sections of *Liber logicus*, the Galenic trace was considered less distinct.

⁸² See Barnes and Morison quoted above, p. 8.

⁸³ I. von Müller, “Über Galens Werk vom wissenschaftlichen Beweise,” *Abhandlungen der königlichen bayerischen Akademie der Wissenschaften, philosophisch-historische Klasse* 20 (1895), pp. 403–478, here pp. 414–416. Von Müller's main point of reference is *Lib. prop.* 14.1–6 (164,1–165,13 Boudon-Millot / 11, 115,21–117,16 von Müller / XIX.39–40 K). The passage immediately precedes A1, being in fact an introduction to, and advertisement of, *Dem.*

⁸⁴ Von Müller, “Über Galens Werk,” p. 416, referring to *Lib. prop.* 14.17 (167,14–16 Boudon-Millot / 11, 119,10–12 von Müller / XIX.43 K). The third source was more controversial for von Müller than it is for us. For, based on Ambrisianus Q3, which reads τῶν ἐν ἐκείνοις συντόμως εἰρημένων (“what was

Von Müller offers a reconstruction of the following books: I–V, VIII, XIII and XIV. All the testimonia available to him are incorporated into this division based on his assumptions about the structure of Galen’s exposition. One of these assumptions is that Galen expounded the theory of demonstration and demonstrative inquiry in a systematic manner, and did so in the early parts of the treatise. In fact, von Müller draws a sharp distinction between two parts of *Dem.*: one (represented by books I–V) where Galen lays the foundations of his theory of scientific knowledge, and another (starting probably with book VIII) where he tests the theory by applying it to problems that famous philosophers and doctors attempted to solve.⁸⁵ But even within the first half, von Müller places all the important elements of the doctrine in the first three books.

This explains the striking discrepancy between the length of von Müller’s analysis of books I–III, and the actual number of testimonia referring to them. Von Müller dedicates more than forty-two pages to this part of the treatise, in contrast to less than sixteen pages covering books IV–XIV.⁸⁶ This is surprising, considering how little information he had about the first three books. There is one brief reference to book one (B1) and one citation from book three (B2), and that is all. For book two, discussed by von Müller over a span of twenty pages, there is not a single testimonium! The explanation of course is that most testimonia do not have accompanying information about their specific location in the text; yet von Müller locates almost all of them in one of the first three books and weaves them – with the help of allusions and parallels in the Galenic corpus – into a coherent argument.

As noted, there are only two reliable clues to reconstructing the contents of the first three books: B1 indicates that the first book was an exhortation to method; and B2 shows that, in the third book, Galen dealt with a case of homonymy in physiology, namely with the ambiguous use of the word καρδία. Von Müller contextualizes B2 in an ingenious manner (which, as we shall see, is largely confirmed by our findings). The upshot of his argument is that, in book three, having presented the general theory of demonstration, Galen turns to the method of solving particular problems. While doing so, von Müller suggests, Galen pursues a similar line of exposition as in *PHP*, distinguishing four types of premisses – scientific, dialectical, rhetorical, and sophistic – and explaining their difference.

As far as the first book is concerned, von Müller believes that, in its exhortative part, it included a critique of those who reason without proof; an exposition of the dis-

discussed concisely in those books”), von Müller interprets the passage as referring not to *Dem.*, but rather to Galen’s commentaries, composed in his youth, on the logical works of Aristotle, Theophrastus, Eudemus, and Chrysippus, which are mentioned in the previous sentence; cf. *Lib. prop.* 14.17 (167,6–14 Boudon-Millot / 11, 119,2–18 von Müller / XIX.43 K); von Müller, “Über Galens Werk,” p. 416. However, the ms. Vlatadon 14, followed by Boudon-Millot, reads τῶν ἐν ἐκείνῃ (*scil.* παραματείῃ), thus unambiguously referring to *Dem.*

85 Von Müller, “Über Galens Werk,” pp. 467–468.

86 Von Müller, “Über Galens Werk,” pp. 417–460 (I–III); pp. 460–476 (IV–XIV).

agreement (διαφωνία) among medical schools; and the endorsement of demonstrative expertise as the capacity to recognize what is true and what is false in every doctrine.⁸⁷ In addition (and much less plausibly), von Müller proposes that, in the same book, Galen situated himself with respect to the Peripatetic tradition (cf. A24); provided an outline of the syllogistic theory; criticized syllogisms “by additional assumption” (F5); discussed possible and mixed syllogisms (F9–F12, A9); and different types of syllogisms more generally (A9); dealt with the number of syllogistic figures (F2); and identified the limits of induction (A27, A28).⁸⁸

Von Müller’s account of the second book of *Dem.* also covers a large number of topics. It starts with epistemology, encompassing the first principles and the criteria of knowledge, the axioms, the relation between reason and experience, the common notions, and scepticism. It continues with complex methodological and metaphysical issues, such as the appropriate starting points of inquiry, notional and essential definitions, division, the categories, form and substance.⁸⁹

Taken together, the first three books, as conceived by von Müller, comprise what he calls Galen’s “positive methodology” (“die positive Methodik”).⁹⁰ They are complemented by books four and five, whose reconstruction covers a mere eight pages. We know that book four dealt with the contested question of the eternity of the world (von Müller cites C1, C4, and C16). For von Müller, this is an example of an issue that cannot be solved in a strictly scientific manner, but only on the basis of plausible premisses derived from experience. The fourth book then, he argues, was an essay about the limits of knowledge, which may have also included discussions about the substance of the soul (B5) and embryology (B3) – the latter on account of the mysterious nature of the formative capacity responsible for organogenesis.⁹¹ The fifth book, which dealt with sense-perception (D1–3), is a supplement to the teaching about the criteria (which include sense-perception) and a “warning”, as von Müller puts it, against erroneous descriptions of the capacities of individual senses.⁹²

Whatever the contents of books six and seven were (we know nothing of them), the eighth book, according to von Müller, begins the second half of the treatise, which did not present any theory, but discussed significant philosophical and medical questions and the solutions to them proposed by particular thinkers. In von Müller’s view, the sequence of topics in this part is not determined by their content, but rather by the chronology of thinkers in question. In book eight, where Galen criticizes Aristotle’s definition of time (and probably also place), his opponent is Aristotle, whereas in book

⁸⁷ Von Müller, “Über Galens Werk,” pp. 417–422.

⁸⁸ Von Müller, “Über Galens Werk,” pp. 422–430.

⁸⁹ Von Müller, “Über Galens Werk,” pp. 430–451.

⁹⁰ Von Müller, “Über Galens Werk,” p. 416.

⁹¹ Von Müller, “Über Galens Werk,” pp. 460–465.

⁹² Von Müller, “Über Galens Werk,” p. 465.

thirteen, dealing with the elements and the physiology of sight (and possibly also in book fourteen, dealing with digestion), it is Asclepiades of Bithynia.⁹³

Von Müller's command of Galenic works is impressive and some of his insights about *Dem.* are enduring.⁹⁴ His article continues to be a useful resource for the study of Galen's methodology. However, his attempt to compress all the doctrinal elements into the first three books is unfounded and implausible.⁹⁵ It is unlikely for an introductory treatise addressed primarily to doctors (A8) to start with technical discussions about syllogistics and, given Galen's expansive style of writing and obsession with clarity, it is hard to believe that he would cover so many complex issues in such a small space. Indeed, he emphasizes that he has dealt with these issues "clearly and extensively" (σαφῶς τε ἅμα καὶ διὰ πολλῶν).⁹⁶ Moreover, as we shall see, new findings allow us to locate some of these discussions much later in the treatise.

Another question concerns the presence of problems whose relevance to the theory of demonstration is far from obvious (especially if the theory was supposed to be useful for medical students): the eternity of the world, time and place, the elements, vision, etc. Why are they included, why in this particular order, and how are they relevant to medicine? As we have seen, von Müller proposes that the majority of these topics (i.e. those appearing from book eight on) are test cases for the efficacy of the demonstrative method, and that they are chosen as significant questions to which particular thinkers believed to have provided an answer. The situation is different with book four, in which topics are used to illustrate the limits of scientific knowledge. Commenting on von Müller's reconstruction, Jonathan Barnes notes that "he pays too much attention to those odd items".⁹⁷ Barnes' point is that discussions of such issues as perception, time, and elements could not have been the main agenda of the later books of *Dem.* But he does not offer an alternative explanation of why they were discussed at all. In an important article on *Dem.* – the first study after von Müller to focus exclusively on this treatise – Riccardo Chiaradonna supplements Barnes' criticism with just such an explanation.⁹⁸

⁹³ Von Müller, "Über Galens Werk," pp. 467–468; for book fourteen, see p. 476.

⁹⁴ This is particularly true about the dating of *Dem.* and the contents of book 3. Also, von Müller's suggestions about the exhortatory part of the first book are entirely plausible.

⁹⁵ Cf. J. Barnes, "Galen on Logic and Therapy," in R. J. Durling and F. Kudlien (eds.), *Galen's Method of Healing: Proceedings of the 1982 International Galen Symposium* (Leiden: Brill 1991), pp. 50–102, here p. 69 n. 61; Chiaradonna, "Le traité," pp. 46–47. Chiaradonna suggests that von Müller's interpretation is due to the conventions of philosophical prose of von Müller's own time: a comprehensive theoretical exposition at the beginning being followed by a historical section or an overview of earlier theories.

⁹⁶ A27.

⁹⁷ Barnes, "Galen on Logic and Therapy," p. 69 n. 61.

⁹⁸ Chiaradonna, "Le traité."

Chiaradonna's starting point is Galen's pragmatic (use-based) approach to logic, a feature already emphasized by Barnes.⁹⁹ For Galen, logic, while constituting a part of philosophy, is a tool to be used by medicine: Galen's epistemology is an applied epistemology, the areas of its application being the study and practice of medicine.¹⁰⁰ How does this explain the presence of the "odd items" in *Dem.*? Chiaradonna agrees with von Müller that the discussion of vision, for instance, is connected to the doctrine of the criteria. However, rather than seeing it as a supplement to that doctrine, Chiaradonna regards it as a part of its exposition, carried out with particular reference to medicine, on the basis that natural criteria like visual perception are the foundations of scientific knowledge in medicine.¹⁰¹ The questions of the eternity of the world or of the substance of the soul serve the purpose of distinguishing between problems that allow for scientific demonstration and those that do not.¹⁰² Here, Chiaradonna again agrees with von Müller but emphasizes the functionality of these discussions with regard to scientific practice. Likewise, Galen's polemic about time draws attention to the limits of definitions, time being an example of an item that cannot be defined in a strictly scientific manner.¹⁰³ However, if Galen's concern was medicine, we may ask why he turns to more general issues of natural philosophy. Chiaradonna responds that some of these issues (e.g. the theory of the elements) are in fact directly relevant to medicine, whereas others (like the ones mentioned earlier) are useful for "clarifying epistemological problems inherent to medicine".¹⁰⁴

Chiaradonna presents a more coherent account of the various issues discussed in *Dem.* than von Müller and integrates them more closely with the agenda of the treatise. Other proposals have been made about the particular choice of these topics, not conflicting with Chiaradonna's explanations, but adding more nuance to them. Referring to the part about the elements in book thirteen, Benjamin Morison notes that *Dem.* "did not just discuss logical theory in the narrow sense of how to construct deductions, but rather discussed which axioms are the correct ones for science".¹⁰⁵ According to this

99 J. Barnes, "Galen and the Utility of Logic," in J. Kollesch and D. Nickel (eds.), *Galen und das hellenistische Erbe: Verhandlungen des IV. Internationalen Galen-Symposiums* (Stuttgart: Franz Steiner 1993), pp. 33–52.

100 Chiaradonna, "Le traité," pp. 49–52.

101 Chiaradonna, "Le traité," pp. 52–53. We might object that this does not pertain specifically to medicine; nor is the interest in perception peculiar to the pragmatic approach to logic. So the principle of applied epistemology does not really help to explain the presence of this particular issue. Moreover, Chiaradonna does not distinguish between the discussions of vision in books five and thirteen, whose aims were probably different. Nonetheless, in our view his argument that the discussion in book five is part of the exposition about the criteria is convincing.

102 Chiaradonna, "Le traité," p. 54.

103 Chiaradonna, "Le traité," pp. 60–62.

104 Chiaradonna, "Le traité," p. 59 n. 75.

105 B. Morison, "Logic," in R. J. Hankinson (ed.), *Cambridge Companion to Galen* (Cambridge: Cambridge University Press 2008), pp. 66–115, here p. 74.

view, then, Galen's focus on (at least) some of the issues of natural philosophy could be due to his interest in the principles. Finally, in a paper published in 2015, one of us argued that Galen's choice of topics, made for didactic and training purposes, was largely traditional and could have been influenced by a sceptic source similar to the one used by Sextus Empiricus. This could be explained by the anti-sceptic agenda of the treatise and its aim to teach doctors, using illustrative examples, how to hold onto plain phenomena and resist the snares of false reasoning, whether it be sceptic or dogmatic.¹⁰⁶ We will further refine these suggestions in the next two chapters.

106 M. Havrda, "The Purpose of Galen's treatise *On Demonstration*," *Early Science and Medicine* 20 (2015), pp. 265–287.

3 Title, date, purpose, audience, and genre

Title

The treatise was called *περὶ ἀποδείξεως*¹⁰⁷ and so referred to as *τὰ περὶ ἀποδείξεως*, where the plural denotes *ὑπομνήματα* or *βιβλία* (both referring to “books” in the sense of divisions of the treatise).¹⁰⁸ Alternatively, Galen inserts the definite article in the title (D1) and refers to the work by its content as: *ἡ περὶ τῆς ἀποδείξεως πραγματεία* (A1, A6, A8, A9, A12, A14, A17, D3, F5, G27); *τὰ περὶ τῆς ἀποδείξεως ὑπομνήματα* (A16, A22, A24, A28, G1) or *βιβλία* (A17); or *αἱ περὶ τῆς ἀποδείξεως μέθοδοι* (A21, where *μέθοδοι* probably means “inquiries”). Other forms of reference include: *τὰ περὶ τῶν ἀποδείξεων ὑπομνήματα* (A13: “books on demonstrations”); *τὰ ὑπὲρ ἀποδείξεως (ὑπομνήματα)* (A15, A18c: “books about demonstration”); *αἱ ἀποδεικτικαὶ μέθοδοι* (A7: “demonstrative methods/inquiries”); or *ἡ λογικὴ θεωρία* (A23: “the study of reasoning”). Later Greek sources never use the original title, referring to *Dem.* rather as *οἱ ἀποδεικτικοὶ λόγοι* (B5) or, more commonly, *ἡ ἀποδεικτικὴ (πραγματεία)* (B2, C4, E1a, F4); the latter description is already found in Galen (A5).

The name *περὶ ἀποδείξεως* was traditional, or understood as such. Galen uses it as an alternative title of *Posterior analytics*, one that is closer to Aristotle’s own description of the subject matter of that work.¹⁰⁹ Galen refers to his own *περὶ ἀποδείξεως* as a place where, as he puts it, he explained “clearly and extensively” the statements that “the ancients” (*οἱ παλαιοὶ*) made in “the [books] on demonstration” (*ἐν τοῖς περὶ ἀποδείξεως*) (A25). It is clear from the context (A24) that “the ancients” are Theophrastus and Aristotle (mentioned in this order) and their “books on demonstration” are their respective

¹⁰⁷ See esp. A4, A26, D1, D2, G2, G25, and G26.

¹⁰⁸ A16, A18, A18a, A18b, A25, A27, B1, B3, F6, and F9. When referring to a multivolume treatise, Galen typically describes it in the plural, each individual volume being called *ὑπόμνημα*, *βιβλίον*, *γράμμα*, *σύγγραμμα*, *λόγος*, etc. The singular description of a multivolume treatise is usually *πραγματεία*. Thus it is somewhat surprising that, on two occasions (A19, C1), Galen refers to *Dem.* by a singular phrase *ἐν τῷ περὶ ἀποδείξεως*, where the referent is masculine or neuter, presumably *λόγος* or *γράμμα*. One would expect that this form would be accompanied by a reference to a specific volume (as in D2, G2, etc).

¹⁰⁹ *PHP* II.3.12 (112,7 De Lacy / V.222 K): *ἐν δὲ τοῖς περὶ ἀποδείξεως, ἃ δὴ καὶ δευτέρα ἀναλυτικὰ ἐπιγράγουσι*. See also *Diff. puls.* IV.17 (VIII.765 K). For Aristotle, see *Lib. prop.* 14.12 (Boudon-Millot 166,11–15 / 11, XIX.42 K), referring probably to *An. pr.* I.4, 25b26–31. That the names “Prior” and “Posterior” (common in Alexander of Aphrodisias) were not yet established in Galen’s time and place is evidenced by his references to *An. post.* not as *ὑστερα* (“posterior”), but as *δευτερα* (“second”). In his commentary on *Prior analytics*, Alexander uses the phrase *περὶ ἀποδείξεως* to distinguish the contents of *An. post.* from *An. pr.*, the latter being *περὶ συλλογισμοῦ*. See Alexander of Aphrodisias, *In An. pr.* I, prooem. (6,14–15 and 32–34 Wallies) *et passim*. Nothing suggests that *περὶ ἀποδείξεως* was also used as a title. However, in his commentary on *Metaphysics*, he does refer to *An. post.* with the phrase *ἐν τοῖς περὶ ἀποδείξεως* as if it were a title. See Alexander of Aphrodisias, *In Met.* Γ.3 (266,22 and 268,3 Hayduck). The standard reference to *An. post.* in the later Platonist commentary tradition is *τὰ ἀποδεικτικά*.

Posterior analytics. Hence by calling the treatise *περὶ ἀποδείξεως*, Galen situates it in the same tradition.

Date

There is no explicit statement in Galen about when he wrote the treatise. But there are several indications pointing to an early period of his career. First of all, it must have been written before the first book of *The therapeutic method* (*MM*); and – more importantly – it was almost certainly written prior to the second book of *The doctrines of Hippocrates and Plato* (*PHP*). This is not only because the latter two texts refer to *Dem.* – cross-references are not a secure indication of chronology, as they could have been added later by Galen’s own hand –,¹¹⁰ but also because they presuppose a general description of the method by which they proceed in tackling particular issues, and there is no doubt that such a description was provided by *Dem.*¹¹¹ Now the first six books of *PHP* were composed during Galen’s first stay in Rome, which lasted from 162 to 166.¹¹² (The first six books of *MM* appeared about a decade later.)¹¹³ So (unless a massive revision of *PHP* II took place in later years) *Dem.* must have been written either in the same period or earlier. But there are reasons to think that it does not belong among the writings composed during Galen’s first stay in Rome. In *His own books* Galen gives a detailed report of his literary output during this time, and it would be strange if he failed to mention a treatise of the size and importance of *Dem.*¹¹⁴ Furthermore, as von Müller points out, in *PHP* II–III Galen refers four times to *The correctness of names*, a lost piece consisting of three books; but Galen tells us (A9) that *The correctness of names* belongs among works written after *Dem.*¹¹⁵ All in all, it seems – as von Müller concludes and as we are convinced – that *Dem.* was composed before Galen’s first arrival to Rome; but

110 There are several instances showing that, while revising his earlier works, Galen added references to treatises written later. See J. Ilberg, “Über die Schriftstellerei des Klaudios Galenos,” *Rheinisches Museum für Philologie*, N.F. 44 (1889), pp. 207–239, here pp. 217–218; P. De Lacy, “Introduction,” in *Galen De placitis Hippocratis et Platonis I–V* (Berlin: Akademie Verlag 2005 [1977]), pp. 12–60, here pp. 47–48.

111 See A21, A24, A25, and A26 (for *PHP* II); and A15, A16, A22, and A23 (for *MM* I).

112 See De Lacy, “Introduction,” pp. 46–47, referring to Ilberg, “Über die Schriftstellerei,” p. 228. For the dates of Galen’s first visit to Rome, see also V. Boudon-Millot, *Galien de Pergame: Un médecin grec à Rome* (Paris: Les Belles Lettres 2012), pp. 101–102 and 121–122.

113 See Ilberg, “Über die Schriftstellerei,” p. 229; V. Lorusso, “Introduzione,” in: V. Lorusso (ed.), *Galen: Metodo terapeutico libri I–II* (Roma: Edizioni di Storia e Letteratura 2018), pp. xxi–lxxiii, here p. lxix; Boudon-Millot, *Galien de Pergame*, p. 364.

114 *Lib. prop.* 1.1–18 (136,25–140,8 Boudon-Millot / 93,19–97,2 von Müller / XIX.11–16 K); I. von Müller, “Über Galens Werk vom wissenschaftlichen Beweis,” *Abhandlungen der königlichen bayerischen Akademie der Wissenschaften, philosophisch-historische Klasse* 20 (1895), pp. 403–478, here p. 412.

115 Von Müller, “Über Galens Werk,” p. 412. As mentioned above, cross-references are not reliable indicators of chronology; nevertheless, in this case too, they are deeply integrated into the text. In particular,

probably not long before he left his post as a doctor for gladiators in Pergamum, held between 157 and 161.¹¹⁶ If this is correct he wrote the treatise around the age of thirty.¹¹⁷

Purpose

We learn the most about the purpose and intended audience of *Dem.* from Galen's autobiographical bibliographies. In *His own books* (A1) Galen mentions *Dem.* in the chapter dealing with "books useful for demonstrations". The chapter starts with an autobiographical sketch where Galen describes his quest for a method "by learning which, when someone else presents a demonstrative argument, we could accurately recognize whether it really is one, or whether, as a counterfeit coin, it resembles the genuine, but is in fact fake. At the same time we would be able to find a solution of everything sought by applying a certain procedure."¹¹⁸ Galen claims that none of the famous Stoics and Peripatetics to which he entrusted himself "at that time" (κατ' ἐκεῖνον χρόνον) was able to offer anything useful in that regard.¹¹⁹ What saved him from the Pyrrhonian ἀπορία, then, were mathematical disciplines and, in particular, their application in astronomy (predication of eclipses) and architecture (construction of sun dials and water clocks).¹²⁰ This familiar story, whether or not it resembles anything in Galen's life, is designed pri-

Galen's famous critique of Chrysippus' etymology of ἐγώ seems to draw heavily on this treatise: see esp. *PHP* II.2.7 (104,20–22 De Lacy / V.214 K).

116 Von Müller, "Über Galens Werk," pp. 412–414.

117 Galen was born in August/September 129; see V. Nutton, "The Chronology of Galen's Early Career," *The Classical Quarterly* 23 (1973), pp. 158–171, here pp. 159–161. The traditional dating of *Dem.* has been questioned by J. Jouanna, "Médecine et philosophie: la réception de la science aristotélicienne chez Galien," in Y. Lehman (ed.), *Aristoteles Romanus: La réception de la science aristotélicienne dans l'Empire gréco-romain* (Turnhout: Brepols 2013), pp. 159–181, here pp. 171–172. Jouanna finds it hard to believe that a treatise to which Galen later attached so much wisdom and importance would have been composed at such a young age. Unfortunately, Jouanna does not engage with (or cite) von Müller's arguments. The objection based on youth is perhaps not too serious. Galen attended philosophical lectures from the age of fourteen; and, irrespective of the date of *Dem.*, he wrote a number of philosophical works in his twenties, and some even earlier; see *Lib. prop.* 14.16 (167,6–14 Boudon-Millot / 11, XIX.43 K). See below, p. 27. Another potential objection against the early date (not raised by anyone to our knowledge) is our testimonium C15a, Rāzī's quotation from *Dem.* referring to *De usu partium* (probably book XVII). *UP* (except for the first book) was written early in Galen's second period in Rome, which started in 169. See Boudon-Millot, *Galien de Pergame*, p. 372. Perhaps some parts of *Dem.* were finished only at that time. But a better explanation is that Galen added the reference as he revised his earlier work; see above, p. 25 n. 110.

118 *Lib. prop.* 14.2 (164,9–16 Boudon-Millot / 11, XIX.39 K).

119 It is not clear what period of his life Galen has in mind (assuming that his narrative is not simply a literary fiction); he could mean the early years of his philosophical formation, i.e. between the fourteenth and sixteenth years of age. See Boudon-Millot, *Galien de Pergame*, pp. 35–44.

120 *Lib. prop.* 14.3–5 (164,14–165,7 Boudon-Millot / 11, XIX.39–40 K).

marily to introduce the notion of demonstration and to promote the treatise written on this issue. “Therefore,” Galen concludes, “I advise anyone who wants to be trained (ἀσκηθῆναι) in linear demonstrations to be educated in them and then read my treatise *On demonstration*.”¹²¹

Of course, *Dem.* was neither about astronomy nor architecture and the connection between these disciplines and the agenda of *Dem.* is not explained. Yet it is at least hinted at in the immediately following lines where Galen lists a number of thematically related commentaries he wrote to “exercise himself” (γυμνάζων ἑμαυτόν): three volumes on Aristotle’s *De interpretatione*; eight on *Prior analytics* (four on each book); eleven on *Posterior analytics* (six on the first book and five on the second); six on Theophrastus’ *On affirmation and negation*; and a commentary on Eudemos (of Rhodes)’s *On expression*.¹²² The structure of the chapter suggests that these commentaries were written before *Dem.* For, in the next section Galen goes further back in the past and mentions a commentary on Chrysippus’ syllogistics he composed “while still a child” (ἔτι παῖς ὢν),¹²³ and many other essays made by him as a “youngster” (μειράκιον).¹²⁴ Then he turns to works written after *Dem.*¹²⁵ Apparently, then, *Dem.* is the center around which the chapter is organized, first listing works which precede it, and then those which follow it. Now Galen tells us that, when writing his commentaries on Aristotle, Theophrastus, and Eudemos, he exercised himself. When this is read in light of

121 *Lib. prop.* 14.8 (165,19–23 Boudon-Millot / 11, XIX.41 K) = A1.

122 *Lib. prop.* 14.11–14 (166,8–22 Boudon-Millot / 11, XIX.41–42 K).

123 This was probably after Galen turned fourteen. See *Lib. prop.* 14.16 (167,6–10 Boudon-Millot / 11, XIX.43 K), on writing the commentary when he started attending lectures on Stoic logic; and *Aff. dig.* 8.3 (28,9–11 De Boer / V.41 K), where Galen specifies that he started attending these lectures “having completed the fourteenth year” (ὑποπληρώσας τετταρεσκαιδέκατον ἔτος). See also *Ord. lib. prop.* 4.4 (99,24 Boudon-Millot / XIX.88 K): “...when we were in our fifteenth year” (ἡνίκα πεντεκαιδέκατον ἔτος ἤγομεν). The word παῖς normally refers to a boy until the age of fourteen; see P. Singer, *Time for the Ancients: Measurement, Theory, Experience* (Berlin: de Gruyter 2022), pp. 46–51, esp. the table on p. 50. This could mean one of three things: (a) until the completion of the thirteenth year (i.e. until one turns fourteen by inclusive reckoning); (b) until the completion of the fourteenth year (i.e. until one turns fourteen by exclusive reckoning); (c) until the completion of the fifteenth year (i.e. including the year when one is fourteen by exclusive reckoning). For inclusive vs. exclusive reckoning of age, see T. G. Parkin, *Old Age in the Roman World* (Baltimore/London: John Hopkins University Press 2003), pp. 26–35. Galen apparently uses the word παῖς in the last mentioned sense; see also Boudon-Millot, *Galien de Pergame*, p. 40.

124 *Lib. prop.* 14.16 (167,6–13 Boudon-Millot / 11, XIX.43 K). It is not clear whether these ὑπομνήματα (which may refer to commentaries, but also to any other texts) include those mentioned earlier or not. The upper age limit of μειράκιον is not certain; in the Hippocratic traditon, it is the third hebdomas, i.e. until twenty-one. But Galen is never specific about this. See Singer, *Time for the Ancients*, pp. 35–66, with the tables on pp. 42 and 50. For the semantic range of ὑπομνήματα see P. van der Eijk, “Galen and the Scientific Treatise: A Case Study of ‘Mixtures’,” in M. Asper and A.-M. Kanthak (eds.), *Writing Science: Medical and Mathematical Authorship in Ancient Greece* (Berlin/Boston: de Gruyter 2013), pp. 145–175, here p. 149.

125 *Lib. prop.* 14.18–23 (167,14–169,12 Boudon-Millot / 11, XIX.43–45 K) = A9.

the story about the quest for method, a picture emerges of a student who approaches ancient Peripatetic texts about logic with one goal in mind: to find a connecting link between geometrical proof and philosophy, a link he has been missing in his philosophical education. By reading and commenting upon these texts, he “exercises himself” presumably in the sense that he critically engages with them and learns to articulate his own view with their help. In other words, he rediscovers ancient Peripatetic logic from the methodological point of view, measuring it by the ideal of geometric proof.

Now *Dem.* was also conceived as an exercise; but, unlike the commentaries (not meant for publication, as Galen emphasizes), it was conceived as an exercise for *others*. Galen consistently describes the proper way of studying *Dem.* as training.¹²⁶ As he puts it in the *Order of his own books*, if a reader not only learns the methods expounded in *Dem.* but also trains himself in them, “he will discover the truth in every instance of the things [under inquiry]” (A4). Thus the methods taught in *Dem.* are the methods of discovery, and the purpose of the study is to learn how to apply them to particular issues.¹²⁷ This is no doubt part of the reason why Galen deals with a number of natural-philosophical problems in *Dem.*: they serve as training material, as examples on which the method, or particular aspects of it, are supposed to be not only understood but also practised. It does not mean, however, that all these problems must be successfully solved – or even solvable. We have already seen that some of these issues, e.g. the question of the eternity of the world, cannot be solved demonstratively in Galen’s view. Here is how Abū al-‘Alā’ ibn Zuhr explains the presence of these topics in the treatise (C11):

For Galen mentions in the treatise *On demonstration* methods of demonstration, using as examples what his predecessors Plato and Aristotle said on topics where a path to perfect certainty has not been found, because it is reasonable to be guided by what they have said. Moreover, since he taught us how demonstrative premisses should be acquired and how to construct syllogisms that draw their conclusion correctly, it is up to him to start from any example that suits him, and it is up to the one who learns this general method to contemplate if this example conforms to the rules or whether it is open to doubt.¹²⁸

¹²⁶ See A4, A6, A7, A13, A27, using the cognates of γυμνάζω. Jaap Mansfeld interestingly suggests that Galen wrote *Dem.* in his youth “to educate himself”, but later came to expect that the treatise “would help the best physicians of the future to educate themselves as well”; see J. Mansfeld, *Prolegomena: Questions to be Settled Before the Study of an Author, or a Text* (Leiden: Brill 1994), p. 126. However, it follows from A27 that Galen conceived of *Dem.* as a training for others from the start.

¹²⁷ This is emphasized by R. Chiaradonna, “Le traité de Galien *Sur la démonstration* et sa postérité tardo-antique,” in R. Chiaradonna and F. Trabattoni (eds.), *Physics and Philosophy of Nature in Greek Neoplatonism* (Leiden/Boston: Brill 2009), pp. 43–77; see above, p. 22.

¹²⁸ Abū al-‘Alā’ ibn Zuhr, *Solution to the Doubts about Galen*, ed. Koetschet–Rajab (in preparation), fol. 3a, ll. 18–23.

Importantly, in accordance with our interpretation, Abū al-‘Alā’ describes these topics as examples (Ar. *miṭāl*). Further, he points out that their purpose is not only to demonstrate the successful application of the method, but also to teach the students how to distinguish between cases to which the method can be applied and those to which it cannot. In other words, they serve to develop their independent judgment.

However, Galen’s choice of topics may have been influenced by yet another factor. At least some of them (and the majority of those about which we are informed) belong among the famously controversial issues around which various collections of philosophical δόξαι were organized. This is true of the questions of whether the embryo is an animal; in which part of the body the ruling faculty of the soul is; what the substance of the soul is (all probably discussed in books two and three);¹²⁹ whether the world is generated (book four);¹³⁰ issues like time, place, and motion (dealt with in book eight and possibly nine);¹³¹ the elements and the causes of vision (discussed in book thirteen).¹³² It seems that Galen chose these topics precisely because they were well-known, controversial, and encrusted by batteries of arguments supporting various opinions. This provided him with enough material for a critical assessment of arguments (an important part of the demonstrative expertise, as we have seen); and at least in some cases an opportunity to test the strength of the demonstrative method in resolving these issues.¹³³ Individual cases will be discussed in the next chapter.

Intended audience

In the *Order of his own books* Galen also provides clear indications about his intended audience. This short auto-bibliographic essay is addressed to Eugenianus, a doctor and most probably one of Galen’s students, who is also the addressee of the second part

129 Aët. IV.3 (the substance of the soul), IV.5 (the location of the ruling part); V.15 (whether the embryo is an animal).

130 See Aët. II.4.

131 See Aët. I.19 (place), I.21–22 (time), I.23 (motion); Sextus, *M.* X.1–36 (place); 37–168 (motion); time (169–247). However, Galen probably did not deal with motion as such but rather in relation to the question of whether the prime mover is unmoved. In addition, his discussions of these issues seem to be focused exclusively on Aristotle’s *Physics*.

132 Aët. I.3 (principles and elements); IV.13 (how we see); Sextus, *M.* X.310–318 (elements).

133 For Galen’s use of doxographic sources, see T. Tieleman, “Galen and Doxography,” in J. Mansfeld and D. T. Runia (eds.), *Aetiana IV: Papers of the Melbourne Colloquium on Ancient Doxography* (Leiden/Boston: Brill 2018), pp. 453–472, with references to the earlier works by Jaap Mansfeld and Teun Tieleman *ibid.*, pp. 453–454 n. 1. However, the importance of this type of literature for Galen should not be exaggerated; he is primarily dealing with arguments studied first-hand in the original sources, not with textbook opinions. In his choice of topics Galen could have been influenced by a sceptic source (a predecessor of Sextus); see Galen, *Di. dec.* I.5 (IX.794 K); M. Havrda, “The Purpose of Galen’s treatise *On Demonstration*,” *Early Science and Medicine* 20 (2015), pp. 265–287, here p. 279 and n. 62.

of *The therapeutic method*.¹³⁴ Galen proposes two starting points for the study of his medical works, one being *On schools* (*De sectis*), followed by other texts subtitled “for beginners” (τοῖς εἰσαγομένοις); and the other the lost *On the best school*, followed by *Dem.* The latter route is intended for “those who are both naturally intelligent and disciples of truth” (ὅσοι καὶ φύσει συνετοὶ καὶ ἀληθείας ἐταῖροι) and who want to become ἀποδεικτικοί, “skilled in demonstration”.¹³⁵ These include specialists in medicine like Eugenianus himself, who are intelligent enough to attain “precise knowledge of things”, rather than relying on correct opinion based on Galen’s reputation.¹³⁶ However, Galen clearly has other readers in mind as well. Whereas *De sectis* is about *medical* schools, the treatise *On the best school* had a more general agenda: its aim was not to praise any particular school of thought, whether medical or philosophical, but “only to indicate what method one might use to construct (ἢ τις ἂν ... συστήσῃαιτο) the best school, whether of the medical, philosophical or any other art”.¹³⁷ So the treatise was supposed to be useful not only for doctors, but for specialists in any field, including philosophy. Likewise, it was supposed to provide a general rule for the criticism of any established school of thought: “I have said and shown in that work ... that, whoever wishes to be a fair judge of schools, has to become an expert on demonstration first.”¹³⁸ Here, too, the word “school” (αἵρεσις) is not limited to medicine but includes philosophy or any other discipline. This treatise, then, is followed by *Dem.*, whose scope is equally broad:

One will do well if he wishes to read these books (*sc. On the best school*) first of all; and if, having been persuaded by them, he wants to become skilled in demonstration before embarking on the study of *all the schools* and making a judgement about them, then he has the treatise written by me, the one *On demonstration*.¹³⁹

134 For Eugenianus being a doctor, see esp. *Ord. lib. prop.* 3.4 (99,13–14 Boudon-Millot / XIX.88 K); S. P. Mattern, *Galen and the Rhetoric of Healing* (Baltimore: John Hopkins University Press 2008), p. 20. See further P. N. Singer, “Galen’s Pathological Soul: Diagnosis and Therapy in Ethical and Medical Texts and Contexts,” in C. Thumiger and P.N. Singer (eds.), *Mental Illness in Ancient Medicine: From Celsus to Paul of Aegina* (Leiden: Brill 2018), pp. 381–420, here p. 414 and n. 56; for Galen’s intended audience more generally, see the bibliography *ibid.* p. 413 n. 51. For the motif of writing at the request of friends, see J. König, “Conventions of Preparatory Self-Presentation in Galen’s *On the Order of My Own Books*,” in C. Gill, T. Whitmarsh, and J. Wilkins (eds.), *Galen and the World of Knowledge* (Cambridge: Cambridge University Press 2009), pp. 35–58.

135 *Ord. lib. prop.* 2.1, 2.3 (91,13–15 and 92,4–5 Boudon-Millot / XIX.83 K), and 1.12 (91,1–2 Boudon-Millot / XIX.82 K) = A4.

136 *Ord. lib. prop.* 3.4 (99,13–18 Boudon-Millot / XIX.88 K) and 2.2–3 (91,15–92,4 Boudon-Millot; XIX.83 K). For the two orders of study, see Mansfeld, *Prolegomena*, pp. 117–126.

137 *Ord. lib. prop.* 1.6 (89,18–20 Boudon-Millot / XIX.81 K). The word “construction” (σύστασις) refers to the way a particular art holds together as a system of thoughts and practices; to “construct” an art then means either to produce an art as a system or, more likely, to understand it as such from its principles; see e.g. Galen, *CAM* prooem. 4–9 (54,14–56,17 Fortuna / I.225–227 K).

138 *Ord. lib. prop.* 1.7 (89,21–90,1 Boudon-Millot / XIX.81 K).

139 *Ord. lib. prop.* 1.12–2.1 (90,23–91,4 Boudon-Millot / XIX.82 K) = A4.

Later on, Galen mentions works that are no longer suitable for medical students but for “those engaged in philosophy” (ὄσοι φιλοσοφία σχολάζουσι).¹⁴⁰ These works include those dealing with philosophical issues listed in *His own books*.¹⁴¹ According to Galen, this purely philosophical part of his œuvre should also be studied after *Dem.*¹⁴² It follows that he regards *Dem.* as an introduction not only to medicine but also to philosophy.

Genre

According to Galen, then, *Dem.* was an introductory treatise; but it was quite unlike other works he wrote for beginners.¹⁴³ The latter are concise and systematic, providing the reader with a clear and memorable overview of a given topic, usually a summary of the knowledge achieved to date, without polemic or argumentation.¹⁴⁴ By its length and complexity, *Dem.* rather resembled Galen’s writings for advanced readers (what we might call “scientific treatises”), often consisting of multiple volumes, in which great care is taken to justify every step of the argument, but which also contain his characteristic polemics and digressions.¹⁴⁵ However, *Dem.* was probably less coherent than, for example, *The therapeutic method*, *The use of parts*, or *The power of simple drugs*, since it dealt with a number of disparate issues, whose selection and arrangement seems more or less accidental. Of Galen’s extant writings, *PHP* appears to be the closest to *Dem.* in this respect.¹⁴⁶ Another feature that the two works must have had in common was the extensive engagement with philosophical material, approached in a largely polemical manner. To use a popular but vague designation, both writings may be described as

¹⁴⁰ *Ord. lib. prop.* 4.2 (99,15–16 Boudon-Millot / XIX.88 K).

¹⁴¹ See *Ord. lib. prop.* 4.7 (100,17–20 Boudon-Millot / XIX.89 K), referring to *Lib. prop.*

¹⁴² *Ord. lib. prop.* 4.7 (100,16–17 Boudon-Millot / XIX.89 K).

¹⁴³ For the list of works “for beginners” see *Ord. lib. prop.* 2.4 (92,7–3 Boudon-Millot / XIX.84 K). For Galen’s introductory works, see V. Boudon, “Les œuvres de Galien pour les débutants (‘De sectis’, ‘De pulsibus ad tirones’, ‘De ossibus ad tirones’, ‘Ad Glauconem de methodo medendi’ et ‘Ars medica’): médecine et pédagogie au II^e s. ap. J.-C.,” in W. Haase (ed.), *Aufstieg und Niedergang der Römischen Welt II.37.2: Wissenschaften (Medizin und Biologie [Forts.])* (Berlin/New York: de Gruyter 1994), pp. 1421–1467.

¹⁴⁴ See C. Petit, “Galien et le discours de la méthode. Rhétorique(s) médicale(s) à l’époque romaine (Ier-IIe siècle de notre ère),” in J. Coste, D. Jacquart, and J. Pigeaud (eds.), *La rhétorique médicale à travers les siècles : actes du colloque international de Paris, 9 et 10 octobre 2008* (Droz: Paris, 2013), pp. 49–75, here pp. 66–67; eadem, *Galien de Pergame ou la rhétorique de la Providence: Médecine, littérature et pouvoir à Rome* (Leiden: Brill 2018), p. 33. The description does not apply to *De sectis*, except for its brevity, clarity, and simplicity of style, praised already by Photius; see Petit, *Galien de Pergame*, p. 15.

¹⁴⁵ For the style of Galen’s scientific prose see esp. van der Eijk, “Galen and the Scientific Treatise”; Petit, *Galien de Pergame*.

¹⁴⁶ For the order of composition in Galen’s major treatises, see the splendid overview by R. Flemming, “Galen’s Imperial Order of Knowledge,” in J. König and T. Whitmarsh (eds.), *Ordering Knowledge in the Roman Empire* (Cambridge: Cambridge University Press 2007), pp. 241–277; for *PHP* see *ibid.*, pp. 251–252.

philosophical miscellanies.¹⁴⁷ Both were loosely structured discussions dealing with a variety of (mainly philosophical) sources from the perspective of an overarching agenda: in *PHP*, to prove that the most important doctrines of Hippocrates and Plato were in agreement, and to confirm them with scientific argument; in *Dem.*, the agenda was more general, focusing on the universal method of inquiry and proof. Our testimonia do in fact indicate that there was significant overlap between *PHP* VII and *Dem.* XIII, and there was also some degree of overlap between *PHP* II and *Dem.* III, and between *PHP* VII and *Dem.* V. Reading these books of *PHP* probably brings us as close to *Dem.* as any Galenic treatise, although certain methodological issues, such as the distinction between four kinds of premisses, were probably discussed at much greater length in *Dem.* than they were in *PHP*.

Another indicator of the genre of *Dem.* is arguably the *Liber logicus* by Clement of Alexandria. The parts selected as B6* and B7* give us precisely what we would expect of an introduction to a philosophical topic, whose aim is not just to present a summary of knowledge, but to bring the reader to an understanding of the subject matter in successive steps. It starts with a distinction between the meaning of the name by which the thing proposed for inquiry is called, the existence of the thing signified, and the substance of that thing, and applies it to the object of the present διδασκαλία, namely, ἀπόδειξις (“demonstration”).¹⁴⁸ The notion of a proper order (τάξις) is emphasized in this connection, just as it is in other places of Galen’s works where the same successive steps of inquiry or teaching are being described.¹⁴⁹ The background, of course, is Aristotelian.¹⁵⁰ The argument is accompanied by illustrative examples.¹⁵¹ Its aim is not only to explain how things are, but also to provide guidelines for a particular practice, which is to investigate a problem and find its solution. This is again shown by concrete examples, one of which is discussed in detail in B7*.¹⁵² At one point the argument imitates a real-life exchange with an opponent. Two types of conversation are considered: a dialogue in the form of questions and answers (κατ’ ἐρώτησιν τε και ἀπόκρισιν) and then, when it fails (because the opponent refuses to cooperate, exposing himself as a sophist), an

147 For scientific miscellanism in Galen’s time see J. König, *Greek Literature in the Roman Empire* (London etc.: Bloomsbury 2009), pp. 66–76. Although König includes Galen in the chapter on “Science and Miscellanism”, he does not describe him as a miscellanist himself; however, works like *PHP* arguably have some features in common with this manner of writing. See also König, “Conventions,” pp. 35–40.

148 Clement of Alexandria, *Lib. log.* (= *Strom.* VIII) 2.3.3–4 and 3.4.3–5.1 (81,17–24 and 82,2–14 Stählin–Havrda) = B6*[2] and [4].

149 See M. Havrda, *The So-Called Eighth Stromateus by Clement of Alexandria: Early Christian Reception of Greek Scientific Methodology* (Leiden: Brill 2016), p. 151, on *Lib. log.* (= *Strom.* VIII) 2.3.4 (81,23f. Stählin–Havrda).

150 See Havrda, *The So-Called Eighth Stromateus*, pp. 149–150.

151 See B6*[4], on the definition of the Sun; B6*[5], on the meaning of ἄνθρωπος.

152 See Clement of Alexandria, *Lib. log.* (= *Strom.* VIII) 4.9.7–13.8 (85,14–88,16 Stählin–Havrda) = B7*[3–10], on whether the embryo is an animal or not.

exposition (κατὰ διέξοδον), which takes into account and preempts reasonable objections.¹⁵³ Even if these fragments do not come directly from *Dem.*, they are representative of the type of didactic prose that must have characterized *Dem.*

¹⁵³ *Lib. log.* (= *Strom.* VIII) 4.11.4 (86,27–29 Stählin–Havrda) = B7*[7]. For parallels see Havrda, *The So-Called Eighth Stromateus*, p. 189, on 86,28f.

4 Galen's *On demonstration*: Reconstruction of the contents

New material gathered since von Müller's pioneering study allows us to revisit the question of the thematic structure of *Dem.* and the contents of each book. This chapter summarizes the results of our investigations in the hope that we will be able to replace von Müller's reconstruction of the whole of Galen's work with an updated picture that will last at least until new discoveries lead to further additions, refinements, or corrections. What, then, do we know about the contents of individual books?

The starting-points of the puzzle are, of course, the testimonia that explicitly mention the number of the cited book. The majority of these belong to books IV and XIII, both of which are extensively quoted by Rāzī and Abū al-'Alā' ibn Zuhr.¹⁵⁴ As for the rest, we have one reference to book I (B1), one to book III (B2), two to book V (D1 and D2), one to book VIII (E1a), two to book IX (E8 and F1), one to book XI (F3), one to book XII (F7), and two to book XIV (G30 and G31). Based on this, a few other pieces can be put into place, some with certainty, others according to a reasoned estimate. The resulting picture according to our current state of knowledge is as follows.

The first three books

Von Müller describes the first book as written in the tone of a λόγος προτρεπτικός. It was not, he thinks, an exhortation to arts and sciences (as the extant fragment of Galen's *Protrepticus* is), but "an invitation to become acquainted with the rules of scientific thought and to become practised in them".¹⁵⁵ This corresponds with Galen's note that, in the first book of *Dem.*, he "encouraged (παρεκάλουν) anyone who attempts to give a demonstration of anything (ὅστις ὀτιοῦν ἀποδεικνύειν ἐπιχειρεῖ) to train themselves in this method first" (B1).¹⁵⁶ This indicates that his targeted audience are people of a rationalist persuasion, rather than, for example, the Empiricists, of whom it could hardly be said that they attempt to give a demonstration of anything.¹⁵⁷ In the first book, then, Galen encouraged these people to train themselves in methodology. While doing so, he

154 Galen refers to book XIII by number five times: G1, G2, G10, G25, and G26. Rāzī does so once (G3), but then he specifies his citations as coming also from "this book", "further on", etc. As for the fourth book, it is explicitly mentioned by Philoponus (C4), by Rāzī (C9), and by Abū al-'Alā' ibn Zuhr (C3).

155 I. von Müller, "Über Galens Werk vom wissenschaftlichen Beweis," *Abhandlungen der königlichen bayerischen Akademie der Wissenschaften, philosophisch-historische Klasse* 20 (1895), pp. 403–478, here p. 417.

156 *PHP* II.2.3 (102,26–104,2 De Lacy / V.213 K).

157 See Galen, *SI* 5 (11,1–2 Helmreich / I,77 K), on the Empiricists: "...they say that there is no demonstration at all (οὐδὲ τὴν ἀρχὴν ἀπόδειξιν εἶναι φασί)."

probably complained about those who produce arguments about medical or philosophical issues without being trained in logic, as he often does in his extant works;¹⁵⁸ and he may have promoted demonstrative methods as a way of resolving disagreements among schools.¹⁵⁹

The next secure piece of the puzzle comes from the third book of *Dem.* There, as Nemesius tells us (B2), Galen spoke of the mouth of the stomach as the organ of distress (λύπη), and pointed out that the ancients called the mouth of the stomach “the heart” (καρδία), even though the actual heart is situated higher up.¹⁶⁰ This passage, as von Müller points out, is paralleled in *PHP* II, where it is part of the discussion about different kinds of premisses used to solve the problem of the location of the ruling part of the soul (τὸ ἡγεμονικόν).¹⁶¹ Among arguments proposed by Galen’s opponents (especially the Stoics) in favour of the cardiocentric view, there is one from “the biting pain in distress” (ὁ ἀπὸ τῆς ἐν ταῖς λύπαις δήξεως), which these opponents “refer” (ἀναφέρουσιν) to the heart. Since, according to Galen, the pain in distress is located at the mouth of the stomach, there are two explanations of this argument: either the biting pain is associated with the heart because the mouth of the stomach is *close* to the heart; or because they mistakenly think that the biting pain is actually felt *in* the heart. The latter mistake could be explained by the use of the word “heart” (καρδία) to refer to the mouth of the stomach, as documented by quotations from Nicander, Thucydides, and Hippocrates.¹⁶² Two of these sources (Thucydides and Hippocrates) are also mentioned in B2 and in other respects too both passages are very similar.

The parallel in *PHP* II is probably indicative of the original context of B2. Two considerations speak in favour of this. First, *PHP* II is framed by the distinction of four kinds of premisses: scientific, dialectical, rhetorical, and sophistic; while discussing various cardiocentric arguments proposed by the Stoics, Galen uses them as examples of non-scientific (“inappropriate”) premisses. In the introduction to *PHP* II, he makes several references to *Dem.*, mentioning specifically the discussion of non-scientific premisses such as those produced by Chrysippus (A24 and A25, see also A21 and A26). It is quite probable, then, that some of the Stoic arguments dealt with in *PHP* II were already used for the same purpose in *Dem.* Second, the last section of B7* – the material from *Liber logicus* by Clement of Alexandria – abruptly ends after introducing the

¹⁵⁸ See e.g. *MM* I.4.15 (52,5–10 Lorusso / X.37 K).

¹⁵⁹ See von Müller, “Über Galens Werk,” pp. 418–422, citing useful parallels in this regard. For Galen’s concern about disagreement, see M. Havrda, “The Purpose of Galen’s treatise *On Demonstration*,” *Early Science and Medicine* 20 (2015), pp. 265–287, here pp. 273–275.

¹⁶⁰ Nemesius, *Nat. hom.* 21 (82,5–13 Morani) = B2.

¹⁶¹ See von Müller, “Über Galens Werk,” pp. 458–459. For the context, see T. Tieleman, *Galen and Chrysippus On the Soul: Argument and Refutation in De placitis, Books II–III* (Leiden/New York/Köln: Brill 1996), pp. 3–129.

¹⁶² *PHP* II.8.4–13 (158,7–160,2 De Lacy / V.275 K).

problem “in which part of the body is the ruling faculty of the soul” (B7*[12–13]).¹⁶³ If B7* goes back to *Dem.*, as we believe it does, this note suggests that in *Dem.* the problem of the location of the ruling part of the soul was discussed after the material excerpted in B7*. But if the ἡγεμονικόν problem was discussed in *Dem.*, we can safely assume that the original context of B2 was precisely that discussion.

Once we bring *Liber logicus* into play, the gaps between B1 and B2 begin to close quite easily. Before introducing the ἡγεμονικόν issue, B7* discusses the problem of “whether the embryo is an animal or not”. That Galen dealt with this problem in *Dem.* is confirmed by B3, Galen’s own report in *De usu partium*.¹⁶⁴ The definition of ‘animal’ proposed in *Dem.* – as reported by Rāzī in B4 – perhaps comes from the same context.¹⁶⁵ Now B7* enables us to locate this discussion in *Dem.* It must have taken place before the ἡγεμονικόν issue came up. And since (as B2 indicates) the ἡγεμονικόν issue was dealt with in book three, it follows that Clement excerpted B7* either from an earlier part of book three or from book two of *Dem.* Further, in *Liber logicus*, the discussion about the embryo (B7*) is preceded by B6*, an introduction to the teaching of demonstration. Again, if B6* comes from *Dem.*, it was most probably excerpted from one of the first two books of *Dem.* Now, as we know, the first book was, at least partly, an exhortation to the theory and practice of demonstrative methods. Since B6* is the beginning of the exposition of the teaching of demonstration, not an exhortation to it, we conclude that B6* is most probably excerpted from the second book of *Dem.*

In an important part of B7*, there is a classification of problems based on the distinction between the substance (οὐσία) and the attributes (ἔργα, παθῆ, δυνάμεις) of the thing under investigation (τὸ ζητούμενον). Several kinds of problems are distinguished, relative to which part of the thing is known in advance, and which part is being looked for. With some problems we know the substance and are looking for some of its attributes; for instance, in the case of stones, plants, and animals, whose activities we do not know (B7*[2]).¹⁶⁶ These are examples from pharmacology, which inquires about the activities of certain substances and the causes of these activities. The question in this type of inquiry is not what these substances are, but rather what they do and why.¹⁶⁷ Another kind of problems are those where we know some of these attributes but do not know, and inquire about, the substances. Here belongs the inquiry about the soul:

163 Clement of Alexandria, *Lib. log.* (= *Strom.* VIII) 4.14.4–5.15.1 (88,25–33 Stählin–Havrda).

164 *UP* XV.5 (357,24–28 Helmreich / IV.238–239 K).

165 Rāzī, *Doubts* 13.1 (84,1–13 Koetschet).

166 Clement of Alexandria, *Lib. log.* (= *Strom.* VIII) 4.9.1–3 (85,1–13 Stählin–Havrda). See the commentary on this passage in M. Havrda, *The So-Called Eighth Stromateus by Clement of Alexandria: Early Christian Reception of Greek Scientific Methodology* (Leiden: Brill 2016), pp. 179–181.

167 See, e.g., Galen, *SMT* II.5 (XI.474–475 K) and references below, *ad loc.* The problem of the embryo also belongs to this category, for here the question ultimately is whether the thing known as the embryo has certain attributes, namely, the capacity to perceive and move by impulse; see Clement of Alexandria, *Lib. log.* (= *Strom.* VIII) 4.9.8–9 (85,18–21 Stählin–Havrda) = *Dem.* B7*[3].

we know its affections, for example, but we do not know what it is (B7*[2]). The question of the bodily location of the ruling part of the soul is introduced as an example of a problem belonging to this class (B7*[12]).¹⁶⁸ Now Nemesius informs us that Galen mentioned the substance of the soul in *Dem.*, saying “that he would prefer not to assert anything about it” (B5). In light of B7*[12], we can assume that this issue was addressed in the third book of *Dem.*, in connection with the question of the ἡγεμονικόν.

Moving on to somewhat shakier ground, the following observation can be added. As we shall see further on, it is possible that other parts of *Liber logicus* than those listed as B6* and B7* go back to *Dem.* This could be true of two sentences at the very beginning of *Liber logicus*:

ἀλλ’ οὐδὲ οἱ παλαιάτατοι τῶν φιλοσόφων ἐπὶ τὸ ἀμφισβητεῖν καὶ ἀπορεῖν ἐφέροντο. (...) οἱ μὲν γὰρ νεώτεροι τῶν παρ’ Ἑλληνσι φιλοσόφων ὑπὸ φιλοτιμίας κενῆς τε καὶ ἀτελοῦς ἐλεγκτικῶς ἅμα καὶ ἐριστικῶς εἰς τὴν ἀχρηστον ἐξάγονται φλυαρίαν.

However, the most ancient philosophers did not indulge in disputing and puzzling over things. (...) For the more recent Greek philosophers, under the sway of vain and ineffectual ambition, are side-tracked into useless verbal quibbling by refutations and contentious arguments. (*Lib. log. = Strom.* VIII.1.1.1, 80,3–8 Stählin–Havrda).¹⁶⁹

The omitted part between these sentences is Clementine and Christian: “So how could we [indulge in these things], we who cling to the really true philosophy and whom Scripture outright commands to seek for the sake of finding, so that we investigate?” But the sentences themselves possibly come from the same source as the excerpts starting with our B6*. The contrast between οἱ παλαιάτατοι τῶν φιλοσόφων and οἱ νεώτεροι τῶν φιλοσόφων is not found anywhere else in Clement, but is typical of Galen (even though not limited to him).¹⁷⁰ In *MM* I.4.15, Galen draws this contrast specifically in connection with the theory of demonstration and the attitude to its principles. First he refers to the views of “ancient philosophers” (οἱ παλαιοὶ φιλόσοφοι) about two kinds of plainly manifest things (τὰ φαινόμενα); this passage, which includes a reference to *Dem.*, is our testimonium A15. Later on, Galen contrasts the ancient philosophers with “certain combative philosophers” (ἔνιοι τῶν φιλοσόφων ἐρίζοντες) who “dispute” (ἀμφισβητοῦσιν) rational principles and argue that “the only thing of which they have firm knowledge is that nothing can be demonstrated” (αὐτὸ γοῦν τοῦτο βεβαίως ἐπίστανται, τὸ μὴδὲν ἀποδειχθῆναι δύνασθαι).¹⁷¹ It is quite possible that, in these two sentences, Clement preserves a fragment of Galen’s polemic against these deniers of demonstration. This contention is supported by the vocabulary used, in particular the rare (and distinctly

¹⁶⁸ *Lib. log.* (= *Strom.* VIII) 4.14.4 (88,27–30 Stählin–Havrda).

¹⁶⁹ Havrda’s 2016 translation revised with the help of Robert Bostock.

¹⁷⁰ See Havrda, *The So-Called Eighth Stromateus*, pp. 130–131.

¹⁷¹ *MM* I.4.15 (52,1–5 Lorusso / X.37 K).

Galenic) expression ἄχρηστος φλυαρία.¹⁷² If so, the fragment would most suitably be placed either in the first book of *Dem.* or somewhere near the beginning of the second.

Putting these pieces together, we arrive at a coherent and relatively detailed picture of the first three books of *Dem.*, which (apart from the beginning) is quite different from the picture drawn by von Müller. The first book was an invitation to the study and practice of rational methods of inquiry and proof, which Galen describes as demonstrative. Mastering these methods qualifies a person as ὁ ἀποδεικτικὸς ἀνὴρ (“the man skilled in demonstration”).¹⁷³ A significant aspect of this skill is its *universality*, i.e., the applicability of the demonstrative methods to “everything capable of being demonstrated” (A12). Details escape us, but similarly motivated passages from other writings of Galen (as well as some unplaced testimonia) allow us to get a rough idea of the content and tone of the first book. It probably raised the issue of the disagreement among schools, and criticized those who attempted to make demonstrations without understanding what it entails.¹⁷⁴ It probably praised geometrical proofs, and emphasized the importance of training in this area.¹⁷⁵ It probably included the defence of the very possibility of demonstration, partly based on the authority of “the ancients”, and a preliminary account of the criteria, according to which demonstration is a “technical” criterion of knowledge.¹⁷⁶

This “exhortatory” part was followed – most likely in the second book – by an introduction to the teaching of demonstration, an abridged version of which is preserved in Clement’s excerpts (B6*). The starting point of this teaching (ἀρχὴ τῆς διδασκαλίας) is the meaning of the word ἀπόδειξις, as understood by all native speakers of Greek. This is accompanied by the question of whether the word does actually have a meaning, or whether it is simply like the word βλίτυρι, a meaningless sound. The question of meaning is closely linked to the question of the existence of the thing signified by the word. The word is used in different contexts (juridical, rhetorical, philosophical) and the way it is used, namely as referring to something real, attests to its meaning, and possibly also to the existence of the thing signified (B6*[1]).

In any case, the text distinguishes three stages of inquiry applied to everything investigated (πᾶν τὸ ζητούμενον): starting with the meaning of the proposed word, the

172 Cf. Galen, *Adv. typ. scr.* 1 (VII.476,13 K); *Hipp. Epid. III*, II.4 (82,4 Wenkebach / XVIIa.611 K); the only other instance is found in Cyril of Alexandria. For further details on this and similar expressions, see Havrda, *The So-Called Eighth Stromateus*, p. 131 n. 14. Other elements of the sentence, while not exclusively Galenic, are paralleled in Galen; for ἀμφισβητεῖν καὶ ἀπορεῖν (used in connection with the principles), cf. Galen, *SMT* II.2 (XI.462,15f. K): οὕτως ἂν οὐτ’ ἀπορον οὐτ’ ἀμφισβητούμενον ἦν οὐδέν.

173 See A1, A4, B6*[14]. For ἀποδεικτικὸς ἀνὴρ, see Havrda, *The So-Called Eighth Stromateus*, p. 173 n. 146.

174 See von Müller, “Über Galens Werk,” pp. 418–422; Havrda, “The Purpose,” pp. 273–275.

175 See *Lib. prop.* 14.8 (165,19–23 Boudon-Millot / 11, XIX.41 K) = A1; above, pp. 28–29.

176 See above, for the appeal to the “most ancient philosophers”, which is closely related to the doctrine of the criteria; see A15. For the authority of the ancients, see also A24. For the criteria, see A14 and below, p. 47.

researcher proceeds to investigate whether the thing signified by the word exists or not, and finally inquires about the nature (φύσις) or substance (οὐσία) of the thing signified (B6*[2]). The discussion of demonstration loosely follows this model, insofar as it proposes a definition of the meaning of the word ἀπόδειξις agreed by all, and then elaborates this definition in order to grasp more precisely what demonstration is. The definition describes demonstration as “an argument that furnishes credence from something agreed to something disputed” (B6*[4]). The subsequent elaboration focuses on the notion of credence (πίστις) and distinguishes two kinds of credence, one that produces scientific knowledge, and one that produces mere persuasion (B6*[5]). Scientific demonstration of course furnishes the scientific kind of credence. This and other details help narrow the definition down to valid syllogisms based on things evident to perception or the intellect (B6*[8–11]).

After this part, which has no doubt reached us in an abridged form (occasionally glossed by Clement), a more extensive version of B7* must have followed. It is quite possible that this section of Clement's excerpts comes from the same book of *Dem.* as B6*. It introduces the notion of a problem (πρόβλημα) and outlines the method of solving problems by means of two procedures: definition of the thing set forth (τὸ προβληθέν) and the search for appropriate premisses (B7*[1]).¹⁷⁷ Having drafted the above-mentioned classification of problems, the author then puts forward a particular example: whether the embryo is an animal or not (B7*[2–3]). A large part of the discussion is taken up by the task of defining the predicate as “that which is capable of perception and motion by impulse”. This definition having been reached, the problem can be reformulated in such a way as to show what premisses allow us to solve it: simply put, we have to find out if the thing called “embryo” is capable of perceiving and moving by impulse (B7*[3–9]). Grasping the problem in this way is to “recognize” it (γνωρίζειν τὰ προβλήματα) (B7*[3]). At the very end, another problem is enunciated: in which part of the body the ruling faculty of the soul is (B7*[12]). In B7*, this discussion is cut short after one sentence, but in *Dem.* it probably went on.¹⁷⁸

We have seen (based on B2) that the discussion of the ἡγεμονικόν started or continued into the third book of *Dem.*, perhaps somewhat along the lines of the second book of *PHP*. As in *PHP*, the discussion may have served the purpose of illustrating different sorts of inappropriate premisses, although it need not have been limited to that.¹⁷⁹

177 For definition as the starting point, see A15–A19. For appropriate premisses, see M. Havrda, “Galen on Logic and Scientific Method,” in P. N. Singer and R. M. Rosen (eds.), *The Oxford Handbook of Galen*. Oxford: Oxford University Press 2024, pp. 229–249, here p. 235.

178 For a detailed commentary on B6* and B7*, see Havrda, *The So-Called Eighth Stromateus*, pp. 145–199.

179 See A24–A26. The correct argument about the ἡγεμονικόν (summarized in *PHP* VIII.1.22, 484,35–486,2 De Lacy / V.655 K) was quite possibly also presented in *Dem.* Although we have no direct evidence, A25 could be hinting in this direction.

Book IV

In his book *On decay*, Galen makes the following reference to *Dem.*:

The [proposition] that every generated [thing] will by all means be corrupted does not involve a scientific or necessary consequence. Rather, as was demonstrated in *On demonstration*, it goes as far as the persuasive, even though nearly everyone who points out that aging happens necessarily to animals uses precisely this reason, claiming that aging is the path to corruption following of necessity to all generated [things].¹⁸⁰

Testimonia from John Philoponus and Rāzī, further complemented by Abū al-‘Alā’ ibn Zuhr, allow us to locate this discussion in the first half of book four and reconstruct its context.¹⁸¹ Galen dealt with the proposition “every generated thing will be corrupted” in connection with an argument about the eternity of the world. The argument has been analysed by Riccardo Chiaradonna and Pauline Koetschet and what follows draws heavily on their work.

The question of the eternity of the world is discussed by Galen’s Middle Platonist contemporaries, and it is also one of the “doxographic” commonplaces.¹⁸² Galen’s motivation in picking it up in *Dem.* IV, however, seems to be linked to particular arguments about this issue, specifically Aristotle’s arguments in the first book of *De caelo*. According to Philoponus, Galen said that

the thought of the eternal (ἡ νόησις τοῦ αἰδίου) is composite (σύνθετος), because it [i.e., the thought] is ungenerated and incorruptible (ἀγέννητος καὶ ἀφθαρτος), and each of the two entails the other. (C4)¹⁸³

The sentence involves a metonymic shift whereby the two objects of thought – “ungenerated” and “incorruptible” – are predicated of the thought itself. But that need not detain us.¹⁸⁴ The thought is composite because its object, “the eternal” (τὸ αἰδίον), is thought of as two mutually entailing things: “ungenerated” (ἀγέννητος) and “incorruptible” (ἀφθαρτος). In this passage Galen paraphrases Aristotle’s proposition defended at length in *De caelo* I.12.¹⁸⁵ One of Aristotle’s objectives in defending this proposition is to

180 *De marcore* 2 (VII.671–672 K) = C1.

181 According to Ḥunayn’s report in A2, only the first half of the fourth book was available in Arabic translation; so presumably all passages cited by Rāzī and Abū al-‘Alā’ ibn Zuhr come from the first half of the book.

182 For the Middle Platonist context, see R. Chiaradonna, “Galen and Middle Platonists on Dialectic and Knowledge,” in T. Bénatouïl and K. Ierodiakonou (eds.), *Dialectic after Plato and Aristotle* (Cambridge: Cambridge University Press 2019), pp. 320–349, here pp. 332–333; for doxographic accounts, see Aët. II.4 with J. Mansfeld and D. T. Runia, *Aetiana* V.2 (Leiden: Brill 2020), pp. 794–815.

183 Philoponus, *Aet. mund.* XVII.5 (600,3–5 Rabe).

184 For metonymic shifts of this kind see Havrda, *The So-Called Eighth Stromateus*, pp. 179 and 234.

185 See esp. *Cael.* I.12, 282a30–b2; cf. Chiaradonna, “Galen and Middle Platonists,” p. 335.

demonstrate the impossibility of there being an incorruptible yet generated thing, such as the world according to Plato's *Timaeus*.¹⁸⁶ Galen is interested in the mutual entailment of the two concepts: while acknowledging that ungenerated entails incorruptible, he argues that the converse statement – that incorruptible entails ungenerated – requires further differentiation of the meanings of “incorruptible”; he distinguishes two: that which “does not admit the account of corruption at all”; and that which is by nature corruptible but eternally restored.¹⁸⁷ In the second sense of “incorruptible” (which is Platonic, as Galen proves from the *Timaeus* and the *Statesman*) the proposition does not hold (C4).¹⁸⁸

Having made this distinction, Galen seems to have turned to the question of whether the world is incorruptible in the sense required by Aristotle's argument, i.e. in the sense of not admitting the account of corruption at all. As the Arabic testimonia show, this part of Galen's discussion was based mainly on *De caelo* I.3.¹⁸⁹ Galen first mentions Aristotle's arguments based on the circular shape and motion of the spheres and planets, according to which they are ungenerated “because they have no contrary”.¹⁹⁰ It is not clear how he assessed these arguments. Nonetheless he immediately moves to the argument from preception (διὰ τῆς αἰσθήσεως) in *Cael.* I.3, 270b13–17, which runs as follows:

But this result also follows sufficiently enough through perception, at any rate for (one might almost say) merely human conviction. For in all of past time, according to the record people have handed down one to another, nothing appears to have changed either in the whole of the outermost heaven or in the parts proper to it.¹⁹¹

Galen's version of the argument, as related in C6, C7, and C8, is more detailed but essentially the same:

If the cosmos could be corrupted, the [celestial] bodies it contains would not remain in one and the same state, nor would the distances between them, or their sizes, or their movements. The water of the sea that existed before us would also have to disappear. But none of these things have ever

186 See *Cael.* I.10, 280a30–31; I.12, 283a4–7.

187 “Not admitting the account of corruptible at all” means “not being compatible with the notion of corruptible under any circumstance”; in other words: “being incorruptible by definition”. Cf. Philoponus, *Aet. mund.* XVII.3 (598,1–4 Rabe). For the expression “have the λόγος of X”, see Simplicius, *In Phys.* VIII.10 (1331,11–12 Diels), quoting Philoponus: τὰ δὲ σύνθετα λόγον ἔχει λύσεως, τὰ δὲ λόγον ἔχοντα λύσεως λόγον ἔχει φθορᾶς. See also Chiaradonna, “Galen and Middle Platonists,” p. 335.

188 Cf. Chiaradonna, “Galen and Middle Platonists,” pp. 336–337.

189 As pointed out by P. Koetschet, “Galien, al-Rāzī, et l'éternité du monde. Les fragments du traité *Sur la démonstration*, IV, dans *Les doutes sur Galien*,” *Arabic Sciences and Philosophy* 25 (2015), pp. 167–198. Abū al-'Alā' ibn Zuhr's precious C6 starts in the middle of a sentence, mentioning Plato and then immediately turning to Aristotle. The content of the missing discussion of Plato can be supplemented from Philoponus' report.

190 See Aristotle, *Cael.* I.3, 270a13–23.

191 Trans. C. D. C. Reeve: Aristotle, *De Caelo* (Indianapolis/Cambridge: Hackett 2020), p. 7.

departed from their initial state or changed, even though astronomers have been observing them for many thousands of years. It follows, therefore, that the world does not age, and therefore is not subject to corruption.¹⁹²

Now, according to Galen, this argument from astronomical observations supports the view that the world is incorruptible. Rāzī complains that if Galen accepts it, then he must also accept that the world is ungenerated, because he states that what is incorruptible is also ungenerated. But this conflicts with other passages where Galen denies having firm knowledge of whether the world is eternal or generated, and even claims that obtaining such knowledge is impossible. This seems like a blatant inconsistency on Galen's part.¹⁹³ Abū al-'Alā' ibn Zuhr defends Galen against this charge. He points out that Galen does not accept the statement "what is incorruptible is also ungenerated" without qualification, but only after certain "determinations and distinctions".¹⁹⁴ Here Abū al-'Alā' hints at the distinction between two meanings of "incorruptible" reported by Philoponus. The point is that even if Galen accepts the argument from astronomical observations, he may still be undecided as to what kind of incorruptibility it proves.

In any case, Galen seems to have emphasized that the argument from astronomical observations does not *demonstrate* that the world is ungenerated. As Abū al-'Alā' reports,

Galen is not satisfied with demonstrations based on such statements because of his rigorous approach to this issue, since every opinion that would result from them is approximate: some [statements] produce something approximating certainty, and this is dialectical credence, and some [produce] something which persuades the soul, and this is rhetorical credence. Demonstration, however, corresponds to neither.¹⁹⁵

This important testimonium recalls the distinction between four kinds of premisses mentioned above: scientific, dialectical, rhetorical, and sophistic. More specifically, it draws a contrast between demonstration, on the one hand, and arguments based on dialectical or rhetorical premisses on the other. Both the dialectical and rhetorical premisses produce some kind of credence (here the Arabic *taṣḍīq* probably translates the Greek πῖστις): the dialectical credence is close to certainty, whereas the rhetorical

192 Rāzī, *Doubts* 2.1 (8,2–6 Koetschet = C6). For the observations of astronomers, see Aristotle, *Cael.* II.12, 292a8–9. Galen's version of the argument may have been informed by an intermediate source, but we do not know which. For some parallels see Chiaradonna, "Galen and Middle Platonists," p. 338 n. 51.

193 Rāzī, *Doubts* 2.2 (8,7–15 Koetschet = C9, see also C2). For Galen's agnosticism about this issue, see esp. *Prop. plac.* 2.1–3 (Garofalo–Lami); for other passages, see Mansfeld and Runia, *Aetiana* V.2, p. 808.

194 Abū al-'Alā' ibn Zuhr, *Solution to the Doubts about Galen*, ed. Koetschet–Rajab (in preparation), fol. 3b, ll. 9–13 (= C10), referring to C3.

195 Abū al-'Alā' ibn Zuhr, *Solution to the Doubts about Galen*, ed. Koetschet–Rajab (in preparation), fol. 3b, ll. 13–21 = C13.

one is mere persuasion. But demonstration is something else, no doubt because it produces firm knowledge.¹⁹⁶

Now, according to Abū al-'Alā', Galen described the opinion arising based on astronomical observations as "proximate". This probably means that he regarded this argument as dialectical rather than rhetorical.¹⁹⁷ In any case, he did not regard it as scientific.¹⁹⁸ This is confirmed by Galen's own words, cited at the beginning of this section:

... the [proposition] that every generated [thing] will by all means be corrupted does not involve a scientific or necessary consequence. Rather, as was demonstrated in *On demonstration*, it goes as far as the persuasive. (C1)

The word "persuasive" (πιθανόν) is by no means limited to rhetorical premisses. Galen described the dialectical premisses as persuasive too.¹⁹⁹ To all appearances, then, the argument from astronomical observations is an example of a dialectical argument. The reason why Galen discussed it is not difficult to find. It is for the same reason he discussed the Stoic arguments about the ἡγεμονικόν in *PHP* II and probably also in *Dem.* III. It was for the purpose of training in the demonstrative skill, an essential part of which is the ability to "discover and recognize the differences of premisses" (A26). As Abū al-'Alā' puts it:

Galen mentions in the treatise *On demonstration* methods of demonstration, using as examples what his predecessors Plato and Aristotle said on topics where a path to perfect certainty has not been found, because it is reasonable to be guided by what they have said. Moreover, since he taught us how demonstrative premisses should be acquired and how to construct syllogisms that draw their conclusion correctly, it is up to him to start from any example that suits him, and it is up to

196 There is a parallel to this use of πίστις in Clement, *Lib. log.* (= *Strom.* VIII) 3.5.3 (82,16–18 Stählin–Havrda) = B6*[5]: "...demonstration in the proper sense is the one that instills scientific credence (ἐπιστημονικὴν πίστιν) into the souls of students, whereas the other kind produces mere opinion. For the meaning of πίστις in this context see Havrda, *The So-Called Eighth Stromateus*, p. 154 (*ad* 81,30–82,1) and p. 158 (*ad* 82,16–18). See also the contrast drawn in *Lib. log.* 3.7.7 (83,33–84,2 Stählin–Havrda) = B6*[9]: "...there are two kinds of credence (πίστις) and demonstration: one producing mere persuasion in the souls of the auditors and one producing scientific knowledge."

197 For the characterization of dialectical premisses as "proximate", see Galen, *PHP* VIII.1.8 (482,6–7 De Lacy / V.651 K), on arguments discussed in *PHP* II: "...some of them were close, namely those that Aristotle habitually calls 'dialectical' (τοὺς μὲν ἐγγύς αὐτῶν, οὓς διαλεκτικούς ἔθος ἔστιν Ἀριστοτέλει καλεῖν)".

198 This is not to say that astronomical observations do not, according to Galen, prove that the world is incorruptible. But he maintains that they do not yield scientific premisses with respect to the conclusion that the world is ungenerated, which is the point at issue in the present discussion. This is because the axiom on the basis of which we could prove that the world is ungenerated requires a different kind of incorruptibility than that which follows from astronomical observations. We are grateful to Riccardo Chiaradonna for pressing us on this issue.

199 See esp. Galen, *PHP* VIII.1.8 (482,4–8 De Lacy / V.651 K); T. Tieleman, "Galen's Notion of Dialectic," in R. J. Hankinson and M. Havrda (eds.), *Galen's Epistemology: Experience, Reason, and Method in Ancient Medicine* (Cambridge: Cambridge University Press 2022), pp. 136–155, here p. 145.

the one who learns this general method to contemplate if this example conforms to the rules or whether it is open to doubt. (C11)²⁰⁰

However, it would be rash to conclude that Galen's interest in dealing with these cosmological issues was merely methodological. Abū al-'Alā' attests that Galen followed Aristotle in making the eternal substance in the celestial sphere – the subject matter of the first book of *De caelo* – an object of his own investigation (C15).²⁰¹ He asked four questions about it: (1) Does it exist? (2) Is it sentient? (3) Is it knowledgeable? (4) Is it skillful?²⁰² Surprisingly, Galen suggests that three of these questions (1, 3, and 4) can be explored scientifically, because it is possible to find appropriate premisses for them: in Galen's terminology, appropriate premisses are premisses of a scientific argument. No such argument can be made about the second question, presumably because the celestial sphere is too far away for such an investigation. In contrast, in Galen's view, the existence of the eternal substance can be established. Abū al-'Alā' refers to "the arguments described above", probably referring to Aristotle's arguments in *De caelo*. As to the third and fourth questions, Galen claims that appropriate premisses can be taken from the study of animals and from astronomy (C15). No doubt the study of animals was supposed to reveal the functional organization of bodily parts (later discussed in detail in *UP*), which Galen seems to have causally attributed to the substance of the highest heavenly sphere, without determining what this substance is.²⁰³ Sadly, we do not know

200 Abū al-'Alā' ibn Zuhr, *Solution to the Doubts about Galen*, ed. Koetschet–Rajab (in preparation), fol. 3a, ll. 13–25.

201 Abū al-'Alā' ibn Zuhr, *Solution to the Doubts about Galen*, ed. Koetschet–Rajab (in preparation), fol. 3b, l. 26–fol. 4a, l. 15.

202 The passage is also discussed below, pp. 75–78.

203 Rāzī says that Galen referred to Aristotle's *Parts of animals*, Theophrastus' *On plants*, and Galen's own *Use of parts* in connection with the claim that "[the circle of the zodiac] is the cause of the generation of animals, plants, and what is found in them of art and wisdom." The references are puzzling, because: (a) there is no mention of the circle of the zodiac in Aristotle's *PA*; (b) *UP* was most probably written after *Dem*. On (a): In an earlier publication, Pauline Koetschet suggested that Galen actually meant Aristotle's *Generation of animals*, where similar claims are made or hinted at (see *GA* IV.10, 777b18–778a5); P. Koetschet, *Abū Bakr al-Rāzī: Doutes sur Galien. Introduction, édition et commentaire* (Berlin/Boston: de Gruyter 2019), p. XLII. Independently, the same explanation has been proposed to us by Kosta Gligorijević. However – supposing that Rāzī's Arabic correctly represents Galen's Greek –, it is hard to explain why Galen, who quotes *GA* several times in his treatise *On semen*, citing specific books and mentioning that it consists of five books overall, should refer to a passage from *GA* as coming from *PA*. Possibly the references do not concern the particular claim about the causal role of the zodiacal sphere; their point rather is that these treatises provide sufficient premisses in favour of this conclusion, by demonstrating the skill involved in the construction of animals and plants. On the other hand, it is true that, in *UP* XVII, Galen considers the causal role of heavenly bodies in the formation of animals. On (b): The reference to *UP* could have been added by Galen years after the original composition of *Dem.*, a practice abundantly attested in other cases (see above, p. 25 n. 110).

whether he developed these interesting points any further in the fourth book or what its other contents were.

Book V

All three references to book five come from Galen, *PHP* VII, a book dealing with the causes of vision, which to some extent mirrors the discussion of *Dem.* XIII. Ḥunayn had not got hold of the fifth book, and so apparently it was never translated into Syriac or Arabic. Whereas in *Dem.* XIII, Galen focused specifically on vision and its causes, in book five he discussed the objects of sight, as well as of other senses. The central question of all three testimonia (D1–3) concerns the capacity of sight to discern the size, shape, and distance of the perceived object. Galen argues that, apart from colour, which is its primary sensible,²⁰⁴ sight can also perceive the shape and size of the coloured body; in addition, it perceives its position and distance, in other words, it sees the object where it actually is.²⁰⁵ For Galen, these capacities belong to sight alone and do not require the cooperation of any other capacity, such as memory and reason.²⁰⁶ This is in conflict with the standard Aristotelian view, according to which size, shape, and distance are common sensibles.²⁰⁷ As far as size and shape are concerned, touch can sometimes discern them as well, but it does so accidentally.²⁰⁸ For touch, the proper sensibles are, firstly, sharpness and bluntness;²⁰⁹ then hotness and coldness; but size and shape, just as motion and number, are *accidental* to touch, as they also require memory and deduction.²¹⁰ As far as distance is concerned, Galen disagrees with some Aristotelians who think that it can also be perceived by hearing and by smell.²¹¹ The proper sensibles of hearing and smell are sounds and scents, respectively, as neither of these, according to

204 See Aristotle, *De an.* II.7, 418a29–b2.

205 *PHP* VII.5.35–37 and 39–41 (460,11–16 and 22–28 De Lacy / V.625–626 K) = D1[3–4] and [6–7].

206 *PHP* VII.5.34–37 (460,8–16 De Lacy / V.625–626 K) = D1[3–4]; for deduction and memory, see also *PHP* VII.6.24 (466,27 De Lacy / V.634 K) = D3[4].

207 For shape and size, see Aristotle, *De an.* III.1, 425a16; distance was probably included among common sensibles by Theophrastus and certainly by Alexander of Aphrodisias; see P. Gregoric, *Aristotle on the Common Sense* (Oxford: Oxford University Press 2007), p. 31 n. 11. According to Aët. IV.8.6, shape is the common sensible of sight and touch; distance is the common sensible of sight and hearing; and size is one of the common sensibles of all senses. For sight and touch, see Themistius, *In De an.* V.1 (82,36–37 Heinze); for sight and hearing, see Alexander of Aphrodisias, *De an.* 50,24–25 Bruns–Sharples. These and other parallels are noted by J. Mansfeld and D. T. Runia, *Aetiana* V.3 (Leiden: Brill 2020), pp. 1556–1557.

208 *PHP* VII.5.36 (460,13 De Lacy / V.626 K) and 6.24 (466,27–28 De Lacy / V.634 K) = D1[3] and D3[4].

209 For Aristotle, sharp and blunt, too, are common sensibles; see *De sensu* 4, 442b2–6.

210 According to Aristotle, all common sensibles are accidental to the individual senses: see *De an.* II.6, 418a9–11; Gregoric, *Aristotle on the Common Sense*, p. 29.

211 For hearing, see above, n. 207.

Galen, “bring with them an indication of their place of origin”.²¹² Galen must have produced detailed arguments to support these conclusions. Those concerning sight seem to have been based on Euclidean optics and the study of the reflection of the visual ray through mirrors.²¹³

We cannot be sure what the context of these discussions was. But it is noteworthy that, in this book, Galen presented his own view about a particular issue, rather than analysing an argument; and that this issue, while essentially physiological, is relevant to the theory of demonstration:

It was demonstrated in [On *demonstration*] that the starting points of every demonstration are things evidently manifest to sense perception and intellection. (A16)²¹⁴

Now ancient philosophers claim that there are two kinds of manifest things: one kind, also acknowledged by the Empiricists, of those discerned by a particular sensation, such as pale, dark, hard, soft, warm, cold, and the like; and the other undemonstrated kind of things that present themselves immediately to intellection. (A15)²¹⁵

The discussion of the proper sensibles is directly related to the question of the primary objects of perception, and thus also of the principles of demonstration. Galen’s examples of principles in A15 are proper objects of touch; likewise, scents, sounds and flavours, if they present themselves to the senses as “plainly manifest” (ἐναργῶς φαινόμενα), will count as principles. Galen’s arguments about sight, then, could serve the purpose of delimiting the competence of sight in this regard.²¹⁶

If this was the context in which the question of the proper sensibles was raised, then perhaps the fifth book was where the systematic exposition of the theory of demonstration actually only began. No doubt the basic tenets had already been outlined earlier, probably in the second book, as we have seen. However, it seems that a more detailed exposition of these tenets came only later, after the reader had already been familiarized, on the basis of concrete examples, with the methods of analysing problems and distinguishing between different kinds of premisses. After all, this was the core of the demonstrative practice the reader was supposed to master; and it would make very

²¹² *PHP* VII.7.5 (470,20–21 De Lacy / V.638 K) = D2[6].

²¹³ *PHP* VII.5.40 (460,27–28 De Lacy / V.627 K) = D1[7]. Much of this material is discussed by K. Ierodiakonou, “On Sense Perception: Galen in Dialogue with Plato and the Stoics,” in R. J. Hankinson and M. Havrda (eds.), *Galen’s Epistemology: Experience, Reason, and Method in Ancient Medicine* (Cambridge: Cambridge University Press 2022), pp. 218–231.

²¹⁴ *MM* I.5.1 (54,9–10 Lorusso / X.30 K).

²¹⁵ *MM* I.4.14 (50,9–13 Lorusso / X.36 K).

²¹⁶ Cf. von Müller, “Über Galens Werk,” p. 465; R. Chiaradonna, “Le traité de Galien *Sur la démonstration* et sa postérité tardo-antique,” in R. Chiaradonna and F. Trabatttoni (eds.), *Physics and Philosophy of Nature in Greek Neoplatonism* (Leiden: Brill 2009), pp. 43–77, here pp. 52–53.

good sense from a pedagogical point of view if a more detailed explanation of the theoretical aspects of the method came at a later stage.

Nor would it be surprising if one of the first topics addressed by Galen at this stage was the criteria of the discovery of scientific premisses. Galen distinguishes two kinds of criteria, natural and artificial. As he explains in his polemic against Favorinus, the theory of demonstration is an artificial criterion of true and false statements, based on the natural criteria of our senses and mind.²¹⁷ In *PHP* he refers to *Dem.* for a detailed exposition of this matter:

So then, I will now show how someone can discover the starting point of the discovery of what is being sought, recalling the [issues] which I discussed at length both in the treatise *On demonstration* and in certain others. For if we possess no natural criterion, we will not be able to discover a technical one either. But if we have natural criteria, we could also discover a technical one. So then, do all we human beings possess some common natural criteria? (...) I declare that you all have natural criteria and I say this as one reminding you, not teaching it or demonstrating it or as making an assertion on my own authority. What are they? Those who have eyes in accordance with nature that see visible objects, those who have ears in accordance with nature that hear audible objects, a tongue that tastes flavours, nostrils [that smell] scents, and the entire skin [that touches] the objects of touch; and besides these, mind or thought or whatever one wants to call it, by which we discern what is entailed and what is incompatible and other things that fall under them, among which are division, composition, and similarity and dissimilarity...²¹⁸

Considering that these issues were discussed in *Dem.* and that they included sense perception, it seems reasonable to suppose that the place where this discussion properly began was the fifth book.²¹⁹

217 Galen, *Opt. doct.* 4.3–4 (104,6–15 Barigazzi / I.49–50 K). The closest parallel to this passage in ancient literature is found in Clement of Alexandria, *Strom.* VII.16.93.2 (66,3–6 Stählin), where the distinction between natural and artificial criteria (known also to Sextus, *PH* II.15 and *M.* VII.31–32, but not used by him in quite the same way) is drawn along similar lines: ἔστι μὲν οὖν κοινὰ τινα τῶν ἀνθρώπων κριτήρια καθάπερ τὰ αἰσθητήρια, τὰ δ' ἄλλα τῶν βουληθέντων καὶ ἀσκησάντων τὰ ἀληθῆ, τὰ διὰ νοῦ καὶ λογισμοῦ τεχνικὰ λόγων ἀληθῶν τε καὶ ψευδῶν (“Now, there are certain criteria common to all men, such as the sensory organs, while the other, artificial criteria of true and false arguments, acquired through the intellect and reasoning, are confined to those who have made truth their aim and practice”, trans. F. J. A. Hort and J. B. Mayor, *Clement of Alexandria: Miscellanies Book VII* [London/New York: Macmillan 1902], pp. 163–165, modified). Another passage from the seventh book of *Stromateis*, following shortly after the one just mentioned (*Strom.* VII.16.95.3–8), contains close verbal correspondences with parts of *Liber logicus* included in our collection (B6*[3–4] and [8] and B7*[2]). The passage either draws on *Liber logicus* itself or perhaps directly on its philosophical source. It is tempting to think that *Strom.* VII.16.93.2, where the common and artificial criteria are distinguished, draws on the same source, that is to say, on *Dem.* For a more detailed discussion, see Havrda, *The So-Called Eighth Stromateus*, pp. 68–72.

218 *PHP* IX.1.10–13 (542,4–19 De Lacy / V.722–723 K) = A14.

219 As mentioned above, the doctrine of the criteria could have been outlined as early as the first book of *Dem.*; see above, p. 38. See also B6*[8–9], on the first principles of demonstration. But a detailed discussion of this issue seems to have started only in book V.

The polemic against Favorinus calls to mind another aspect of Galen's discourse about method that could be associated with the fifth book. In the list of works "that provide a broader treatment of what was discussed in [*On demonstration*]" Galen mentions several treatises dealing with scepticism: *On Clitomachus and his refutations of demonstration*; *On the best teaching against Favorinus*; *In defence of Epictetus against Favorinus*; and probably also *On self-refuting arguments*; and *On the controversy regarding the apprehension of things*.²²⁰ This strongly suggests that Galen dealt with scepticism in *Dem.* too. If he did, then presumably he would have *refuted* the sceptic arguments against the possibility of firm knowledge; and he would have *defended* this possibility, as it is the very foundation of the demonstrative theory. One version of both the refutation and defence is found in the second title on the list – *On the best teaching against Favorinus* (*Opt. doct.*) –, the only one that has survived. There Galen distinguishes between "the older Academics" (οἱ παλαιότεροι Ἀκαδημαϊκοί) and the more recent ones like Favorinus. The former assume that the arguments on both sides of an issue lead to "suspension" (ἐποχή), by which they mean "that indeterminacy ... which consists in determining nothing on any matter and asserting nothing firmly" (τὴν ἀοριστίαν ὅπερ ἐστὶ περὶ μηδενὸς πράγματος ὀρίσασθαι μηδ' ἀποφύνασθαι βεβαίως). The latter "sometimes advance suspension so far that they do not even allow that the sun is apprehensible (καταληπτόν), and sometimes advance judgement so far that they entrust it to their pupils without their first having been taught any criterion of knowledge (ἐπιστημονικὸν κριτήριον)".²²¹ Apart from pointing out the inconsistency of Favorinus' position, Galen argues that the best teaching is that which relies on credible starting points, and no starting points are more credible than that which is plainly manifest to perception and intellect.²²² If the polemic went along similar lines in *Dem.*, it would probably have included the reference to the criteria, and so the discussion of perception and its objects would find an appropriate place in that context.

In this connection we may add two speculative but not unfounded remarks. In *Liber logicus*, the section B7* of the present collection is immediately followed by a polemic against the sceptic notion of ἐποχή ("suspension of judgement") and the associated claim that "nothing is firm" (βέβαιον εἶναι μηδέν). In this polemic, the argument of self-refutation is used, which leads to a doubt about the credibility of the criticized position:

If suspension of judgement says that nothing is firm, clearly if it starts from itself it will invalidate itself first. Either it concedes that something is true and we should not suspend judgement about everything; or it objects by saying that nothing is true, and it will clearly not speak the truth in the

²²⁰ *Lib. prop.* 14.19–22 (168,4–19 Boudon-Millot / XIX.44 K) = A9[3–6].

²²¹ *Opt. doct.* 1.1 (92,5–11 Barigazzi / I.40–41 K). I am using an unpublished translation kindly provided to me by Jonathan Barnes. I make one modification in translating the phrase ἐπιστημονικὸν κριτήριον as "criterion of knowledge" instead of "means of knowledgeable judgement".

²²² Cf. *Opt. doct.* 4.3 (104,3–6 Barigazzi / I.49 K).

first place. (...) Therefore, even if we ought to believe them and suspend judgement about everything, we will start by suspending judgement about suspension of judgement itself, as to whether we should believe it or not.

Εἰ φησιν ἡ ἐποχὴ βέβαιον εἶναι μηδέν, δῆλον ὅτι ἀφ' ἑαυτῆς ἀρξαμένη πρῶτον ἀκυρώσει ἑαυτήν. ἢ τοίνυν δίδωσιν ἀληθές τι εἶναι καὶ οὐ περὶ πάντων ἐφεκτέον, ἢ ἐνίσταται μηδέν εἶναι ἀληθές λέγουσα, καὶ δῆλον ὅτι οὐδ' αὐτὴ πρότερον ἀληθεύσει. (...) <δι'> ὁ καὶ εἰ δεῖ πειθόμενον αὐτοῖς περὶ πάντων ἐπέχειν, περὶ αὐτῆς πρότερον τῆς ἐποχῆς ἐφέξομεν, εἴτε πειστέον αὐτῇ εἴτε καὶ μή.²²³

The style of this polemic is reminiscent of a puzzling passage in Olympiodorus' *Introduction to logic*, where the following argument against the sceptic notion of "inapprehensibility" (ἀκαταληψία) is attributed to Plato:

You who maintain that there is inapprehensibility either know that there is inapprehensibility or you do not know it. If you do not know it, how can we believe you, since your claim is just talk? But if you know that there is inapprehensibility, then look! – there is apprehension after all, since you apprehend that there is inapprehensibility.

ὁμοίως οἱ πρεσβεύοντες ἀκαταληψίαν ἢ ἐπέγνωτε ὅτι ἔστιν ἀκαταληψία ἢ οὐκ ἔγνωτε· εἰ μὲν οὖν μὴ ἔγνωτε, πῶς ὑμῖν πιστεῦσωμεν ἀπὸ γνάθων ἀποφαινομένοις; εἰ δὲ ἔγνωτε ὅτι ἀκαταληψία ἔστιν, ἰδοὺ πάλιν ἔστι κατάληψις· κατελάβετε γὰρ ὅτι ἔστιν ἀκαταληψία.²²⁴

This is followed by a similar argument (fictitiously) attributed to Aristotle and then, remarkably, by a quotation from Galen:

But Galen refutes them from activity by saying: "If there is no apprehension and the nature of things is <not> determinate, why then do we not go to a furnace when looking for water, or again to the sea when looking for food?"

ὁ δὲ Γαλιηνὸς ἐλέγχει τούτους ἀπὸ τῆς ἐνεργείας²²⁵, λέγων ὅτι εἰ μὴ ἔστι κατάληψις καὶ <μὴ>²²⁶ ἔστι ὠρισμένη ἢ φύσις τῶν πραγμάτων, τί δήποτε ὕδωρ μὲν ζητοῦντες οὐκ ἐπὶ κάμινον βαδιοῦμεθα, τροφὴν δὲ ὁμοίως ζητοῦντες οὐκ ἐπὶ θάλατταν βαδιοῦμεθα;²²⁷

This quotation is not found anywhere in the Galenic corpus. Adolf Busse, the editor of Olympiodorus, suggests that it may come from *Dem.*, a reasonable guess, given that

223 Clement of Alexandria, *Lib. log.* (= *Strom.* VIII) 5.15.2–3 and 5.15.7 (89,1–5 and 17–19 Stählin–Havrda), trans. M. Havrda.

224 *Proleg.* 1 (4,5–9 Busse); trans. S. Gertz, *Olympiodorus: Introduction to Logic* (London: Bloomsbury 2018), p. 198, slightly modified.

225 Thus codex Mutinensis 69; Busse changes to ἐναργείας, mistakenly in my view. Galen's refutation is "from activity", i.e., from the pragmatic inconsistency.

226 *addidi*.

227 Olympiodorus, *Proleg.* 1 (4,15–18 Busse).

Dem., or at least parts of it, was studied in the Alexandrian Neoplatonist school.²²⁸ Since Galen is quoted at the end of a section dealing with scepticism, where the only other authorities mentioned are Plato and Aristotle (and their quasi-sceptic predecessors), it is possible that a larger part of this section goes back to Galen. The similarity of its style to the antisceptic polemic in *Liber logicus* (which is found in the immediate vicinity of a patently Galenic material) lends support to this view, as well as to the hypothesis that Galen is also the source of this part of Clement's excerpts.²²⁹ However, as plausible as this may be, all indications are indirect. We do not have sufficiently close and specific parallels in Galen to the arguments used in *Liber logicus* or in Olympiodorus (prior to the actual quotation from Galen).²³⁰ For this reason, we do not include this material among the testimonia of *Dem.*

Books VI and VII

When it comes to books six and seven, we are left in complete darkness. Ḥunayn did not have them nor are they mentioned in any Greek source. The following remarks – much like those made at the end of the preceding section – are therefore speculative. If it is true that in book five Galen dealt with perception in the context of a discussion about the criteria, then perhaps he pursued this topic further, moving on to the rational criteria and the methods of inquiry associated with them:

...and besides these, mind or thought or whatever one wants to call it, by which we discern what is entailed and what is incompatible and other things that fall under them, among which are division, composition, and similarity and dissimilarity..²³¹

That Galen dealt with the rational criteria in *Dem.* is pretty much certain. After all, he says so in the passage just cited. They are among “the issues which I discussed at length both in the treatise *On demonstration* and in certain others” (A14). The things “falling under” these criteria (ἃ καταπέπτωκε τούτοις) include division and composition, and similarity and dissimilarity. As Galen makes clear, these topics are relevant to the process of establishing the principles of demonstration: “In just about all my writ-

²²⁸ See above, p. 8.

²²⁹ In *The So-Called Eighth Stromateus*, pp. 49–50, I suspended judgement about this question. It is worth noting that both in the Olympiodorus passage and in *Liber logicus*, the sceptics are called οἱ ἐφεκτικοί. See Olympiodorus, *Proleg.* 1 (3,32 Busse) and *Lib. log.* (= *Strom.* VIII) 5.16.3 (90,4 Stählin–Havrda). However, the name is quite common in the second century: see *The So-Called Eighth Stromateus*, pp. 215–216, for some examples.

²³⁰ We can only lament the loss of Galen's polemic against Clitomachus (which would certainly have included a discussion of ἐποχή) or his treatise *On the controversy regarding the apprehension of things*, which would probably have addressed the notion of ἀκαταληψία.

²³¹ *PHP* IX.1.13 (542,16–29 De Lacy / V.723–724 K) = A14.

ings I have pointed out that the demonstration of every doctrine goes back to the rational principles (εἰς τὰς λογικὰς ἀρχὰς ἀνάγεται παντὸς δόγματος ἢ ἀπόδειξις).²³² The capacity to distinguish the similar and the dissimilar, and the methods of division and composition seem to play an essential role in that regard. In *PHP*, in accordance with the agenda of that work, Galen collects passages from Plato and Hippocrates dealing with these issues. But it is perhaps not too bold to conjecture that he dealt with them directly in *Dem.*, by way of a systematic exposition.²³³ For the reason mentioned above, the sixth book would have been an appropriate place for this discussion.

Here again, we are reminded of a potentially relevant chapter in *Liber logicus*. The polemic against ἐποχή in section δ is followed by section ε, introduced by the title: “Procedures and principles of inquiries involve and consist in these matters.”²³⁴ It includes a discussion of division and definition, presented as methods of inquiry. It has been argued that section ε could go back to Galen, as it contains a number of parallels with his writings.²³⁵ The evidence is less conclusive than in sections β and γ of *Lib. log.* (i.e., our B6* and B7*), and so it is not included in the present collection. If it goes back to Galen, however, its source could well be the sixth or the seventh book of *Dem.* As we shall see, the eighth book, dealing with Aristotle’s definition of time, was probably part of a larger discussion of definition. It could have been preceded by a systematic elaboration of this topic, such as the one found (in a drastically abbreviated form) in *Liber logicus*.

Books VIII and IX

There is one Greek testimonium mentioning book eight and two Arabic testimonia mentioning book nine. According to Abū al-‘Alā’ ibn Zuhr, in book nine Galen “very clearly, beyond any doubt, showed Aristotle’s error”; he did so while dealing with “the conjunction” of categorical premisses, which seems to indicate that, in his discussion of “Aristotle’s error”, he focused on the validity of Aristotle’s argument, constructed as a categorical syllogism.²³⁶ Unfortunately, we do not know what the argument was

²³² Cf. *PHP* IX.8.1 (590,12–13 De Lacy / V.782 K); trans. De Lacy, modified.

²³³ One of the treatises mentioned in A9 is *On similarity* in three books. *On what is said in many ways* is also relevant.

²³⁴ *Lib. log.* (= *Strom.* VIII) 90,7–8 (Stählin–Havrda): Αἱ τῶν ζητήσεων ἔφοδοι καὶ ἀρχαὶ περὶ ταῦτα καὶ ἐν τούτοις εἰσίν.

²³⁵ See *The So-Called Eighth Stromateus*, p. 42 n. 122, for the list of parallels. We may add the use of the word ἐμνηνευτικός in *Lib. log.* (= *Strom.* VIII) 6.19.2 (91,32 Stählin–Havrda), which seems to be characteristically Galenic. See R. Chiaradonna, *Ontology in Early Neoplatonism: Plotinus, Porphyry, Iamblichus* (Berlin/Boston: de Gruyter 2023), pp. 128–129.

²³⁶ Abū al-‘Alā’ ibn Zuhr, *Solution to the Doubts about Galen*, ed. Koetschet–Rajab (in preparation), MS Āstān Quds Riḍawī 13997, fol. 13b, l. 18–23 = E5.

about, but it is likely that, as in the case of the discussion in book four (to which Abū al-ʿAlāʾ refers in the same passage), it concerned some issue in natural philosophy. We know from other sources that Galen addressed three topics of Aristotle's *Physics* – time, place, and the unmoved mover – in order to expose the flaws of Aristotle's reasoning. A precious testimonium from Simplicius allows us to locate the discussion of time in book eight. Apparently, then, the line of attack against Aristotle, focusing on his arguments in the area of natural philosophy, continued in the following book.

a. Time

In the eighth book of *Dem.*, according to Simplicius, Galen criticized Aristotle's argument in *Physics* IV.11, 218b21–219a11, a passage whose aim was to establish that “time does not exist without motion” (the word “motion”, κίνησις, is used in the sense of “change”, μεταβολή).²³⁷ Aristotle's argument is the first step towards the definition of time as “the number of motion according to the prior and the posterior”; it establishes the necessary connection between time and motion/change, without yet determining what the connection is.²³⁸ The argument is based on the following observation, supported by the story of the sleepers by the tombs of the heroes in Sardinia: “When we do not change in our minds at all, or do not notice that we are changing, we do not think that time has elapsed.” According to Aristotle, “if the non-realization of the existence of time happens to us when we do not distinguish any change, but the soul seems to stay in one indivisible state, and when we perceive and distinguish [change] we say time has elapsed, evidently time is not without motion, i.e., change.”²³⁹

Galen interprets Aristotle as saying that time does not exist without motion “because we conceive of time while moving” (ἐπειδὴ κινούμενοι νοοῦμεν τὸν χρόνον).²⁴⁰ Considering that Aristotle links the non-perception of time with the state of “not changing in our mind” (ὅταν ... μηδὲν αὐτοὶ μεταβάλλωμεν τὴν διάνοιαν) and the soul's apparent

237 Simplicius, *In Phys.* IV.11 (708,22–34 Diels) = E1a. For “motion” as change, see Aristotle, *Phys.* IV.11, 218b19–20.

238 The definition is reached in *Phys.* IV.11, 219b1–2.

239 Aristotle, *Phys.* IV.11, 218b21–219a1: ... ὅταν γὰρ μηδὲν αὐτοὶ μεταβάλλωμεν τὴν διάνοιαν ἢ λάθωμεν μεταβάλλοντες, οὐ δοκεῖ ἡμῖν γεγονέναι χρόνος, καθάπερ οὐδὲ τοῖς ἐν Σαρδοῖι μυθολογουμένοις καθεύδειν παρὰ τοῖς ἥρωσιν, ὅταν ἐγερθῶσι· συνάπτουσι γὰρ τῷ πρότερον νῦν τὸ ὕστερον νῦν καὶ ἐν ποιοῦσιν, ἐξαιροῦντες διὰ τὴν ἀναισθησίαν τὸ μεταξύ. ὡς περ οὖν εἰ μὴ ἦν ἕτερον τὸ νῦν ἀλλὰ ταῦτό καὶ ἔν, οὐκ ἂν ἦν χρόνος, οὕτως καὶ ἐπεὶ λανθάνει ἕτερον ὄν, οὐ δοκεῖ εἶναι τὸ μεταξύ χρόνος, εἰ δὴ τὸ μὴ οἶεσθαι εἶναι χρόνον τότε συμβαίνει ἡμῖν, ὅταν μὴ ὀρίσωμεν μηδεμίαν μεταβολήν, ἀλλ' ἐν ἐνὶ καὶ ἀδιαίρετῳ φαίνεται ἡ ψυχὴ μένειν, ὅταν δ' αἰσθώμεθα καὶ ὀρίσωμεν, τότε φαμέν γεγονέναι χρόνον, φανερόν ὅτι οὐκ ἔστιν ἄνευ κινήσεως καὶ μεταβολῆς χρόνος. Trans. R. P. Hardie and R. K. Gaye, “Physics,” in J. Barnes (ed.) *The Complete Works of Aristotle I* (Princeton: Princeton University Press 1991), p. 69, modified.

240 Themistius, *In Phys.* IV.11 (144,24–25 Schenkl) = E1, closely paralleled in E1a.

staying “in one indivisible state” (ἐν ἐνὶ καὶ ἀδιαρέτω φαίνεται ἡ ψυχὴ μένειν), this is not an implausible interpretation – although it is vigorously rejected by Themistius and Simplicius. Galen then refutes the argument by means of a counterexample: “For it is also true of motionless things, like the poles of the cosmos and the centre of the earth, that we conceive of them while moving, and yet they do not involve motion.”²⁴¹ According to Simplicius, the motion Galen has in mind is the motion of thought: “For we do not conceive anything with a thought that does not move.”²⁴² Ibn Rušd plausibly interprets this motion as belonging properly to *imaginatio*.²⁴³

Probably in the same section of *Dem.*, Galen also criticized the above-mentioned definition of time (“the number of motion according to the prior and the posterior”) as circular:

Having given a long list of meanings of the ‘before and after’, [Galen] says that none of them are well suited to [Aristotle’s] definition except the one with respect to time. Therefore, time is the number of motion with respect to time.²⁴⁴

So Galen rejected Aristotle’s view that “the prior and the posterior is first of all in place” (*Phys.* IV.11, 219a14–17); instead he seems to have argued that the temporal meaning of these determinations is just as primary as the local one; and he concluded that the temporal meaning is the only one applicable in the definition of time. Did Galen supplement this criticism of Aristotle’s definition with any positive alternative? Themistius says that, according to Galen, time “is defined by itself” (ἀφορίζεσθαι δι’ αὐτοῦ). Simplicius uses different words expressing the same thought: “Galen says that time is elucidated by itself” (δι’ ἑαυτοῦ δηλοῦσθαι).²⁴⁵ It is not clear, however, whether this comment represents Galen’s view about *time* – namely, that it cannot be defined except by itself – or whether it refers merely to the circularity of Aristotle’s definition.²⁴⁶

²⁴¹ Themistius, *In Phys.* IV.11 (144,27–29 Schenkl) = E1.

²⁴² Simplicius, *In Phys.* IV.11 (708,31–32 Diels) = E1a.

²⁴³ Ibn Rušd, *In Arist. Phys. IV*, comm. 97, ed. U. R. Jeck, *Aristoteles contra Augustinum*, pp. 164–165 and 248 = E1b. Ibn Rušd probably hints at Aristotle’s view of φαντασία as motion, see Aristotle, *De an.* III.3, 428b10–429a2.

²⁴⁴ Themistius, *In Phys.* IV.11 (149,5–7 Schenkl) = E2[1]; Simplicius, *In Phys.* IV.11 (718,13–719,18 Diels) = E2[1].

²⁴⁵ Themistius, *In Phys.* IV.11 (149,4 Schenkl) = E2[1]; Simplicius, *In Phys.* IV.11 (718,30 Diels) = E2a[1].

²⁴⁶ In its immediate context, the claim that time is “defined by itself” (Themistius) or “elucidated by itself” (Simplicius) is directly linked to the circularity of Aristotle’s definition; see Chiaradonna, “Le traité,” pp. 55–56 and 61, who correctly interprets the verbs as passive, rather than middle (“reveals itself” *vel sim.*). Whether it also reflects Galen’s view of time, that it cannot be defined except by itself – as Chiaradonna, *ibid.*, pp. 61–62, suggests – is another question. One could argue against this interpretation that Galen presents the circularity of Aristotle’s definition as its weakness, not strength; and there seems to be no parallel in Galen’s writings to the view that any object could be defined by itself. This objection also applies to Havrda, “The Purpose,” p. 286.

This picture can be further supplemented on the basis of Arabic sources. An important passage in Yahyā ibn ‘Adī (E3) cites Alexander of Aphrodisias as its source for the following report:

Galen held that time is subsistent through itself and has no need for motion in its existence, and he said that Plato was of the same opinion on this topic, that is, that he held that time is a substance, by which he meant duration, and motion merely measures and determines it. So Galen says that motion does not produce time for us, but rather produces only day, month, and year for us. Time, though, is existent in itself, and it is related to [motion] accidentally.²⁴⁷

If true, this probably pertains to the same discussion about time as reported by Themistius and Simplicius. Unlike them, Yahyā attributes to Galen certain positive views about time as well as a particular interpretation of Plato’s position. Nonetheless, these views are closely linked to Aristotle’s discussion in *Physics* IV, as they deal with the relation between time and motion. In our passage the argument concerns specifically the motion producing “day, month, and year”, i.e., the motion of the heavens.²⁴⁸ Aristotle is depicted as a relativist, who understands time as dependent on motion, whereas Plato is depicted as the proponent of absolute time, which is independent of motion, being merely measured by it. It seems that, as in book four, Galen confronted Aristotle’s argument with Plato’s alternative view. Perhaps he even endorsed Plato’s (alleged) view, as Yahyā suggests, at least for the sake of the argument. However, unlike in book four, the Platonic source of this interpretation is obscure.²⁴⁹

Galen attributes to Plato the view that time is a substance (as opposed to its being merely an accident), and interprets this substance as “duration” (Ar. *mudda*). This is a remarkable term, not only because it later occurs in Newton in a similar connection.²⁵⁰

247 Yahyā ibn ‘Adī, *The Philosophical Treatises* (318,6–319,3 Khalifat), trans. Adamson, in “Galen and al-Rāzī on Time,” in R. Hansberger, M. A. al-Haytham, and C. Burnett (eds.), *Medieval Arabic Thought: Essays in Honour of Fritz Zimmermann* (London: Warburg Institute 2012), pp. 1–14, here p. 5, modified by Koetschet. In the last sentence we follow the emendation proposed by M. Rashed (see below, notes to E3).

248 The background is possibly Aristotle, *Phys.* IV.14, 223a29–224a2.

249 Sharples links the interpretation with Galen’s view that, according to Plato, there was an eternal disorderly motion prior to the ordering of the cosmos; see R. W. Sharples, “Alexander of Aphrodisias, *On Time*,” *Phronesis* 27 (1982), pp. 58–81, here p. 74, referring to Galen’s *Plat. Tim.* 4, preserved in Arabic (7,1–7 Kraus/Walzer); the passage is translated by P. Adamson, “Galen and al-Rāzī on Time,” pp. 7–8 (T8). However, the deductive steps between this and the view that time is duration independent of motion are far from obvious. See the discussion in Adamson, *ibid.* Perhaps the background passage is rather *Plat. Tim.* 36e2–5, on the origin of the “endless and rational life” of the world soul “for the whole of time” (πρὸς τὸν σύμπαντα χρόνον), which could be interpreted in the sense that there is an eternal time belonging to the soul which precedes the motions of the heavenly spheres. Cf. Simplicius, *In Phys.* (783,18–21 Diels).

250 I. Newton, *Philosophiae naturalis principia mathematica* (London: Joseph Streater 1686), p. 5, def. VIII, schol. 1. Cf. M. Rashed, “Alexandre d’Aphrodise et la ‘Magna Quaestio’.” Rôle et indépendance des scholies dans la tradition byzantine du corpus aristotélicien.” *Les études classiques* 63 (1995), pp. 295–351, here p. 325. For the background to this view in the scholastic literature of the 16th and 17th centuries, see

As Andreas Lammer points out, it also occurs in Alexander's *On time* as part of the definition of time, which is claimed to be in full accordance with Aristotle:

We shall talk about time according to the opinion of the Philosopher without deviating from him in any respect. So, he maintains that, logically (?) speaking, it [sc. time] is the number of the west-bound motion of the sphere and of what is other than this. Thus, its definition is that it is a duration (*mudda*) which motion numbers.²⁵¹

The original Greek word in this passage and in Galen's interpretation of Plato was probably παράτασις.²⁵² This, at least, is the word used by Simplicius when answering for Galen to Themistius. According to Simplicius, Galen would say that “the prior and the posterior” in the definition of time are not employed in the local sense, as Themistius believes, but “with respect to the duration of being” (κατὰ τὴν τοῦ εἶναι παράτασιν).²⁵³ These are of course Simplicius' words, not Galen's; but Yahyā's report indicates that Galen already used a word whose Arabic equivalent is *mudda*, and παράτασις is as good a candidate as any.²⁵⁴ Simplicius' phrase “the duration of being” also occurs in his comment on Aristotle *Phys.* IV.12, 220b32–221a9; the particular passage where the phrase is used probably draws on Alexander.²⁵⁵ Once again, this cannot be taken as proof that Alexander used the word παράτασις in his discussion of time, but we do have the above-quoted passage from his treatise *On time*, which strongly suggests that he did. If this is correct, the following picture emerges: (1) In his critique of Aristotle, Galen used the word παράτασις in reference to the Platonic notion of time. (2) Alexander was acquainted with Galen's critique and his use of the word παράτασις in this context.²⁵⁶ (3) In his own interpretation of Aristotle, Alexander too employed the word παράτασις, possibly in direct response to Galen's critique. (4) Whereas for Galen, however (or at

M. Edwards, *Time and the Science of the Soul in Early Modern Philosophy* (Leiden/Boston: Brill 2013), pp. 23–34. For the notion of *mudda* in Arabic philosophy, see below, p. 78.

251 Alexander of Aphrodisias, *Temp.* 8 (20 Badawī / 93 Théry), trans. A. Lammer, *The Elements of Avicenna's Physics* (Berlin/Boston: de Gruyter 2018), p. 452.

252 This is suggested by Havrda, “The Purpose,” p. 286 n. 83.

253 Simplicius, *In Phys.* IV.11 (718,25–719,2 Diels).

254 Galen uses the word παράτασις exclusively in the temporal sense; see Galen, *Hipp. Epid.* III III.76 (Wenkebach 165,21 / XVIIa.745 K); *Hipp. Aph.* V.69 (XVIIb.885,11 K); *Tot. morb. temp.* 1 (73,5 Wille / VII.441 K).

255 Simplicius, *In Phys.* IV.12 (735,17–28 Diels). In this passage Simplicius interprets Aristotle as saying that time is the measure of motion “with respect to the duration of being” (κατὰ τὴν τοῦ εἶναι παράτασιν). Without attributing it directly to Alexander, he does quote Alexander in the next clause, which is presented as the explanation of this interpretation (735,28–31 Diels). The same interpretation is already developed in an earlier passage (*In Phys.* IV.11, 715,29–716,34 Diels), which is introduced with a laudatory reference to Alexander who “explained almost everything correctly” (715,10 Diels).

256 This is attested by Yahyā's report, which claims to go back to Alexander's response to Galen.

least for his “Plato”), time was duration independent of motion, for Alexander, it was the duration of being measured by motion.²⁵⁷

Even so, the description of time as “duration” was probably not understood by Galen as a definition in the strict sense, i.e., an account expressing the substance of time. So much, at least, follows from Ibn Bāḡḡa’s report, which includes a reference to Alexander and thus appears to go back to Alexander’s polemic against Galen as well. According to Ibn Bāḡḡa, “Galen says that one must content oneself with what people know about [time], and that its substance eludes the mind”.²⁵⁸ This statement indicates that Galen was agnostic about the substance of time and, whatever definition of time he adopted, he regarded it as a description of “what people know” about it. “What people know” is probably a reference to the common understanding of the meaning of words expressed in the so-called notional definitions.²⁵⁹ Perhaps, then, “duration” was just such a definition in Galen’s view, non-committal as to the nature of the substance whose duration time is.

All the reports discussed so far regarding Galen’s polemic about time either mention Alexander of Aphrodisias as their source or may plausibly be traced back to Alexander – either to his commentary on Aristotle’s *Physics* or another treatise dealing specifically with Galen. Now if Alexander paid so much attention to Galen’s arguments about time, it indicates that he was worried about them and thought it was important to defend Aristotle against Galen’s critique. As such it is reasonable to suppose that Galen was one of the anonymous critics of Aristotle addressed in Alexander’s extant treatise *On time*. Indeed, some of the objections against the view that time is the number of motion, reported by Alexander, are reminiscent of Galen, and could plausibly go back to *Dem*. One of them involves the following thought experiment:

If we were to think of the sphere standing still, its standing still would be in time; and since its standing still would be in time, its motion would be in time; and if its motion is in time, the number that follows its motion is in time too.²⁶⁰

At first glance the argument seems rather weak, as it posits the very thing it aims to prove: that time would continue even if the motion of the heaven stopped moving. If the sphere were to stop moving and still be in time, it argues, then the motion of the sphere

257 This paragraph summarizes the argument made in Matyáš Havrda, “Je čas akcident pohybu? K antické kontroverzi nad Aristotelovou *Fyzikou*,” in O. Navrátilová and V. Němec (eds.), *Pole plné rozmanitých bylin: Sborník k životnímu jubileu Lenky Karfíkové* (Prague: OIKOYMENH 2022), pp. 7–27 (in Czech).

258 Ibn Bāḡḡa, *Commentary on Aristotle’s Physics* IV.14 (694,13–15 Lettinck) = E4.

259 For notional (“ennoematic”) definitions, see Chiaradonna, “Galen and Middle Platonists,” pp. 339–349. See esp. Galen, *Diff. puls.* IV.2 (VIII.704 K); *MM* I.5.3 (56,6–9 Lorusso / X.40 K). For the appeal to the common understanding of words, see also Clement of Alexandria, *Lib. log.* (= *Strom.* VIII) 2.3.3 (81,17–20 Stählin–Havrda) = B6*[2], with Havrda, *The-So Called Eighth Stromateus*, pp. 149–150.

260 Alexander of Aphrodisias, *Temp.* 5 (20 Badawi), trans. Koetschet = E9*.

and the number of this motion would be in time too, and so, if time were the number of motion, time would be in time. Alexander brushes the argument aside, on the basis that, if the heavenly motion stopped moving, time would cease to exist, and that such a supposition is vacuous. However, from a later section of Alexander's response, it appears that the argument takes its starting point from Aristotle himself, namely, from the qualification of his definition, according to which time is not only the number of motion but also of rest (*Phys.* IV.12, 221b7–23). The opponent seems to have argued something like this: "If time is the number of motion and rest, then the sphere of the heaven would be in time even if it stopped moving. (And so its motion and its number is in time too.) Moreover, if the sphere were in time, even if it stopped moving, then the parts of the cosmos that actually do not move – the axis and the centers of the heavenly circuits – are in time too. (And so time is not posterior to motion)." The second part of this argument is addressed by Alexander in the following passage:

No-one should think that, when we say that time is the number of rest just as it is of motion, then it is necessary for us to say that the diameter of the whole is at rest and that the centres are at rest, and so that it is necessary for [the whole] to be in time. For we do not claim that whatever does not move is in time, since rest according to us is not [in everything] which merely does [not] move or is not moved ; rather, it is [in] that which has the ability according to its nature to move and it is at rest only accidentally. This is what we said there <to remove this uncertainty>. And when we say of the poles and of the centres that they do not move, we do not say that they are at rest; because it is not in their nature to move. So it is not necessary for them to be in time.²⁶¹

Whatever the merit of these objections against Aristotle, they resemble Galen's arguments in four respects: as with the other reports, they focus on the relation between time and motion, arguing that time is not posterior to motion; like E1 and E1a, they involve the notion of the poles/axis and centers of the heavenly circuits (the latter being identical with the center of the earth); like the argument about place (E6, discussed below), they involve a thought experiment; and like other instances in *Dem.*, they argue dialectically, based on the premisses taken from the opponent.²⁶² None of this *proves* that Alexander's opponent is Galen, but the material at least is close enough to be appended to section E as "presumed testimonia".

Why did Galen discuss time in the eighth book? We cannot be sure; but a plausible interpretation is that he took Aristotle's argument in *Physics* IV as an example of a (failed) search for a definition. On the one hand, Aristotle's discussion is exemplary, as it starts with the question of the existence of time, continues by exploring what others say about time, and, after identifying an attribute of time that, as Aristotle believes,

²⁶¹ *Ibid.*, p. 23, trans. Koetschet = E11*.

²⁶² For *Dem.*, see C6, C7, C11–13, G4, and G5 (see below, on book XIII); the discussion of the ἡγεμονικόν in *PHP* II, probably paralleled in *Dem.* III to some extent, is based on the cardiocentric premiss; see B. Morison, "Logic," in R. J. Hankinson (ed.), *Cambridge Companion to Galen* (Cambridge: Cambridge University Press 2008), pp. 66–115, here pp. 75–83.

necessarily belongs to it (namely, change), searches for the middle term grasping time's essence.²⁶³ On the other hand, it is a failure, in Galen's eyes at least, which makes it even more useful as a didactic example. For asking the question why the argument fails enables the reader to learn better what definition is, how to search for it, and what limits there are to its power and application. For Galen, time appears to be an entity that cannot be properly defined, and perhaps need not be: for practical purposes, it suffices to say "what people know about it"; in other words, to articulate the meaning of the word "time" in everyday use. The limits of definition is a topic frequently addressed by Galen in his extant writings.²⁶⁴

b. Place

As already noted, according to *al-Fihrist*, Alexander wrote a treatise against Galen regarding time and *place*.²⁶⁵ It is generally supposed by scholars that the part about place focused on Galen's critique of Aristotle's argument about place in *Physics* IV; that a fragment of this critique is preserved by Themistius and Philoponus (E6 and E6a); and that this fragment comes from *Dem*.²⁶⁶ All three suppositions are probably correct, as the fragment just mentioned seems to address Aristotle's argument in *Phys.* IV.4, 211b14–19, and it is cited by the same authors who cite the fragments about time, which are explicitly linked to *Dem*. Moreover, unlike some other topics discussed in *Dem*., we have no indication that Galen dealt with this issue anywhere else. Where exactly in *Dem*. he did so, however, is more difficult to say. Place (just as time) is mentioned in two Arabic testimonia for book thirteen (G6 and G7), and it is quite possible that the Themistius/Simplicius fragment (E6 and E6a) comes from the same book.²⁶⁷ On the other hand, Alexander was probably not interested in Galen's arguments for their own sake, but because they challenged Aristotle's views in the *Physics*. Whereas the Arabic sources do not bear any trace of this anti-Aristotelian edge, the Themistius/Simplicius fragment does. And since Galen discussed Aristotle on time in book eight and other topics of Aris-

263 See Aristotle, *Phys.* IV.10, 217b29–11, 219b2. The question about the essence of time (its "nature"), which follows after the investigation of its attributes, is posed in *Phys.* IV.10, 218a31.

264 See Chiaradonna, "Le traité," pp. 60–62.

265 Ibn al-Nadīm, *Kitāb al-Fihrist* 7.1 (253 Flügel).

266 See von Müller, "Über Galens Werk," p. 471; Chiaradonna, "Le traité," p. 45; P. Adamson, "Galen on Void," in P. Adamson, R. Hansberger, and J. Wilberding (eds.), *Philosophical Themes in Galen* (London: Institute of Classical Studies 2014), pp. 197–211, here p. 207.

267 See Adamson, "Galen on Void," who suggests that Rāzī's G6 belongs to the same argument as the Themistius/Simplicius testimonium (E6/E6a), an argument whose actual subject is not place, but void. Even though Adamson is not explicit about this, it seems to follow from his discussion that Galen's quotation in E6/E6a comes from the same book as Rāzī's G6, i.e., *Dem.* XIII; see Adamson *ibid.*, pp. 208–210.

totle's natural philosophy in book nine, it is reasonable to conclude that the fragment just mentioned also comes from one of these two books.²⁶⁸

The commentators cite the fragment in connection with *Phys.* IV.4, 211b14–19, where Aristotle rejects the notion of place as extension (διάστημα):

The extension between the extremities is thought to be something, because what is contained and separate may often be changed while the container remains the same (as water may be poured from a vessel) – the assumption being that the extension is something over and above the body displaced. But there is no such extension. One of the bodies which change places and are naturally capable of being in contact with the container falls in – whichever it may chance to be.²⁶⁹

In his response Galen sets out to defend the notion of separate extension by means of a thought experiment:

But let us suppose that when water is removed, no other body flows in. There remains, therefore, separate extension in between the surface.²⁷⁰

The point of this argument presumably is not to posit the existence of void.²⁷¹ Rather, it aims to show that extension is conceptually separate from body, whichever body it may be, and thereby, presumably, to defend the notion of place as extension. It is rather similar to the argument from the cessation of the celestial motion, produced by one of Alexander's opponents, the aim of which is to show that time is conceptually separate from motion (E9*). Galen's view of time as duration is in line with these arguments. In neither case does Galen seem to propose a definition in the sense of an account that captures the essence of the thing in question. Rather he seems to defend a particular concept of the thing, which, in his view, corresponds to the meaning of the words "time" and "place" in everyday use.²⁷²

c. Prime mover

In a treatise mentioned in *His own books*, Galen discussed Aristotle's argument in *Physics* VII that the first mover is unmoved.²⁷³ Alexander wrote a refutation of Galen about this issue, and the refutation, containing verbatim quotations from Galen, is

268 Chiaradonna, "Le traité," p. 45, thinks that Galen probably criticized Aristotle's definition of place in *Dem.* VIII. So already von Müller, "Über Galens Werk," p. 471.

269 Trans. R. P. Hardie and R. K. Gaye, "Physics," p. 56.

270 Themistius, *In Phys.* IV.4 (114,7–8 Schenkl) = E6[1]; Simplicius, *In Phys.* IV.4 (573,19–21 Diels) = E6a[1].

271 Against Adamson, "Galen on Void," p. 207, according to whom Galen's thought experiment was designed to show that void was conceptually possible.

272 This reiterates the point made in Havrda, "The Purpose," pp. 286–287 and n. 84.

273 *Lib. prop.* 17.1 (171,15 Boudon-Millot / 15, XIX.47 K): εἰς τὸ πρῶτον κινουῦν ἀκίνητον.

partly preserved in an Arabic translation.²⁷⁴ Alexander's source text was probably the above-mentioned Galenic treatise.²⁷⁵ A Greek fragment of the same critique of Aristotle's argument, attributed to Galen (and possibly going back to the same source), is cited in Simplicius' commentary on the *Physics*.²⁷⁶ All this would hardly be worth mentioning here, did we not have a testimony from Ps-Ġābir ibn Ḥayyān that Galen examined the first mover in *Dem.* as well, arguing that "in moving what it moves, [the first mover] should necessarily be endowed with a movement of its own".²⁷⁷ Since we know that Galen discussed Aristotle's views on natural philosophy in books eight and nine, and book eight was not known to Arabic readers, the argument about the first mover could have been addressed in book nine. It is tempting to believe that Galen rehearsed some of the same objections against Aristotle as those reported by Alexander and Simplicius.²⁷⁸

Books IX to XII

In book nine, Galen began the exposition of the syllogistic theory. The context of the critique reported by Abū al-'Alā' (E5) was a discussion of the pairs of categorical premisses. In the *Inst. log.*, Galen tells us that he dealt with categorical syllogisms in *Dem.*, showing that the number of syllogistic figures was exactly three (F2). A parallel in Ibn al-Ṣalāḥ

274 See above, p. 5. For a detailed reconstruction of Galen's argument, see O. Harari, "Alexander Against Galen on Motion: A Merely Logical Debate?" *Oxford Studies in Ancient Philosophy* 50 (2016), pp. 201–236.

275 See *Alexander against Galen on motion*, Part A, the Carullah manuscript, 67a: "But a certain man [namely Galen] blamed Aristotle concerning this proof ... and wrote a book about it." Trans. al-Dimashqī, in: N. Rescher and M. E. Marmura, *The Refutation by Alexander of Aphrodisias of Galen's Treatise on the Theory of Motion* (Islamabad: Islamic Research Institute 1965), p. 18.

276 Simplicius, *In Phys.* VII.1 (1039,13–15 Diels): ταύτην τὴν ἀπόδειξιν αἰτιᾶται μὲν καὶ ὁ φιλολογώτατος Γαληνός, αἰτιῶνται δὲ καὶ ἄλλοι ὡς ἀδυνάτω χρωμένῃ ὑποθέσει τῇ λεγούσῃ τοῦ AB πρώτως καὶ καθ' αὐτὸ κινουμένου τὸ ΓΒ μὴ κινεῖσθαι. ("The most scholarly Galen criticizes this demonstration, and others criticize it too, on the grounds that it uses an impossible hypothesis, [namely,] the one claiming that, though AB is moving primarily and in its own right, CB is not moving"; trans. C. Hagen, *Simplicius: On Aristotle's Physics* 7 [London: Duckworth 1994], p. 14). Simplicius probably draws on Alexander, whose response to the critique is mentioned in the following sentence. Here again, the reference is possibly to Galen's treatise mentioned in *Lib. prop.* 17.1; although it cannot be ruled out that, in his commentary on *Physics*, Alexander's background text was *Dem.*, just as it was, presumably, in his response to Galen's critique of Aristotle's definitions of time and place.

277 Ps-Ġābir ibn Ḥayyān, *Selected Texts*, p. 517 Kraus = E7. This testimonium was unknown to Galenic scholars until now; nonetheless, some have suspected that the argument about the first mover could have been developed in *Dem.* too; see Chiaradonna, "Le traité," pp. 45–46 n. 18; Havrda, "The Purpose," p. 280 n. 63.

278 As mentioned above, there was a significant overlap between *Dem.* XIII and *PHP* VII; there was also some overlap between *Dem.* XIII and *Hipp. elem.*; between *Dem.* V and *PHP* VII; and probably also between *Dem.* III and *PHP* II. Possibly, then, there was also an overlap between some part of *Dem.* (book IX?) and Galen's treatise on the prime mover.

allows us to locate this discussion in book nine.²⁷⁹ The next reference to a specific book concerns book eleven. There, Ibn Buḥtīšū' tells us, Galen, "after explaining [the propositions] used by Aristotle in syllogisms of the third figure," discussed a particular issue in Plato.²⁸⁰ This indicates that Galen continued his analysis of categorical syllogisms, a topic introduced in book nine, in the subsequent two books, perhaps explaining each of the three Aristotelian figures in turn. Having concluded the topic in book eleven, he turned to Plato. The Platonic issue mentioned by Buḥtīšū' is a curious one: Galen argues that Plato "imposes no constraints on most people as to the use of sex which follows its natural course"; on the other hand, he wishes to restrain those who suffer from love-sickness, arguing that they should only be allowed a moderate use of sex. It is not clear which passage in Plato Galen is referring to, but the context of the discussion in *Dem.* seems to be revealed by the anonymous treatise *All the kinds of syllogism* from the Alexandrian Neoplatonist school.²⁸¹ There we learn that Galen distinguished between simple and compound syllogisms, the former being standard Aristotelian syllogisms composed of three terms, whereas the latter were four-term syllogisms, of which Galen "found many examples in Plato's dialogues" (F4).²⁸² The treatise then analyses several examples of the compound syllogism, mostly (or solely) from Plato's dialogues. One of these, from the third book of the *Republic*, runs as follows:

All correct passions come about through moderation.
 All sexual activities come about through excessive pleasure.
 No excessive pleasures come about through moderation.
 Therefore, no correct passions come about through sexual activities.²⁸³

This example recalls the passage from Buḥtīšū', insofar as both texts (a) deal with sexual desire and activities, contrasting excess and moderation in that regard; (b) do so in the course of a discussion about syllogisms; and (c) refer to Plato. They differ from each other in that each attributes to Plato a different attitude towards sex. Whereas according to Buḥtīšū', Plato imposes no constraints on sexual activities he considers to be natural, according to the *All the kinds*, Plato speaks disparagingly of sexual activity as such. However, it is quite possible that Buḥtīšū' reflects Galen's gloss on this very example, which, like other examples from Plato cited in *All the kinds*, is probably taken from *Dem.*²⁸⁴ Having analysed Plato's argument about sexual activity in the *Republic*,

279 Ibn al-Ṣalāh, *On the fourth figure of the categorical syllogism*, 122b18–20, ed. in N. Rescher, *Galen and the Syllogism* (Pittsburgh: Pittsburgh University Press 1966), p. 76 = F1.

280 Ibn Buḥtīšū', ed. F. Klein-Franke, *Abū Sa'īd 'Ubaydallah ibn Buḥtīšū': Über die Heilung der Krankheiten der Seele und des Körpers* (Beirut: Dar El-Machreq 1978), p. 48,11–21 = F3.

281 See above, p. 8.

282 *Omn. syllog.* x,30 Wallies, trans. Barnes and Morison, forthcoming.

283 *Omn. syllog.* x,16–19 Wallies, trans. Barnes and Morison.

284 See above, p. 8.

Galen may have recalled the same philosophers's distinction between natural and unnatural sex, and argue that a moderate use of sex is acceptable for Plato.²⁸⁵ But even if Butišū' refers to a different Platonic passage, it seems safe to assume that the context of the reference is the discussion of compound syllogisms. If this is correct, it follows that Galen discussed compound syllogisms in book eleven.

Rāzī tells us that in book twelve, Galen dealt with necessary consequence. His example was one season following upon another (F7). A parallel in Ps-Ġābir ibn Ḥayyān suggests that Galen regarded this consequence as "one of the first premisses in the mind" (F8); this presumably means that it is primitive and need not be proved. We do not know the context in which Galen dealt with this issue, but a reasonable guess is that in book twelve Galen discussed the modality of syllogistic premisses and conclusions. In *SMT* Galen recalls "a certain logical theorem pointed out in the books *On demonstration*," which concerns this issue. According to this theorem, "of demonstrations, some conclude that this holds of that of necessity, whereas others that it is possible [for this] to hold [of that]. Some of these latter change into [this] holding [of that] of necessity, whenever they follow necessary principles" (F9).²⁸⁶ This passage, analysed in detail by Jonathan Barnes, shows that Galen was interested in modality and examined this issue in *Dem*.²⁸⁷ And even though, according to another source, he thought that "the theory of the possible and the syllogisms that are generated from it are superfluous" (F12, see also F10), he did concede a positive role to the possible demonstrations within scientific method. As F9 indicates, this role is one of tentative conclusions, which are to be confirmed by showing why they are necessarily true. These and related issues were probably dealt with in book twelve.²⁸⁸

²⁸⁵ See, e.g., Plat. *Leg.* I, 636c3–5 and V, 733e6–734a9.

²⁸⁶ *SMT* III.25 (XI.612–613 K).

²⁸⁷ For a discussion of Galen's attitude to modal syllogistic, including a detailed commentary on our testimonia F9 and F12, see J. Barnes, *Truth, etc.* (Oxford: Oxford University Press 2007), pp. 465–487. See also R. Chiaradonna, "Galen on What is Persuasive (*pithanon*) and What Approximates to Truth," in P. Adamson, R. Hansberger, and J. Wilberding (eds.), *Philosophical Themes in Galen* (London: Institute of Classical Studies 2014), pp. 61–88, here pp. 83–87.

²⁸⁸ Some of these issues were developed in Galen's treatise *On the possible*, mentioned in A9(3). A short fragment is preserved in an Arabic translation; see N. Rescher and M. E. Marmura, *The Refutation by Alexander of Aphrodisias of Galen's Treatise on the Theory of Motion* (Islamabad: Islamic Research Institute 1965), pp. 69–70. In that fragment, Galen criticizes Theophrastus for distinguishing between two meanings of "necessity", one in statements about eternal things ("the sun illuminates of necessity"), and the other about things perishable ("man is endowed with speech of necessity"). Galen regards this distinction as pointless, as in both cases the expression refers to the same thing, namely to the fact of inseparable existence of one thing in another. As Chiaradonna points out, this passage displays a "similar attitude" as Fārābī's testimonium F11 about the double meaning of the word "possible": "for in both cases, modal distinctions (contingency vs. necessity and the various senses of the term 'necessity') are ultimately regarded as useless and unfounded" (Chiaradonna, "Galen on what is Persuasive," p. 86). For the Arabic reception, see further below, pp. 85–87.

Somewhere within the span of books IX to XII, Galen also probably introduced “a third species” of syllogisms – besides the categorical and hypothetical – which he describes as coming about κατὰ τὸ πρός τι (“based on relation”).²⁸⁹ One example is the following argument: “Theo is equal to Dio; Philo is equal to the same Dio; therefore, Theo is equal to Philo.”²⁹⁰ The issue of relational syllogisms is complex and controversial and cannot adequately be covered within the confines of this overview.²⁹¹ The little we do know about it comes from Galen's *Introduction to logic*, a badly preserved treatise written late in Galen's career. In one passage (our testimonium F6) Galen tells us that he discussed relational syllogisms in two works, both of which have been lost: *On demonstration* and *On the number of syllogisms*.²⁹² The text is corrupt, but Galen seems to be saying that in both of these works he explored two aspects of relational syllogisms, namely, their σύστασις and their πίστις, and found that they have their σύστασις because of the πίστις of the axioms to which they are subordinated. The word πίστις is probably used in the same sense as in the definition of demonstration in B6*[4],²⁹³ i.e., as credence, which is supplied from something that has been agreed to something that is in dispute; in the case of demonstration in the proper sense, the “thing agreed” is agreed to because it is evident or credible in virtue of itself (see B6*[8–9]; B7*[11]; A12; A16). Relational syllogisms, then, obtain their credence from axioms, defined as propositions “credible in virtue of themselves”.²⁹⁴ In the example mentioned above, the axiom is this: “Items equal to the same are also equal to one another.”²⁹⁵ By furnishing their credence to them, axioms in turn endow relational syllogisms with σύστασις, which is probably to be interpreted in the sense of “guarantee” or “confirmation”.²⁹⁶ In

²⁸⁹ Galen, *Inst. log.* 16.1 (38,13–14 Kalbfleisch). We are using the forthcoming edition of Jonathan Barnes and Ben Morison, and are grateful to them for sharing it with us prior to publication.

²⁹⁰ *Inst. log.* 1.2 (3,12–4,1 Kalbfleisch).

²⁹¹ The best contributions include: I. Mueller, “Greek Mathematics and Greek Logic,” in J. Corcoran (ed.), *Ancient Logic and Its Modern Interpretations* (Dordrecht/Boston: Reidel 1974), pp. 35–70, here pp. 61–64; J. Barnes, “Proofs and Syllogisms in Galen,” in J. Barnes and J. Jouanna (eds.), *Galen et la philosophie* (Geneva: Fondation Hardt 2003), pp. 1–24, here pp. 16–24; Morison, “Logic,” pp. 105–115; idem, “Late Antiquity,” in L. Castagnoli and P. Fait (eds.), *Cambridge Companion to Ancient Logic* (Cambridge: Cambridge University Press 2023), pp. 82–105, here pp. 87–96.

²⁹² Galen, *Inst. log.* 17.1 (42,10–11 Kalbfleisch). *On the number of syllogisms* is mentioned in A9, among the works “providing a broader treatment of what was discussed concisely in [*Dem.*].”

²⁹³ Clement of Alexandria, *Lib. log.* (= *Strom.* VIII) 3.5.1 (82,12–14 Stählin–Havrda).

²⁹⁴ See e.g. *Inst. log.* 17.7 (44,13–14 Kalbfleisch): τὸν γὰρ ἐξ αὐτοῦ πιστὸν λόγον οὕτως (scil. ἀξίωμα) ὀνομάζειν ὑπεθέμεθα κατὰ τὴν προκειμένην διδασκαλίαν.

²⁹⁵ *Inst. log.* 1.2–3 (3,12–4,7 Kalbfleisch). See Galen, *MM* 1.4.10 and 14 (48,2–3 and 50,13–14 Lorusso / X.34 and 36 K); the second passage, which refers to *Dem.*, is listed as A15.

²⁹⁶ This meaning of σύστασις is arguably derived from συνίστημι in the sense of “guarantee” or “make firm” (LSJ, s.v., IV.2 and V); see also *ibid.* s.v. σύστασις, II. For a detailed commentary on *Inst. log.* 17.1 (= F6), see Barnes, *Truth, etc.*, pp. 419–444.

Dem., Galen was concerned with showing that relational syllogisms obtain their confirmation in precisely this way: by the force of the axiom under which they fall.²⁹⁷

Book XIII

Book thirteen fortunately attracted the attention of Rāzī, and so we possess a wealth of information about its contents, both from Rāzī and his opponent Abū al-‘Alā’ ibn Zuhr. This is complemented by Galen’s own evidence, which indicates that Galen dealt mainly with two topics in this book: the elements and the causes of vision. Galen’s discussion was partly polemical, especially in relation to corpuscular theories; but he also argued in favour of alternative theories, presenting arguments he regarded as demonstrative. This latter feature – the presence of positive views about issues in natural philosophy, supported by demonstrations – seems to distinguish the thirteenth book from books IV, VIII, and IX, where natural-philosophical arguments were exposed as undemonstrative or false but with no fully-fledged positive arguments to replace them.

Galen must have devoted a significant part of the thirteenth book to a polemic against Asclepiades and his corpuscular theory of the elements:

For this reason we will no longer mention Asclepiades in this account, having demonstrated that his elements are false, namely in the thirteenth book of *On demonstration* and in the treatise on *The doctrines of Asclepiades*, in which the fifth and sixth book contain refutations of his elements. (G1)²⁹⁸

A discussion of the same topic is preserved in Galen’s *Elements according to Hippocrates* (*Hipp. elem.*). However, Galen tells us that in that treatise he only presented the arguments that Hippocrates himself used. “For the most complete scientific knowledge about the elements of the body,” he adds, “one should read the discussion in the thirteenth book *On demonstration* and in the fifth and sixth book of *The opinions of Asclepiades*” (G2).²⁹⁹ *The opinions of Asclepiades* is lost and Galen tells us next to nothing about the relevant part of *Dem.* XIII. Yet, Arabic sources give us at least a glimpse of the argument. Even though they never mention Asclepiades or the theory of the elements, some of their evidence for book XIII fits neatly into this framework.

Besides the causes of vision (on which more below), three issues are addressed in the Arabic sources for *Dem.* XIII: (1) “the primary body”, also described as “the substratum of generation and corruption” and as “substance”; (2) void; and (3) time. In relation

²⁹⁷ See *Inst. log.* 16.5–13 and 18.1–8 (39.5–42.6 and 45.6–47.17 Kalbfleisch). According to Galen (*Inst. log.* 18.8, 47.16–17 Kalbfleisch), Posidonius of Apamea called these arguments (or some of them) “conclusive by virtue of an axiom” (συνακτικοὺς κατὰ δύναμιν ἀξιώματος).

²⁹⁸ Galen, *Cur. rat. ven. sect.* 3 (XI.257 K).

²⁹⁹ Galen, *Ord. lib. prop.* 2.8 (93.9–15 Boudon-Millot / XIX.55 K).

to the first issue, Galen is concerned with showing that the primary body is devoid of shape (G3–G5). Void and time then both seem to be treated as parts of the same argument concerning the separability of quantity from an incorporeal substance (G6–G7). In addition, Galen produced arguments against the existence of void (G8–G9).³⁰⁰

The testimonia about the primary body are unfortunately somewhat confused. Rāzī reports Galen as saying that “substance is the primary body and substratum of all generation and all corruption, which is in itself devoid of quality” (G3). In Galen’s other writings, the predicate “devoid of quality” (ἄποτος) is said of the matter underlying the elementary bodies (fire, water, earth, and air), which does not exist in itself, but can be separated from the primary qualities (the hot, the cold, the dry, and the wet) by thought (κατ’ ἐπίνοιαν).³⁰¹ Galen never describes this abstract matter as “the primary body” or as “substance”. In fact, according to Abū al-‘Alā’, “in this book [i.e., *On demonstration*] by ‘primary substance’ [Galen] does not mean the substance as being devoid of the sensibles, but as the first sensible [thing]” (G5). Whatever is meant by the phrase “the first sensible thing”, it surely does not refer to the abstract “unqualified matter”.³⁰²

It seems, however, that when Galen speaks of the primary body as being devoid of qualities, he does not present his *own* doctrine; rather he articulates the position of his opponents. In his *Commentary on Hippocrates’ Nature of man*, Galen summarizes the view of the atomists and other corpuscularists regarding the elements as follows:

For what really exists is one in form according to these people too. Thus the primary body is called ungenerated and indestructible, since everything else derives its generation by way of composition out of it.³⁰³

Now, as Galen reports elsewhere, the primary bodies, according to his opponents, are devoid of qualities in the sense that they have none of the primary sensible qualities such as colour, taste or temperature:

³⁰⁰ Rāzī’s testimonium G8 (*Doubts* 4.2, 20,7–9 Koetschet) is discussed by Adamson, “Galen on Void,” pp. 208–211.

³⁰¹ See *Hipp. elem.* 6.38 (114,16–21 De Lacy / I.469 K); *QAM* 3 (36,21–37,2 von Müller / IV.773 K); *PHP* IX.9.44 (608,19–21 De Lacy / V.804 K).

³⁰² Galen uses the phrase “the first and simplest sensible elements” in reference to the homoeomerous parts; see *Hipp. elem.* 8.11 (126,1–2 De Lacy / I.479 K); see also *Nat. Fac.* I.6 (109,18–19 Helmreich / II.12 K); *Opt. med.* 3.6 (290,13–14 Boudon-Millot / IV.60 K).

³⁰³ *HNH* I.7 (21,12–15 Mewaldt / XV.36–37 K), trans. R. J. Hankinson: ἔν γὰρ τῶ εἶδει καὶ κατὰ τούτους ἐστὶ τὸ ὄντως ὄν. Οὕτω δὲ καὶ ὠνόμασται τὸ πρῶτον σῶμα τὸ ἀγέννητόν τε καὶ ἀφθαρτον, ἐπειδὴ τάλλα πάντα τὴν γένεσιν ἐκ τῆς ἐκείνου συνθέσεως λαμβάνει. We are grateful to Jim Hankinson for providing his unpublished translation to us.

It is posited by all of them that the first element is without qualities; it does not have inherent whiteness or blackness or any colour whatever; it does not have sweetness or bitterness or heat or cold; and it has no other quality at all.³⁰⁴

It is true that the corpuscles have shape, hardness, and weight; but these are not regarded as qualities by these thinkers.³⁰⁵ Galen, then, in response to these views, seems to have argued that the primary bodies – in the sense of the elements of sensible bodies – are *not* without qualities, but *are* devoid of shape.

Further, according to G4, Galen seems to have argued dialectically that if the primary body were without qualities (as his opponents believe), it would be without shape; and if shape were added to it, it would become a mathematical body (rather than an element of sensible things). According to G5, Galen argued that, since the first substance is susceptible to change in nature, which extends to all its parts, it is a body devoid of shape. The claim that the first substance of sensible things is susceptible to an alteration “through-and-through” (δι’ ὅλων) is defended at length in *Hipp. elem.* and was probably defended already in *Dem.*³⁰⁶ The conclusion that such a substance does not have a shape of its own follows from this premiss.

Possibly in the same connection Galen also appears to have argued that quantity cannot be separated from the first substance. This – namely *That quantity is inseparable from the first substance* – was the title of one of the works mentioned in A9, “which provide a broader treatment of what was discussed concisely in [*On demonstration*]”.³⁰⁷ Rāzī and Abū al-‘Alā’ give us a hint as to the context of this discussion in *Dem.* According to Rāzī, Galen says: “Void is not sensible and it is not clear whether it exists or not, whereas time exists without any doubt and quantity is inseparable from it even if it [i.e., time] is not corporeal.”³⁰⁸ It is unclear at first glance what the point of these statements was. Rāzī is intrigued by the part which mentions quantity as being inseparable from time and concludes that, according to Galen, “time is a substance because it is the subject of quantity”.³⁰⁹ Abū al-‘Alā’ objects that Galen’s statement does not imply that time is a substance, since quantity is predicated also of other things than substances, such as speech and number. And he continues: “Moreover, when Galen says about this substance [i.e. time] that there is something inseparable from it that characterizes it and that obviously differentiates it from other sensible things, and that this is quantity,

³⁰⁴ *Hipp. elem.* 2.11 (60,5–8 De Lacy / I.417 K).

³⁰⁵ See *CAM* 7.4 (74,3–8 Fortuna / I.246–247 K); D. Leith, “The Qualitative Status of the Onkoi in Asclepiades’ Theory of Matter,” *Oxford Studies in Ancient Philosophy* 36 (2009), pp. 283–320; for Galen, see pp. 292–294.

³⁰⁶ Cf. *Hipp. elem.* 9.12–17 (130,11–132,13 De Lacy / I.484–485 K).

³⁰⁷ *Lib. prop.* 14.23 (169,8 Boudon-Millot / 12, XIX.45 K).

³⁰⁸ Rāzī, *Doubts* 4.1 (20,1–6 Koetschet) = G6.

³⁰⁹ Rāzī, *Doubts* 4.1 (20,1–6 Koetschet) = G6. See further below, p. 78.

he tells us nothing except that [time] is sensible.”³¹⁰ Abū al-‘Alā’, then, denies that in this passage Galen discussed the question of whether time is a substance or not. Rather, he says, Galen singled out one feature of time that “characterizes it and obviously differentiates it from other sensible things”, describing this feature as quantity. If this is correct, Galen must have meant a peculiar quantity belonging to time – perhaps duration, as discussed above. By pointing out that some such quantity is inseparable from time, Galen, according to Abū al-‘Alā’, “tells us nothing except that [time] is sensible”. This perhaps indicates that for Galen duration is that by which time is sensible and distinguishable from other sensible things.

According to the testimonia, Galen further drew a contrast between time and void. The contrast can be outlined as follows: whereas void is not sensible and it is not clear whether it exists or not, time exists without any doubt and (even though it is incorporeal) it is sensible through a peculiar quantity which is inseparable from it.³¹¹ Now void, of course, was postulated by the corpuscularist as one of the principles of the universe; and the notion of time as incorporeal, although commonly associated with the Stoics, is also attested among the Epicureans.³¹² Galen apparently argued from the assumptions of his opponents. What did he argue about? According to Abū al-‘Alā’, Galen said: “I only did this for void and time.”³¹³ Discussions of both topics, then, must have shared a common point, and maybe that point was this: neither void nor time can be conceived of without quantity. Time is an incorporeal but sensible substance and what characterizes it as such is a peculiar quantity (duration). Void, irrespective of whether it exists or not, is thought of as “place suitable for the movement of the bodies in it” (G7). Galen presumably argued that void too in this sense cannot be thought of without quantity, specifically extension. As Rāzī reports, “by the word ‘void’ [Galen] means place” (that is, place unoccupied by any body), and place, as we have seen above, was probably interpreted by Galen as extension.³¹⁴ Taking up the issues discussed already in book eight (and possibly nine), Galen showed that neither void nor time can be conceived of without quantity.³¹⁵ Many details elude us, but the discussion of void and time in book thirteen could have formed part of an argument about the first substance of sensible bodies and the view that quantity (just like quality) is inseparable from it.

310 Abū al-‘Alā’ ibn Zuhr, *Solution to the Doubts about Galen*, fol. 5b, ll. 10–11 Koetschet–Rajab = G7.

311 Rāzī, *Doubts* 4.1 (20, 1–6 Koetschet = G6), the last part (regarding the peculiar quantity) being interpreted in light of Abū al-‘Alā’ ibn Zuhr, *Solution to the Doubts about Galen*, fol. 5b, ll. 7–16, Koetschet–Rajab = G7.

312 See Sextus Empiricus, *M.* X.227.

313 *Solution to the Doubts about Galen*, fol. 5b, , ll. 7–16, Koetschet–Rajab = G7.

314 Rāzī, *Doubts* 4.1 (20, 1–6 Koetschet) = G6.

315 The existence of void was postulated only for the sake of the argument. Galen went on to demonstrate, no doubt against his corpuscularist apponents, that void does not exist. See G8–G9.

The same book also included a discussion of the causes of vision, which is largely paralleled in *PHP* VII.³¹⁶ We cannot be sure about the order in which Galen dealt with these issues. However, our arrangement follows the order of Rāzī's references, where the primary body, void and time come first, and vision second, followed by a quotation from "the end of this [i.e., thirteenth] book" (G28).

Why did Galen discuss vision in *Dem.*? In *PHP* VII, the starting point is the role of pneuma in the functioning of the ruling part of the soul.³¹⁷ In *Dem.*, the topic may have emerged in the wake of the preceding polemic against the corpuscular theory of the elements, which also extends to the explanation of vision. According to Abū al-'Alā', "Galen's purpose in this part of his book is to do away with the belief of those who say that vision occurs through images of visible things streaming towards the eye or that small bodies enter the pupil of the eye" (G15).³¹⁸ As in the case of the elements, Galen presented arguments in favour of a different view, according to which vision arises due to the optic pneuma emanating from the eye, which alters the quality of the illuminated air and uses the air – modified by the twofold impact of the optic pneuma and the light from the Sun – as the instrument of vision. He provided five signs to the effect that the pneuma emanates from the eye; at the same time, he refuted what he apparently considered to be an exhaustive list of alternative explanations of vision, both extramissionist and intromissionist, exploring them each separately (see esp. G17).³¹⁹

Towards the end of the book, Galen returned to the question of the primary body. Perhaps by way of summarizing the main conclusions of the argument as a whole, he set down a proposition according to which the primary body is neither generated nor corruptible. He further argued that this proposition is universally accepted, because it follows from "two first principles evident to all people, namely that nothing is created out of that which does not exist at all; and nothing is corrupted in such a way as to become that which does not exist" (G28).³²⁰

The last two books

We know nothing about the fifteenth book and next to nothing about the fourteenth. According to Rāzī, somewhere in the fourteenth book Galen discussed digestion and

³¹⁶ Galen, *PHP* VII.4.1–8.14 (448,4–478,8 De Lacy / V.611–647 K); for discussion, see H. von Staden, "La théorie de la vision chez Galien: la colonne qui saute et autres énigmes," *Philosophie Antique* 12 (2012), pp. 115–156; K. Ierodiakonou, "On Galen's Theory of Vision," in P. Adamson, R. Hansberger, and J. Wilberding (eds.), *Philosophical Themes in Galen* (London: Institute for Classical Studies 2014), pp. 235–247.
³¹⁷ Cf. *PHP* VII.4.1 (448,4–14 De Lacy / V.611–612 K).

³¹⁸ Abū al-'Alā' ibn Zuhr, *Solution to the Doubts about Galen*, fol. 7a, ll. 27–28 (Koetschet–Rajab).

³¹⁹ Abū al-'Alā' ibn Zuhr, *Solution to the Doubts about Galen*, fol. 9a, ll. 3–26 (Koetschet–Rajab).

³²⁰ *Doubts* 6.1 (36,2–5 Koetschet). Cf. Galen, *MM* I.4.14 (50,16–17 Lorusso / X.36–37 K) = A15.

the question of how long food remains in the stomach (G30–G31).³²¹ This might indicate that after discussing the elements Galen's intention was to show how the methods expounded in *Dem.* could be used in dealing with topics of immediate interest to doctors.

Conclusion

According to our reconstruction, the structure of *Dem.* was roughly as follows. After inviting his readers to the study of demonstration in the first book, Galen introduced the concept of demonstration as such. Next he outlined, by means of specific examples, the method for dealing with problems. He started, possibly in the second book, with the question of whether the embryo is an animal or not, using it to illustrate how to “recognize the problems” and to define the object of investigation. Another question taken up probably in the third book concerned the bodily location of the ruling part of the soul. Again, Galen used it as a didactic example to show how to distinguish between different sorts of premisses and to identify those appropriate to the problem. The same line of thought was followed in the fourth book, where the question of whether the world is generated or not served to familiarize the reader with the distinction between scientific and merely persuasive premisses. The fifth book, where the proper objects of individual senses were discussed, was arguably the beginning of a systematic exposition of the theory of demonstration, starting with the natural criteria of knowledge. There are certain indications that the context of this discussion might have been a polemic against scepticism; and it could have been followed – somewhere between books V and VIII – by the treatment of the rational criteria of knowledge, and the capacities and methods corresponding to them, such as the capacity to distinguish the same and the different, and the methods of division and composition. As our tentative remarks indicate, the last sentence rests upon relatively meagre evidence or reasonable but unprovable hypotheses. Yet, given the sheer darkness at this point in our journey – especially when it comes to books VI–VII – we gratefully snatch at any glimmer of light, however dim it may be. Later, in books VIII and IX, Galen presented a critical discussion of issues in Aristotle's natural philosophy: certainly his definition of time, and probably also place and the prime mover. The context might have been the exposition of rational methods, such as definition. And Aristotle's argument about the prime mover could have been taken up as an example of a failed proof, giving students the satisfaction of being able, with the knowledge they had acquired so far, to discover the flaws in the great philosopher's reasoning. Book IX also marks the beginning of an exposition of the syllogistic theory. Within the span of book IX and book XII, Galen discussed the three Aristotelian figures, the so-called compound four-term syllogisms identified in Plato (XI), the difference between possible and necessary syllogisms (XII), and probably

321 Rāzī, *The comprehensive book of medicine*, 5.45 and 5.95 Hyderabad (G30–G31).

also relational syllogisms. In Book XIII there was a critique of the corpuscularist theories of the elements and of vision, and arguments in favour of the particular views that Galen himself held about these matters. Perhaps, after explaining the theory of demonstrative argument in all its complexity, and training his readers to become experts in this area, Galen thought it fitting to test their demonstrative skills by tackling issues of prime importance for natural philosophy. In the final books he may have continued along similar lines, showing how the theory and practice of demonstration is useful for inquiry about particular issues relevant to medicine.

5 The Arabic *On demonstration*: Transmission, translation, and interpretation

Given the sheer number of Galenic works that were translated into Arabic and so can still be read today in their Arabic translation, the loss of *Dem.*, in both Greek and Arabic, is certainly one of the most regrettable casualties in the history of texts. The loss is particularly acute because of the wide influence that this treatise – and more generally Galenic logic – had on Arabic philosophers.

This chapter will discuss three different aspects of the Arabic *Dem.* The complex historical transmission of the text itself will first be examined. Arabic testimonia are crucial for our access to *Dem.*, but the Arabic *Dem.* was unfortunately always lacunose to some extent. The second section will stress the importance of shifting our perspective from transmission to reception. In doing so, I wish to stress that fully understanding the Arabic testimonia requires not only utilizing them as a means to restoring the (lost) Greek text, but also appreciating them in their own linguistic and intellectual context.³²² Finally, I will focus on the interpretation of *Dem.* The Arabic reception of *Dem.* bears testimony to the evolution of Arabic philosophy itself: while the formative period of Arabic philosophy, in the 9th and beginning of the 10th century, is characterized by the predominance of Galen, his authority as a philosopher and logician became a target for criticism in the wake of the growing influence of Aristotelian logic, and the privileged status accorded to *Dem.* as a logical treatise was undermined.

(i) The transmission of *Dem.*

The translation of *Dem.* formed part of the herculean program of translating Galenic writings undertaken by Ḥunayn and his circle. By the middle of the 9th century, almost all of Galen's treatises were available in high-quality translations. In this period Galen was the Greek author whose writings were most extensively translated into Arabic – a fact that would remain true even after the 10th century. In addition to making Galen's treatises readily accessible to his fellow Arab physicians, the Arabic translations also extended Galen's influence beyond the realm of medicine. *Dem.*, Galen's most important work on logic, was largely responsible for his reputation as a first-class philosopher in the Islamic world.

The transmission of *Dem.* in Arabic was always marred by lacunae, as Ḥunayn explains in his *Epistle* (see A2). Nine books were available in Arabic, at least in part:

³²² On the need for this change of perspective, see R. Rashed, "Greek into Arabic. Transmission and Translation," in J. E. Montgomery (ed.), *Arabic Theology, Arabic Philosophy. From the Many to the One* (Leuven/Paris/Dudley: Peeters), pp. 157–196. See also R. Rashed (ed.), *Lexique historique de la langue scientifique arabe* (Hildesheim/Zurich/New York: Georg Olms 2017).

book II (a small part), book III (most of it), IV (the first half), IX (with a lacuna at the beginning), XII, XIII, XIV, XV (with a lacuna at the end). Ḥunayn first translated this material into Syriac, and his circle then translated the Syriac version into Arabic.

Abū al-‘Alā’ ibn Zuhr, one of our main sources on the Arabic *Dem.* and the author of most of the new material gathered in this collection, was well aware of the complex transmission of the Galenic treatise. In his *Solution to the Doubts about Galen*, he comments on a passage from the *Doubts* (C15a). In this passage, according to Rāzī, Galen claims in book IV that it is possible to show that the circle of the zodiac is the cause of the generation of the animals and of the plants, and that he made that clear in his *Use of the Parts*, among other references. Rāzī then moves on to condemn this claim as preposterous, as nowhere in *UP* does Galen provide such proof. Abū al-‘Alā’'s response illustrates the caution that should accompany the interpretation of *Dem.*

How [would the obscurities be absent] in such a book, which Ḥunayn collected with difficulty, and only by guessing about the parts that had been lost? So he put it back together piece by piece, but the elements needed to make the expression perfect and the understanding excellent remained missing.³²³

Despite this lacunose transmission, Arabic fragments play a key role in the reconstruction of *Dem.* Around sixty testimonia – of variable size - come from Arabic sources. They form the bulk of the available material on books IV and XIII, while book XII is solely referred to in Arabic sources. In addition to this, a large proportion of these Arabic testimonia are direct quotations from *Dem.*³²⁴

In some cases, the missing passages of the Arabic *Dem.* could be supplemented by the indirect tradition. For example, even though book VIII did not reach Arabic philosophers, they knew about the discussions on time that this book contained through Greek sources, such as Alexander of Aphrodisias. In the case of book IV, our collection shows that the Arabic tradition was more complete than previously thought. Until now, in addition to Galen, our evidence for book IV, and specifically the question of the eternity of the world, came from Philoponus and Rāzī. Rāzī seems to have missed the double interpretation of eternity outlined in book IV, when he attributes to Galen the following argument: 1) the world is not subject to corruption; 2) what is not subject to corruption is not generated; 3) the world is not generated. Rāzī's account follows Aristotle's *De caelo* but ignores the reference to Plato's account of the creation of the world in the *Timaeus* and, in particular, the argument based on the double interpretation of the adjective "eternal" as ungenerated and incorruptible. Yet his argument forms the core of the fragment from Philoponus' *De aeternitate mundi* – to which we should add Galen's own reference in

³²³ Abū al-‘Alā’ ibn Zuhr, *Solution to the Doubts about Galen*, ed. Koetschet–Rajab (forthcoming), MS Āstān Quds Riḍawī 13997, fol. 4b, ll. 18–20.

³²⁴ In addition to the quotations found in Arab authors' writings, the Arabic *Dem.* also included the numerous references to *Dem.* that Galen himself made in his other treatises, all of them translated into Arabic, as well as references in Greek in treatises later translated into Arabic.

On decay.³²⁵ We have therefore up until now been left with a significant discrepancy between the Greek and the Arabic versions of book IV of *Dem*. What was responsible – Rāzī’s misrepresentation of Galen’s argument or the lacunose state of book IV in Arabic?

Abū al-‘Alā’s account now shows that the reference to the *Timaeus* was indeed known in Arabic. When commenting on section 2 of the *Doubts*, which contains Rāzī’s response to book IV, Abū al-‘Alā’ explains that Galen explicitly says that the proposition that what is not corrupted is not generated can only be correct “after we have made determinations (*taḥdīd*) and distinctions (*tamiiz*)” (C10). This expression echoes Philoponus’ report that “the proposition that everything that is incorruptible is also necessarily ungenerated requires a distinction for us to readily accept it” (C4). Further on in the *Solution*, when commenting upon the passage C1 from *On decay*, Abū al-‘Alā’s text is even closer to Philoponus and leaves us in no doubt that he did indeed have access to the same source. We may compare both passages:

C3. Abū al-‘Alā’ ibn Zuhr, *Solution to the Doubts about Galen*, ed. Koetschet–Rajab (forthcoming), fol. 72b, l. 27–fol. 73a, l. 9.

C4. Philoponus, *Aet. mund.* XVII.5 (599,17–601,20 Rabe):

What Galen says, that the proposition that every generated thing will be corrupted is not true by all means but it is <persuasive>, is correct. He explained it clearly in the fourth book of his treatise *On demonstration*: there may be a generated being that is corruptible **because it obtained immortality by way of restoration and was forbidden to receive death**. In turn, what the Sophist claims, that what Galen says – the proposition that every generated thing will be corrupted is not true by all means but is persuasive – contradicts the result that he obtained in his treatise *On demonstration*, that is, everything that is not corruptible, is not generated, is a lie. Indeed, Galen does not say that, but he says: **what we said about everything incorruptible, that it must necessarily be ungenerated, requires determinations and distinctions for us to readily accept it. The distinction and the determination consist in considering the ways in which a particular thing is conceded to be incorruptible, because it can be (incorruptible) either because it does not admit corruption at all, like what is unique, perfectly simple and unaffected, either because it obtained immortality by way of restoration and was forbidden to receive death.**

Nevertheless, **[the proposition] that everything that is incorruptible is also necessarily ungenerated requires a distinction for us to readily accept it.** What distinction is it? **[It consists] in setting apart the ways in which a particular thing is conceded to be incorruptible, whether in the sense of not admitting the account of corruption at all, like what is perfectly simple and unaffected, or in the sense of having obtained immortality by restoration,** like something Plato, too, seems to say about the gods in the *Timaeus*, in which he makes the first god discourse with them. The speech goes as follows: ‘Since you have been generated, you are not immortal nor completely indissoluble. And yet you will not be dissolved nor will you meet a fate of death, having obtained a bond of my will that is even greater and more authoritative than those by which you were bound together when you came to be’.

325 On the discussion on the eternity of the world in book IV, see above, pp. 40–45.

It is conceivable that the Arabic version of *Dem.* did not include this passage and that Abū al-ʿAlāʾ quoted it directly from Philoponus' *On the eternity of the world against Proclus*. This treatise was translated into Arabic, although only a few quotations from it are known today.³²⁶ However, this hypothesis seems unlikely to us. First, this is not the only passage where Abū al-ʿAlāʾ quotes passages from *Dem.* that are absent from the *Doubts*, indicating that Abū al-ʿAlāʾ had direct access to *Dem.* which he used to correct Rāzī's account. This method is in line with Abū al-ʿAlāʾ's usual approach in the *Solution*. This method is in line with Abū al-ʿAlāʾ's usual approach in the *Solution*, where he constantly confronts Rāzī's account of a Galenic passage with direct quotations of the corresponding passages in the Arabic translation. Second, to our knowledge, Abū ʿAlā does not refer to or draw upon any source other than Rāzī's *Doubts* and Galen's writings. Finally, at the beginning of his commentary on book IV of *Dem.*, Abū al-ʿAlāʾ mentions both Plato and Aristotle, whereas Philoponus only mentions Plato. This suggests that he had access to the whole of Galen's argument, including his discussion of Aristotle's *De caelo* and Plato's *Timaeus*.

(ii) Translating *Dem.*

As was the case for all translations from Greek into Arabic, the translation process of *Dem.* created a space where the Arabic text was in contact not only with its Greek original but also with the philosophical and theological debates that formed the context of the production and reception of this translation. Recent research has begun to investigate how the translations may have been adapted with a view to the target audience. For example, Elvira Wakelnig has shown that in the Arabic translation of Galen's treatise *On diseases and symptoms*, produced by Ḥunayn or his nephew Ḥubayš, the translator sometimes omits to translate "phusis" in the case of the Galenic demiurgic nature and uses expressions such as "wisdom and kindness".³²⁷ Although we cannot, in the limited scope of this chapter, analyze the translation of *Dem.* in detail, it is important to indicate how the reception context contributes to our understanding of the testimonia. Indeed, the Arabic translation of *Dem.* was read in relation to other texts that belonged

326 On the Arabic translation of Philoponus' treatise, see: E. Giannakis, "The Quotations from John Philoponus' *De Aeternitate Mundi Contra Proclum* in al-Bīrūnī's India," *Zeitschrift für Geschichte der Arabisch-Islamischen Wissenschaften* 15 (2002–2003), pp. 185–195; E. Wakelnig, "The Other Arabic Version of Proclus' *De Aeternitate mundi*. The Surviving First Eight Arguments," *Oriens*, 40 (2012), pp. 51–95; M. Rashed, "Nouveaux fragments anti-procliens de Philopon en version arabe et le problème des origines de la théorie de l'instauration' (*ḥudūth*)," in G. Federici-Vescovini and A. Hasnawi (eds.), *La circolazione dei saperi nel Mediterraneo: filosofia e scienze (secoli IX–XVII)*. Florence: Cadmo 2013, pp. 323–360.

327 E. Wakelnig, "Translation as Interpretation: Translating Galen's Polysemous Term *Phusis* into Arabic," *Medieval Worlds* 11 (2020), pp. 60–116.

to the same intellectual context, texts sometimes written by the same author who preserved the testimonium.

Let us turn for example to C15. According to this report by Abū al-‘Alā’ ibn Zuhr, Galen’s attempt to show how to acquire demonstrative premisses involves the examination of four questions related to the eternity of the world: Is there an eternal substance in the world? Is this substance sentient? Is it knowledgeable (*ḥabīr*)? Is it skillful (*ḥakīm*)? Only for the second question is it impossible to discover appropriate premisses (*al-muqaddimāt al-mulā’ima lahu*). The appropriate premisses to the first question are provided by “the arguments above”, i.e. probably Aristotle’s in *De caelo*.³²⁸ Abū al-‘Alā’ adds that for Galen these premisses belong to the category of possible premisses, not of necessary premisses.³²⁹

How should we understand the adjectives *ḥabīr* and *ḥakīm* here and in C15a? A few lines further on, Abū al-‘Alā’ continues to discuss Galen’s attempt to find the premisses appropriate to the question of the eternity of the world, in a passage that might be either a paraphrase of *Dem.*, or Abū al-‘Alā’’s commentary. It explains how the science of the stars and zoology provide premisses that establish that the celestial spheres are uncorruptible and that we may find scientific proof of providence in the world. In this regard, this passage is very close to UP XVII.

Thus, the objects of creation serve as a sign that they have a Creator; the substances that always subsist and are far from all corruption, such as the celestial sphere and the planets, serve as a sign that their Creator is eternal, that nothing precedes Him, and that no corruption nor change affects Him. Indeed, if exemption from corruption exists among the objects of His creation, then He (i.e. the Creator) is [even] more worthy [of being eternal] and this is more appropriate to Him. Furthermore, the agreement between the disposition of the celestial sphere and the change that occurs in the world wherever the planets follow their course, and the fact that [this agreement] is particularly important when the astral associations move from the triangles is a sign that their inventor and creator is extremely skillful to the utmost degree (*ḥikma laysa ba’dahā nihāya*); in the same way, the fact that we see the parts of animals being arranged in such perfect agreement that it is not possible to imagine a better disposition, and the bad and foul humours being transformed into pure, living, rational and thinking bodies, [all] this serves as a sign to us that the creator is knowledgeable (*ḥabīr*) and skillful (*ḥakīm*). This is Galen’s objective.³³⁰

The two words of *ḥabīr* and *ḥakīm* strike a theological note for the 9th-century (and later) reader from the Islamic world. Both of them are attributes of God in the Koran, and they are often associated (for example 6.18, 6.73, 34.1).

Proving not only the existence, but also the knowledge and skill of God based on the arrangement of the cosmos and of the human body is a commonplace in antiquity. In *Laws X*, Plato establishes a connection between the existence and nature of god

³²⁸ See above, p. 44.

³²⁹ See further below, p. 85–87.

³³⁰ Abū al-‘Alā’ ibn Zuhr, *Solution to the Doubts about Galen*, fol. 4b, ll. 20–29.

and the fact that the cosmos is intelligible arithmetically. As for the arrangement of the human body, Galen himself had prominently developed this line of argument in *The use of parts*.

Going back to *Laws X*, one of Galen's possible sources, might help us understand the meaning of the two attributes of the Creator, "knowledgeable" and "skillful".³³¹ Like Galen's discussion in *Dem.*, book 10 focuses on the demonstration of the existence of the nature of the gods. This discussion is prompted by the circulation of impious ideas in a city – that the gods do not exist, or that they exist but pay no attention to humans, or that they do pay attention to humans, but can simply be won over by sacrifices and prayers (888c). Clinias' first answer relies on "the evidence of the earth, the sun, the stars, and all the universe, and the beautiful ordering of the seasons, marked out by years and months; and then there is the further fact that all Greeks and barbarians believe in the existence of gods". Beyond this belief, it is necessary to provide "adequate proofs" that "the gods exist and that they are good and honor justice more than do men" (X, 887b). One of these proofs is the orderly motion of the stars and all the other things under the control of reason (*nous*), which has organized the universe (XII, 967b). The intellectual component of the nature of the gods is further developed in the *Timaeus*, which Galen epitomized.

The use of parts is the second obvious source. Here, we are fortunate enough to be able to study its Arabic reception. *Ḥabīr* and *ḥakīm* are also used here to describe the action of the Creator in this context. Starting from the 9th century, *UP* became a central point of reference for philosophers and theologians as a theological treatise that offered proof of the Creator's wisdom based on the arrangement of the human body. Elvira Wakelnig has demonstrated that this theological interpretation was facilitated by a peculiarity of the translation of *UP*, namely that personified Nature is no longer featured, and is instead completely replaced by the praise of the Creator.³³² Her article provides several examples of the semantic field in which *ḥabīr* and *ḥakīm* operate.

Ḥabīr, an attribute of God, refers more specifically to the fact that a fundamental attribute of God is His possession of knowledge. For example, in a treatise attributed to

331 No extant Arabic translation of the *Laws* came down to us. Ibn al-Nadīm mentions two translations, one by Ḥunayn and one by Yaḥyā ibn 'Adī, but their existence has been questioned (Ibn al-Nadīm, *Kitāb al-Fihrist*, ed. Flügel, p. 246). Al-Fārābī wrote a *Compendium* of the *Laws*, but it does not cover books X–XII. On the existing Arabic tradition of the *Laws*, see D. Gutas, "Galen's *Synopsis* of Plato's *Laws* and Fārābī's *Talkhīṣ*," in *The Ancient Tradition in Christian and Islamic Hellenism: Studies on the Transmission of Greek Philosophy and Sciences, Dedicated to H.J. Drossaart Lulofs on his Ninetieth Birthday* (Leiden: Brill 1997), pp. 101–119; reprint in D. Gutas, *Greek Philosophers in the Arabic Tradition* (London/New York: Routledge 2020).

332 E. Wakelnig, "Medical Knowledge as Proof of the Creator's Wisdom and the Arabic Reception of Galen's *On the Usefulness of the Parts*," in P. Bouras-Vallianatos and S. Xenophontos (eds.), *Greek Medical Literature and its Readers: From Hippocrates to Islam and Byzantium* (Abingdon/New York: Routledge 2018), pp. 131–149.

the renowned Muslim scholar al-Ġāhiz, based on Galen's *UP*, the author speaks about the dissection of the head. He explains that the cranium acts as a protective helmet and adds:

So who, do you think, has endowed the brain with this fortification and has decreed it this way, if not the Kind (*al-Laṭīf*) and the Knowledgeable (*al-Ḥabīr*)?³³³

The word *ḥikma*, referring to providence, is often used in the Arabic *UP* in relation to the application of God's knowledge through art (*ṣinā'a*). For example, in the Arabic translation of the epilogue, the translator speaks of "the traces (*āṭār*) of the Creator's wisdom (*ḥikma*) and of his power (*qudra*)" offered through dissection.³³⁴ This wisdom is first and foremost practical, as it is associated with art.

This interpretation of providence, that underlies the use of two adjectives *ḥabīr* and *ḥakīm*, echoes the understanding of how God acts in the world in the 9th-century *kalām* theology. According to the *Mu'tazila*, one of the qualifications of God is that He is capable of acting in a skillful way - *fi'l muḥkam* -, the adjective *muḥkam* being formed from the same root as *ḥakīm* and *ḥikma*. This skillful act may be used as a proof that God is knowledgeable (*ālim*).³³⁵ In turn, the proof that God acts in a skillful way is provided by the creation of the animals and the "marvels" (*aġā'ib*) displayed by them, as well as by the revolutions of the stars and their combination. Thereby, the fact that the world is an artefact is crucial to prove the existence of God, and science itself is understood as a skillful act.

This intertextuality can occur on a second level, when the translation displays parallels in the philosophical ideas of the author who quotes it. An example of this phenomenon is the use of the term *ġawhar*, "substance", by Rāzī in G3:

[Galen] says in the thirteenth book of [*Dem.*] that substance (*ġawhar*) is the primary body (*al-ġism al-awwal*) and substratum of all generation and all corruption, which is in itself devoid of quality. He therefore states that matter (*hayūlā*) is a body without making [the statement] clear in this work or referring to a passage where he had already made it clear, as if it were a part of primary knowledge.³³⁶

This passage can be read in the context of the discussions between *kalām* theologians and *falsafa* philosophers on matter in Rāzī's time, in which he took part.³³⁷ Here, Rāzī identifies substance (*ġawhar*) with matter (*hayūlā*). "Substance" (*ġawhar*) is of course a

333 (Ps.?)al-Ġāhiz, *Book of examples and their study*, p. 87 Idris; trans. (slightly modified) by E. Wakelnig, "Medical Knowledge as Proof of the Creator's Wisdom," p. 135.

334 Galen, *UP* XVII, MS Paris 2853, fol. 295a16.

335 See 'Abd al-Ġabbār, *Explanation of the Book of the Five Principles (by Al-Mānkadīm)*, ed. İlyas Çelebi, İstanbul: Türkiye Yazma Eserler Kurumu Başkanlığı, 2013, p. 253-255.

336 Rāzī, *Doubts* 3.1 (18,9–16 Koetschet).

337 On *kalām* atomism, see M. Rashed, "Natural Philosophy," in P. Adamson (ed.), *The Cambridge Com-*

very polysemic term in Arabic philosophy. However, it is rarely associated with “matter” (*hayūlā*, from the Greek ὑλη) by *falsafa* philosophers. For example, in his treatise *On the definitions and descriptions of things*, al-Kindī distinguishes between matter (*hayūlā*), “a potentiality that is the subject for the predication of forms, and is passive”³³⁸, and substance (*ḡawhar*): “what subsists through itself. It is the bearer for the accidents, and its essence does not undergo alteration.”³³⁹ On the other hand, *ḡawhar* is frequently used in the sense of matter by *kalām* theologians, many of whom espoused an atomistic conception of matter (see below).

This association between *ḡawhar* and *hayūlā* dovetails with another passage from Rāzī’s writings: in his treatise *On absolute matter*, Rāzī is said by Nāṣir-e Khusrāw to have used the word *ḡawhar* as a synonym for matter (*hayūlā*).³⁴⁰

This form of intertextuality between the translation of *Dem.* and the emerging philosophical systems can also infuse the translation with more distant echoes. These echoes are nonetheless essential for grasping how Arab authors read this translation. An example can be found in E3. In this fragment, Ibn al-Mawṣilī, in his correspondence with Yaḥyā ibn ‘Adī, recalls Galen’s account on time in book VIII of *Dem.*

For Galen held that time is subsistent through itself and has no need for motion in its existence, and he said that Plato was of the same opinion on this topic, that is, that he held that time is a substance, by which he [i.e. Plato] meant ‘duration’ (*mudda*), and motion merely measures and determines it.³⁴¹

The close relation between Galen’s criticism of the Aristotelian definition of time in *Dem.* and Rāzī’s own conception of time has already been examined by Peter Adamson, and need not detain us here.³⁴² My focus is on how G3, through the Timaeic reference to *mudda*, resonates with Rāzī’s conception of time, based on the duality between absolute duration (*mudda*), and time determined by number (*zamān*), *mudda* being also unmeasured, and existing independently from motion.

panion to Arabic Philosophy (Cambridge: Cambridge University Press 2005), pp. 287–307. On Rāzī’s conception of matter, see P. Adamson, *Al-Rāzī* (Oxford: Oxford University Press 2021), pp. 71–98.

³³⁸ Kindī, *On the definitions and descriptions of things*, in *The Philosophical Works of Al-Kindī*, ed. and trans. P. Adamson and P. E. Pormann, pp. 297–311, here p. 300.

³³⁹ Kindī, *On the definitions and descriptions of things*, trans. Adamson and Pormann, p. 301.

³⁴⁰ Rāzī, *On absolute matter*, p. 224 Kraus.

³⁴¹ Ibn Abī Sa‘īd al-Mawṣilī, in Yaḥyā ibn ‘Adī, *The Philosophical Treatises* (318,6–319,3 Khalifat).

³⁴² See P. Adamson, “Galen and al-Rāzī on Time,” in R. Hansberger, M. Afifi al-Haytham, and C. Burnett (eds.), *Medieval Arabic Thought: Essays in Honour of Fritz Zimmermann* (London: Warburg Institute 2012), pp. 1–14.

(iii) *Dem.* in the formative period of Arabic philosophy

In the formative period of Arabic philosophy, the work of Ḥunayn secured a central place for Galen's writings well beyond the medical sphere. As far as logic went, *Dem.* was not the only treatise by Galen translated into Arabic by Ḥunayn and his associates: Ḥunayn's *Epistle* also mentions the *Institutio logica* as well as a short treatise *On the number of syllogisms*.³⁴³

The central role played by *Dem.* is best shown in the writings of Abū Bakr al-Rāzī, who calls it “the most precious and useful book after the sacred books”, in his *Doubts about Galen*. Most of the fragments found in this text focus on philosophical topics: the eternity of the world (book IV, book XII), time and place (book XIII), the primary body (book XIII), and vision³⁴⁴ (book XIII). Rāzī emphasizes the methodological purpose of the treatise on several occasions.

Rāzī's interest in these passages was both epistemological as well as metaphysical and physical. I have shown elsewhere how Rāzī's discussion of these topics helps us understand his philosophical system, otherwise known mainly through fragments transmitted in a polemical context.³⁴⁵ In what follows, I will focus on the intertextuality between Rāzī's interpretation of *Dem.* in the *Doubts* and other passages by him on matter and on demonstration.

Matter and the elements were discussed in book XIII of *Dem.* as the Arabic fragments show. These passages were of great interest to Rāzī, who endorsed atomism, an unusual position among Islamic philosophers. On this topic, he engaged with *Dem.* in the third section of the *Doubts*. Along with section 15, where Rāzī responds to the Galenic criticism of atomism in *UP*, section 3 (18,9–16 Koetschet) sheds light on Rāzī's conception of matter and its Greek pedigree. In the third section of the *Doubts*, immediately after the discussion of the eternity of the world, Rāzī turns to the primary matter in *Dem.*, as “a body devoid of quality” and “the substratum of all of generation and corruption”. He argues that if the substratum is a body, it is necessarily endowed with tridimensionality, and bears at least one quality, namely shape (*ṣakl*). Through this critique, Rāzī lays the foundations of his own interpretation of “absolute matter” (*hayūlā muṭlaqa*), that he will develop in other treatises, such as *On matter*. In section 15.1 (108,1–2 Koetschet) of the *Doubts*, he explains that, according to the atomists, the elements are composed of “small bodies” (*aḡsām ṣuḡār*), which they call “primary bodies” or “indivisible bodies”. From that point on, the “first body” is no longer the Aristotelian-Stoic substratum

343 *Epistle on what was translated* 126–127 (51 Bergsträsser).

344 On Rāzī's theory of vision and how it relates to *Dem.*, see P. Koetschet, “Abū Bakr al-Rāzī on Vision,” in P. Adamson and P. E. Pormann (eds.), *Philosophy and Medicine in the Formative Period of Islam* (London: Warburg Institute 2017), pp. 170–189.

345 P. Koetschet, *Abū Bakr al-Rāzī: Doutes sur Galien. Introduction, édition et commentaire* (Berlin/Boston: de Gruyter 2019).

defended by Galen. The first level of matter, i.e. absolute matter, is constituted by the atoms, that underlie the Aristotelian elements. The debate on the tridimensionality of atoms extends beyond the specific polemical context of the *Doubts*. It takes place within the framework of the disagreement between Rāzī and the *kalām* theologians. Indeed, while both Rāzī and the *kalām* theologians endorse an atomistic conception of matter, the *Doubts* show that Rāzī's atomism draws on the corpuscular theories of ancient atomism. By contrast, *kalām* theologians such as Abū 'Alī al-Ġubbā'ī and Abū al-Qāsim al-Balḥī (contemporaries of al-Rāzī) identify the atom with the Euclidian points and deny that it has extension.³⁴⁶ Rāzī's atoms, on the other hand, are ultimately conceptualized in terms of their role in the composition of the bodies, and not as positions.

Turning to Rāzī's analysis of demonstration, I would like to reflect on Rāzī's reception of *Dem.* in the wider context of his logical writings. Rāzī wrote several treatises on logic, unfortunately lost today, but referred to by Bīrūnī in his *Epistle on Rāzī's writings*. In addition to a book *On demonstration (Kitāb al-Burhān)*, we find the following titles: *Introduction to logic (al-Madḥal ilā al-manṭiq)*, *Summaries of the Categories*, *the De interpretatione*, and *the Analytics (Ġawāmi' Qāṭiġūrīyās wa-Bārīmīniyās wa-Anālūṭīqā)*, *On logic in the expressions of Muslim theologians (Fī al-manṭiq bi-alfāz mutakallimī al-Islām)*, *On how sign works (Kayfiyat al-istidlāl)*, and *On expression and how to rely on it and what indicates that it is correctly attributed (Fī al-ḥabar kayfa yuskanu ilayhi wa-mā 'alāma al-muḥaqqaq minhu)*.³⁴⁷

According to Ḥunayn, Galen's main objective in *Dem.* was "to explain the method of establishing what is [capable of being] established necessarily. This was also Aristotle's objective in the fourth book of the *Organon*," which corresponds to the *Posterior analytics*. At least two of Rāzī's logical writings are related to the *Posterior analytics*: his summary of the treatise, and his own book *On demonstration*.

Very few fragments are known of Rāzī's logical treatises, which makes it impossible to reconstruct Rāzī's theory of demonstration based on his logical writings. For this reason, the critiques of Galen in the *Doubts* on topics related to demonstration are especially valuable. Analysis of this material – passages from his logical writings and the *Doubts* – suggests that Rāzī endorsed a strong conception of demonstration, similar to Galen's, and illustrates the specific attention he gave to inductive arguments.

In the only reference that we know of to his treatise *On demonstration*, Rāzī stresses the importance of "intellectual knowledge" (*ulūmunā al-'aqliya*). This reference may be found in Book I of Rāzī's *Abridgement of Galen's Therapeutic method*. In Book III of *The therapeutic method*, Galen underlines the limits of the treatment of hollow wounds by empiricist physicians. He explains that, having acquired a thorough knowledge of the nature of the disease, he was able to put in place a treatment that combined two

346 See A. Dhanani, *The Physical Theory of Kalām: Atoms, Space, and Void in Basrian Mu'tazilite Cosmology* (Leiden/New York/Köln: Brill 1994), pp. 90–140. M. Rashed, "Natural Philosophy," pp. 290–293.

347 Al-Bīrūnī, *Epistle on the writings of Abū Bakr al-Rāzī*, p. 14 Kraus.

substances which, separately, are harmful. Based solely on their experience, the Empiricists were unable to come up with such treatment. Rāzī seizes upon this passage to recall the importance of theoretical knowledge in medical methodology.

If I weren't reluctant to go on [about it], I would have spoken more fully on the subject. I have shown that our noblest knowledge is intellectual [knowledge], not sensory [knowledge], but on this subject, I have tended to abbreviate, also because this treatise is not the place to have this discussion, and that moreover, I have examined this subject in depth in the second book of the treatise *On demonstration*.³⁴⁸

A fragment that I have identified as probably coming from Rāzī's *On demonstration*, found in Ps.-Ġābir's *Book of morphology*, provides us with a glimpse of Rāzī's conception of sign-inference.³⁴⁹ This passage is closely related to Galen's *Dem.*, from which it includes two quotations. The author announces that he will study how sign inference (*al-istidlāl*) and deduction (*al-istinbāt*) proceed from the manifest (*al-šāhid*) to the hidden (*al-ġā'ib*). He distinguishes three categories of sign inference: "homogeneity (*al-muġānasa*)", equivalent to the paradigm, the "course of habit" (*maġrā al-'āda*), which refers to induction, and traces (*al-ātār*). According to the text, the first two categories only achieve persuasive rather than demonstrative knowledge.³⁵⁰ The section on traces is unfortunately missing.

The influence of Galen's *Dem.* is explicit in the case of the second category, where the author turns to two passages from *Dem.* as examples.

This is why, despite his capacity for science and his experience in theoretical matters, Galen adopted such premisses as if they were [first] principles and he used them to illustrate [his thesis], so much so that he says in his book *On demonstration*: "One of the first premisses in the mind is the following: if it is true that summer must undoubtedly be followed by autumn, this can only take place after spring has passed." For my part, I think that this premiss is not correct unless it has been [previously] established that [the alternation] of the seasons has always taken place and will always take place in the same way as it is taking place [now]. If this is not established, the possibility is not excluded that [in the future] there may be a summer that is not followed by an autumn and not preceded by a spring. I have studied this example well in my book *On sign inference*, thoroughly and according to the doctrines of the logicians.

(...)

[Galen] also uses this [inference based on induction] in his book entitled *On demonstration*. Indeed, what he says is misleading, even if he is unaware of it. He says: "We must come to know that this noble part – I mean the part that corresponds to the heavens – is not generated from the fact that our fathers and all the ancients have always observed it to be one and the same, and astronomers have made observations for thousands of years, and have seen that its dimensions and movements

³⁴⁸ Abū Bakr al-Rāzī, *Abridgment of Galen's Therapeutic method*, ed. N. Deif, I. Hamed, and P. Koetschet (forthcoming), MS Escorial 801, fol. 4b, ll. 17–19.

³⁴⁹ P. Koetschet, "Abū Bakr al-Rāzī et le signe. Fragment retrouvé d'un traité logique perdu," *Arabic Sciences and Philosophy* 27 (2017), pp. 75–114.

³⁵⁰ Koetschet, "Abū Bakr al-Rāzī et le signe," p. 80.

are one and the same.” He spent time on this and expanded his remarks, and he established a connection based on this sign and what results from it.³⁵¹

The two first categories of sign-inference, and Rāzī’s approach to them as non-demonstrative, are echoed in the *Doubts*, when Rāzī discusses the different kinds of premisses in relation to *Dem*. In section 14, Rāzī engages with Galen’s discussion of the attractive faculties in the organs in *On the natural faculties*. Rāzī objects to an inductive argument by which Galen intends to apply the same explanation to the path of all liquids in the body. For Galen – according to Rāzī’s account – if it is validated that urine is secreted because the kidneys attract it due to a natural power within them, then it must also be the case that the distribution of food in the organs takes place in the same way. Rāzī then refers to *Dem*., where he learnt to be wary of such inductive arguments:

Did he (i.e. Galen) not himself teach us to avoid this type of criteria in his treatise *On demonstration*, and in many other treatises, showing the greatest skill and the most thorough examination? So why, I would like to know, is he satisfied with it here and using it, if not because he is excessively inclined to validate this opinion and because he leans towards it at the expense of others? And why, I’d like to know, does it follow necessarily from the fact that urine doesn’t move to the kidneys by the necessary force of the vacuum, that the journey of the blood in the body cannot be caused by the necessitating force of the vacuum either, if not because he (i.e. Galen) breaks away here from the demonstrative method (*ṭarīq al-burhān*) and takes the one used by the rhetoricians (*mā yusta’miluhu al-ḥutabā*), i.e. the syllogism by examples (*al-qiyās bi-al-miṭāl*), or [the one used by] dialecticians ([*mā yusta’miluhu*] *al-ḡadalīyūn*), i.e. the inductive syllogism (*al-qiyās bi-al-istiqrā*)?³⁵²

Rāzī’s critical approach to inductive arguments appears in different places of the *Doubts*, where he dismisses induction as a scientific tool, following Galen’s position (see A27, A28).³⁵³ In this respect, Rāzī’s approach to the question of the eternity of the world (which raises the question of his access to book IV) can be understood as a further critique of induction, with Rāzī turning Galen’s reluctance against him. When discussing Galen’s argument in this book, Rāzī addresses the claim that it is an unmistakable truth confirmed by observations that the world is unperishable. Whatever may have been Rāzī’s knowledge of the overall discussion in *Dem*., his main objection here is directed against the first premiss of this syllogism, which is reached through a sign inference based on observations: according to these observations, the world is not subject to change. This statement, according to Rāzī, is merely based on an inductive sign inference, which cannot rule out the possibility of sudden destruction. Nor can the observations made by astronomers eliminate the approximation of their results. In the conclu-

351 Ps.-Ġābir ibn Ḥayyān, *Book of morphology*, pp. 420–421 Kraus. French translation in Koetschet, “Abū Bakr al-Rāzī et le signe,” p. 84.

352 Rāzī, *Doubts* 14.16 (104,4–9 Koetschet).

353 On the critique of induction in the *Doubts*, see P. Koetschet, *Abū Bakr al-Rāzī: Doutes sur Galien*, pp. cii–cxii.

sion of this discussion, Rāzī points out that the justification that Galen's objective was to demonstrate where the premisses could be drawn from does not hold, since, he "used principles that were not principles and consequents that are not necessarily attached to their antecedents."³⁵⁴

Because of the limits of induction, the best that Galen can get to, according to Rāzī, is a hypothetical syllogism where the first premiss must be construed as a conditional proposition:

Now, the implication of this consequent by this antecedent is validated if we add a condition (*šarf*) to [this antecedent], so that [this implication] can be stated as follows: "If the world was subject to corruption by decay, then the bodies in it would not remain in one and the same state", or another antecedent, so that it becomes clear that nothing is ever corrupted except by decay.³⁵⁵

The syllogism obtained can be outlined as follows: 1. If the world were subject to corruption by decay, then the bodies in it would not remain in one and the same state. 2. The bodies in the world remain in one and the same state. 3. So the world is not subject to corruption by decay. It reminds us of the second of the five Stoic indemonstrables: If the first, then the second; but not the second; therefore not the first.³⁵⁶

According to Rāzī, the first premiss remains defective – even in its hypothetical form – since the substances can be subject to a dissolution that is so slow that it could never be observed and made evident. Moreover, even if this premiss held, the world could always be subject to another form of corruption.

On another occasion, Rāzī suggests transforming the first premiss into a conditional proposition (F7):

Now, I do not consider that this antecedent (i.e. if it happens to be winter) necessarily implies this consequent (i.e. it was necessarily preceded by autumn, and summer will necessarily follow it), as long as we haven't added a condition (*šarf*) to it, so that [the argument] can be stated as follows: if the [alternation] of the seasons has always taken place and will continue to take place in the manner that it does at the moment, and we are in winter, then this [season] necessarily follows autumn, which necessarily precedes it; similarly, if [the season] happens to be summer, autumn will necessarily follow it.³⁵⁷

Adding a condition (*šarf*) is equivalent to transforming an inductive argument into a merely conditional connection. In this case, the two premisses are construed as conditions.

³⁵⁴ Rāzī, *Doubts* 2.6 (14,8 Koetschet).

³⁵⁵ Rāzī, *Doubts* 2.3 (10,10–13 Koetschet).

³⁵⁶ See for example S. Bobzien, "Demonstration and Indemonstrability of the Stoic Indemonstrables," *Phronesis* 55/3 (2020), pp. 355–371.

³⁵⁷ Rāzī, *Doubts* 2.8 (16,16–19 Koetschet).

(iv) Galen under siege: the Aristotelian movement

In Rāzī's own time, Galen's influence as a philosopher was starting to be challenged. Rāzī himself mentions the growing criticism against Galen from one Aristotelian whom he describes as "an eminent man in Baghdad, supporter of Aristotle".³⁵⁸ When recalling Galen's exposition of vision in *On the use of parts* and Galen's lengthy explanation of geometrical notions, he mentions the suggestion made by this eminent man that Galen would sometimes attempt to "kill the dead", in other words, explaining what is already clear.³⁵⁹

These attacks on Galen initially stemmed from the Baghdad school led by Mattā ibn Yūnus, the teacher of both Yaḥyā ibn 'Adī and Fārābī. Their criticism was based on a strict demarcation between the contributions of Galen as a physician on the one hand and as a philosopher and a logician on the other. They could find an ally in their critical evaluation in Alexander of Aphrodisias, whose work was also being translated into Arabic.

Al-Siğistānī (d. ca. 985), who belonged to the circle of Yaḥyā ibn 'Adī in Baghdad, disparages *Dem.* in his doxographical work (*Ṣiwān al-Ḥikma*).

Galen wrote on logic; but expert logicians disapprove of his *On demonstration*, which they say does not bear witness to his competence in the subject. An exception is Ḥunayn ibn Iṣḥāq who has shown excessive partiality for this book... A similar verdict applies to what we know of Galen's attempts to establish the principles of his discipline (i.e. medicine), such as prime matter, form, or active cause – in other words, the physical concepts it presupposes. When, at the end of his life, he wrote on his personal beliefs, he acknowledged his ignorance and confessed himself defeated by the problems which exercise the philosophers. This caused Alexander of Aphrodisias to remark that Galen had spent eighty years of his life to come to the conclusion that he did not know, notwithstanding the contributions his efforts had made to his own discipline... for the benefit of mankind, a benefit so great that there was no one in the world who did not owe him a debt of gratitude.³⁶⁰

One of the most important representatives of this Aristotelian turn was Fārābī, who demoted medicine in favour of philosophy in order to elevate Aristotle's authority over Galen's. In his extant treatises, Fārābī often scornfully refers to Galen as "the doctor Galen" and puts medicine, as a practical science concerned with quotidian matters, on a par with agriculture. This is the line taken in his *Long commentary on De interpretatione*, as well as in his *Short treatise* on the same Aristotelian work. F. Zimmermann has observed that, until the gap had narrowed between the Arabic reception of Galen and

³⁵⁸ Rāzī, *Doubts* 16.11 (152,1 Koetschet).

³⁵⁹ Rāzī, *Doubts* 8.6 (58,8 Koetschet).

³⁶⁰ Abū Sulaymān al-Siğistānī, *Ṣiwān al-Ḥikma*, p. 86 Badawī. Translated by F. Zimmermann, *Al-Farabi's Commentary and Short Treatise on Aristotle's De Interpretatione* (London: Oxford University Press 1981), p. lxxxii, note 2 (slightly modified).

that of Aristotle, one or two generations after Ḥunayn's death, "Galen, as a philosopher and logician, enjoyed an ascendancy over Aristotle apt to scandalize Aristotelians. The Aristotelian movement of al-Fārābī's day set out to redress the balance".³⁶¹

This critical position certainly does not mean that Fārābī did not study Galen's logical treatises intensively. In the *Doubts*, it is possible that the mysterious Aristotelian from Baghdad reading Galen alongside Rāzī might be Fārābī. Fārābī does in fact quote Galen on several occasions.³⁶² As far as *Dem.* is concerned, in Fārābī's remaining treatises, only the abovementioned two direct references may be found, in the *Long commentary on De interpretatione* and in the *Short treatise on De interpretatione*. In addition to these, two indirect references in Ibn Rušd and Maimonides ultimately go back to Fārābī. In the *Short treatise*, Fārābī discusses the difference between contradictions about possibilities that are unknown by nature, not just in relation to us, and contradictions about necessities that are unknown in relation to us, but not by nature. He complains that Galen in *Dem.* ignored this difference and considered that what is possible by nature is the same as what is possible to our minds (see F11).³⁶³ This criticism is matched by the additional reference in Fārābī's *Long commentary*, where Galen is said to claim that Aristotle, in talking at length about possible and hyparctic affairs, has wasted his time on useless things.³⁶⁴ Even though the polemical context of these two quotations might not do justice to Galen's approach to possible syllogisms in *Dem.*, they indicate that Galen considered modal syllogistic as superfluous, and focused on hyparctic syllogisms.

Abū al-'Alā' ibn Zuhr drew on this distinction between the possible and the necessary. When addressing Galen's discussion of the eternity of the world in *Dem.* IV, Abū al-'Alā' quotes Rāzī as saying that, according to Galen, "it is possible, concerning something like the circle of the zodiac, to show that it is the cause of the generation of animals, plants, and of the arts found in them" (C15, quoting C15a). Here the word "possible" indicates that premisses for this conclusion can be discovered, without specifying the nature of these premisses. The rest of the testimonium, which we have already discussed above, helps us to answer this question.³⁶⁵ Abū al-'Alā' mentions four epistemological questions raised by Galen in book IV: (1) Is there an eternal substance in the world? (2) Is this substance sentient? (3) Is it knowledgeable? (4) Is it skillful? According to Abū al-'Alā', Galen states that it is "likely impossible to discover the appropriate

361 F. Zimmermann, *Al-Farabi's Commentary*, p. lxxxii. This section on Fārābī draws heavily on Zimmermann's analysis in this introduction.

362 F. Zimmermann, "Al-Fārābī und die philosophische Kritik an Galen von Alexander zu Averroes," in A. Dietrich (ed.), *Akten des VII. Kongresses für Arabistik und Islamwissenschaft, Göttingen, 15. bis 22. August 1974* (Göttingen: Vandenhoeck & Ruprecht 1976), pp. 401–414, here p. 407.

363 Fārābī, *Treatise*, p. 82 Kutsch/Marrow; trans. in Zimmermann, *Al-Farabi's Commentary*, p. 246.

364 Fārābī, *Long commentary*, p. 193 Kutsch/Marrow; trans. in Zimmermann, *Al-Farabi's Commentary*, p. 186.

365 For other aspects of the testimonium, see above, pp. 75–78.

(*mulā'ima*) premisses” for (2), but he thinks that it is possible to discover these premisses for (1), (3), and (4). Since appropriateness is the characteristic feature of scientific premisses,³⁶⁶ the premisses to (1), (3), and (4) are probably considered to be scientific by Galen. However, after repeating that “it is possible, in the case of the circle of the zodiac, to show that it is the cause of the generation of animals and plants,” Abū al-'Alā' continues:

Galen does not take this [inference] beyond the realm of the possible (*uṣur al-imbān*). Now, this Sophist (i.e. Rāzī) transforms [the course of] the possible into the course of the necessary (*uṣur al-iğāb*).³⁶⁷

In this passage, the word “possible” has a different meaning than in the preceding sentence attributed to Galen. Whereas Galen states that it is possible to demonstrate a causal connection between the zodiac and the generation of animals and plants, Abū al-'Alā' interprets him as saying that *this causal connection* is merely possible. In this sense, the conclusions based on the premisses found in astronomy and the study of animals would be only tentative, not demonstrative. It seems, therefore, that Abū al-'Alā' confuses different sorts of questions addressed by Galen: on the one hand, the questions about the existence, wisdom, and skill of the eternal substance, which, according to Galen, can be solved scientifically, by means of appropriate premisses (C15); and, on the other, the question of whether the world is generated or not, which can be solved at most in a dialectical or plausible manner, as shown by Abū al-'Alā' (C13) as well as Galen himself (C1).

In his article “Galen on What is Persuasive”, Riccardo Chiaradonna convincingly argues that, from the Galenic perspective, “possible” does not refer to an ontological category, but rather constitutes an epistemic category based on the limitations of our knowledge. As opposed to Alexander of Aphrodisias, who distinguishes the status of medicine along with the other stochastic arts from that of rigorous sciences on the basis of the ontological status of their objects, Galen strives to establish a medical methodology that integrates stochastic as well as axiomatic principles,³⁶⁸ and even compares medicine to geometry. Fārābī's criticism in F10, F11, and F12 should be understood against the backdrop of these views on the epistemic status of medicine, according to Zimmermann³⁶⁹ and Chiaradonna. In this context, “possible” and “necessary” are merely epistemic concepts: they point to the current limitations of our knowledge, while remaining open to the possibility that these boundaries might be extended some day.

³⁶⁶ See above, pp. 39 and 44.

³⁶⁷ Abū al-'Alā' ibn Zuhr, *Solution to the Doubts about Galen*, ed. Koetschet–Rajab (forthcoming), MS Āstān Quds Riḍawī 13997, fol. 4a, ll. 16–17.

³⁶⁸ On this (very large) topic, one can refer to M. Havrda and R. J. Hankinson, “Introduction,” in M. Havrda and R. J. Hankinson (eds.), *Galen's Epistemology* (Cambridge: Cambridge University Press 2022), pp. 1–12.

³⁶⁹ F. Zimmermann, *Al-Farabi's Commentary*, p. lxxxii.

One debate relating to Galen's presentation of Aristotelian syllogistic takes place mainly in the Arabic tradition: whether Galen did or not invent a fourth figure of syllogisms. Benjamin Morison has surveyed the available material on this debate.³⁷⁰ While various Arabic philosophers, such as Ibn Sīnā and Ibn Rušd, attributed such invention to Galen, and while Ibn al-Šalāḥ wrote a treatise called *On the fourth figure of the categorical syllogism attributed to Galen*, there is also evidence to the contrary. In F1, the same Ibn al-Šalāḥ says that in *Dem.* and *On the number of the syllogisms*, Galen divided the categorical figures into three only. According to Morison, it is probable that the attributions to Galen of the fourth figure are based on a misunderstanding of the discovery by Galen of four figures of compound syllogisms (see F4).

Much work remains to be done on the influence that Galen's *Dem.* had on Arabic philosophy. It must unfortunately be carried out through the refracted history of lost texts: *Dem.* of course, but also all of Rāzī's logical treatises, as well as a great part of Fārābī's commentaries on Aristotle's *Organon*. However, it is sufficiently clear that Galen was central to the formative period of Arabic philosophy not only as a physician and a philosopher but also as a logician.

370 B. Morison, "Logic," in R. J. Hankinson (ed.), *Cambridge Companion to Galen* (Cambridge: Cambridge University Press 2008), pp. 66–115, here pp. 85–91. See also N. Rescher, *Galen and the Syllogism* (Pittsburgh: Pittsburgh University Press 1966).



Part II **The testimonia**

Introduction to the edition of the testimonia

1. Criteria for inclusion

We have selected passages from ancient and medieval sources that meet some of the following criteria:

- a) They mention Galen's *Dem.*, referring to it either by its original name, or by a paraphrase of this name, or by a more general description.¹
- b) They mention Galen and refer to or quote a passage from *Dem.*, as can be inferred from the context or from parallels with passages mentioning *Dem.*
- c) They refer to or quote from *Dem.*, as can be inferred from their content.

Thus passages selected according to the first criterion, while referring to *Dem.*, do not necessarily refer to it by name.² Those selected according to the second criterion, while mentioning Galen, do not mention *Dem.*³ And those selected according to the third criterion do not even mention Galen. While the inclusion of the last group of passages is based on careful consideration, it is nevertheless conjectural. We call them “presumed testimonia” and designate them with an asterisk.⁴

2. Quotations, indirect references, and context

Direct quotations from *Dem.* are marked with quotation marks, just as any quotations in our selected passages. We do not distinguish passages containing direct quotations as “fragments” as opposed to “testimonia”, which merely refer to, or paraphrase, the source text indirectly. We regard all the selected passages as testimonia, in the sense that they bear witness to the reconstructed text. We include as much surrounding material as we consider useful for understanding the context in which *Dem.* is quoted, paraphrased, or mentioned.

1 For various paraphrases of the title, see above, p. 24. When passages are excerpted from a larger discussion concerning *Dem.*, we take such expressions as “the same book”, “this treatise” as equivalent to direct references.

2 See A7 (“the demonstrative methods”) and A23 (“the study of reasoning”). A20 is a borderline case.

3 Easy cases are passages quoted in a larger context where *Dem.* is discussed (especially those preserved by *Abū Bakr al-Rāzī* and *Abū al-'Alā' ibn Zuhr*) or those with verbatim parallels in other passages where *Dem.* is mentioned (A30, E1, E1b); more difficult are those whose inclusion is based on thematic relevance rather than verbatim parallels, coupled with other considerations about the likely source of the quoted material (E3, E4, E6, E6a).

4 B6*, B7*, E9*, E10*, and E11*.

3. Edition

The testimonia from Abū Bakr al-Rāzī's *Doubts about Galen* are quoted according to the edition by Pauline Koetschet, *Abū Bakr al-Rāzī: Doutes sur Galien. Introduction, édition et commentaire*, Berlin/Boston: de Gruyter 2019.⁵ Passages from Abū al-'Alā' ibn Zuhr's *Solution to the Doubts about Galen* are printed here for the first time, based on the forthcoming edition of MS Riḍawī 13997 by Pauline Koetschet and Iktimal Rajab.

The remaining Arabic texts as well as all Greek and Latin texts are quoted on the basis of modern editions, with manuscripts being consulted selectively.⁶ Information about the emendations proposed by other editors also draws on these editions. Emendations proposed by the editors of this volume are printed here for the first time. Readings proposed by Jonathan Barnes and Benjamin Morison come from their forthcoming edition of Galen's *Institutio logica*. In all cases, the chosen reading is the responsibility of the editors, Pauline Koetschet for the Arabic, and Matyáš Havrda for the Greek and Latin.

All deviations from the manuscripts are marked in the apparatus, but the differences in manuscript readings are given only selectively. The list of editions used is in the Bibliography section. Manuscripts mentioned in the apparatus include:

Ambrosianus graecus 659⁷

British Library, IO Islamic 1296⁸

Hamilton 270⁹

Laurentianus 74.3¹⁰

Laurentianus Pluteus 5.3 (also referred to as "ms." in section B)¹¹

Mosquensis 467¹²

Marcianus 236¹³

⁵ See the textual introduction in Koetschet, *Abū Bakr al-Rāzī: Doutes sur Galien. Introduction, édition et commentaire* (Berlin/Boston: de Gruyter 2019), pp. cxxxiii–cxxxviii.

⁶ E.g. in A12 and F6. For all quotations from Galen's *Institutio logica*, we are grateful to Jonathan Barnes and Benjamin Morison for sharing their forthcoming edition with us.

⁷ For Galen, *Lib. prop.* and *Ord. lib. prop.* The manuscript is described in V. Boudon-Millot, *Galien I: Introduction générale, Sur l'ordre de ses propres livres, Sur ses propres livres, Que l'excellent médecin est aussi philosophe* (Paris: Les Belles Lettres 2007), pp. 35–42.

⁸ For *al-Ṭabarī* (C5).

⁹ For Galen, *PHP*; described in P. De Lacy, "Introduction," in *Galeni De placitis Hippocratis et Platonis I–V* (Berlin: Akademie Verlag 2005), pp. 12–60, here pp. 12–18.

¹⁰ For Galen, *Opt. doct.*; cf. A. Barigazzi, *Galeni De optimo docendi genere, Exhortatio ad medicinam (Protrepticus)* (Berlin: Akademie-Verlag 1991), pp. 39–46.

¹¹ For Clement of Alexandria, *Liber logicus*; described in O. Stählin, *Clemens Alexandrinus II: Stromata Buch I–VI* (Berlin: Akademie-Verlag 1985), pp. vii–viii.

¹² For Galen, *PHP*; cf. De Lacy, "Introduction," pp. 19–21.

¹³ For Philoponus, *Aet. mund.*; cf. H. Rabe, *Ioannes Philoponus, De aeternitate mundi contra Proclum* (Leipzig: Teubner 1899), pp. iii–vii.

Marcianus 284¹⁴
 Parisinus graecus 635¹⁵
 Parisinus graecus 2058¹⁶
 Parisinus graecus 2064¹⁷
 Riḍawī 13997¹⁸
 Vlatadon 14¹⁹

4. Translation

The majority of the Arabic material has been translated by Pauline Koetschet (Ko) with the collaboration of Sean Coughlin (C) and Matyáš Havrda (H). In most cases, Koetschet produced a draft translation from Arabic into French, which was then translated into English by Coughlin, and the draft English translation was then revised in view of the Arabic original and Greek parallels during a series of online meetings attended by all three collaborators. Other testimonia were translated into English directly by Pauline Koetschet. The majority of the Greek material has been translated by Sean Coughlin and/or Matyáš Havrda. Texts marked (C-H) are based on translations originally drafted by Coughlin, which were more or less substantially revised by Havrda.

In some cases we have adopted existing translations, sometimes with modifications. They include:

Peter Adamson, “Galen and al-Rāzī on Time.” In Rotraud Hansberger, M. Afifi al-Haytham and Charles Burnett (eds.), *Medieval Arabic Thought: Essays in Honour of Fritz Zimmermann* (London: Warburg Institute 2012), pp. 1–14, here p. 5 (for E3 and E4)

Jonathan Barnes and Benjamin Morison, “On All the Kinds of Syllogism: Edition, translation, and commentary,” Annex to Galen, *Introduction to Logic*, edition, translation, and commentary, forthcoming with Oxford University Press (for F4)

Aileen Das and Pauline Koetschet, “Galen: *Compendium of Plato’s Timaeus*”. In Aileen Das, Pauline Koetschet, and Mark Shiefsky, *Galen: Writings on Plato’s Timaeus. Compendium of the Timaeus. Commentary of the Medical Statements in the Timaeus*, forthcoming with Cambridge University Press (for G10)

¹⁴ For Galen, *PHP*; cf. De Lacy, “Introduction,” pp. 18–19.

¹⁵ For Galen, *Inst. log.*; cf. K. Kalbfleisch, *Galen Institutio logica* (Leipzig: Teubner 1896), p. vi.

¹⁶ For Philoponus, *Aet. mund.*; cf. Rabe, *Ioannes Philoponus, De aeternitate mundi*, pp. vii–viii.

¹⁷ For Anonymus, *Omn. syllog.*; cf. M. Wallies, *Ammonii in Aristotelis analyticorum priorum librum 1 commentarium* (Berlin: Reimer 1899), pp. v–viii.

¹⁸ For Abū al-‘Alā’ ibn Zuhr’s *Solution to the Doubts about Galen*; cf. Koetschet, *Abū Bakr al-Rāzī: Doutes sur Galien*, pp. cxxxv–cxxxvi.

¹⁹ For Galen, *Lib. prop.* and *Ord. lib. prop.*; cf. Boudon-Millot, *Galien I*, pp. 42–44.

Matyáš Havrda, “The So-Called Eighth *Stromateus* (‘Liber Logicus’) by Clement of Alexandria: Greek Text, Translation, and Commentary.” In Matyáš Havrda, *The So-Called Eighth Stromateus by Clement of Alexandria: Early Christian Reception of Greek Scientific Methodology* (Leiden: Brill 2016), pp. 87–103 (for B6* and B7*)

Marwan Rashed, *Essentialisme. Alexandre d'Aphrodise entre logique, physique et cosmologie* (Berlin/Boston: de Gruyter 2007), p. 271 (for C16)

Marwan Rashed (with Jonathan Barnes), Maimonides' quotation from al-Fārābī's *Commentary on the Prior analytics*, in Jonathan Barnes, *Truth, etc.: Six Lectures on Ancient Logic* (Oxford: Clarendon Press 2007), p. 465 (for F12)

Robert W. Sharples, “Alexander of Aphrodisias, *On Time*,” *Phronesis* 27 (1982), pp. 58–81, here pp. 60–61, 64, and 65–66 (for E9*–E11*)

Friedrich W. Zimmermann, *Al-Fārābī's Commentary and Short Treatise on Aristotle's De interpretatione* (London: Oxford University Press 1981), pp. 186 and 246 (for F10 and F11)

One testimonium (A29) was translated by Elvira Wakelnig for this book.

The names of the translators are given for each passage. Regardless of who authored the original translation, responsibility for all translations rests with the editors of this book.

5. Arrangement

The testimonia are divided into seven sections, called A-G. Section A contains those which cannot be located in a particular book or refer to *Dem.* in general. Starting from section B, the criterion of division is the presumed thematic structure of *Dem.* Thus, section B contains the material we believe was included in the first three books, section C the material discussed in book IV, etc. The rationale for the division is explained in the Introduction, Chapter 4 (“Reconstruction of the contents”).

6. Cross-references

Cross-references to testimonia include their designation (e.g. E1) and usually also the lines of the referenced passage. The reference lines in the edition notes are edition lines, while the reference lines in the translation notes are translation lines.

Text / Translation

A1. Galenus, *De libris propriis* 14.6–8 (165,11–23 Boudon-Millot / XIX.40–41 K)

κατὰ τοῦτο τοίνυν ἔτι καὶ μᾶλλον ἔγνω δεῖν ἀποστῆναι μὲν ὧν ἐκεῖνοι λέγουσι, ἀκολουθησαὶ δὲ τῷ χαρακτῆρι τῶν γραμμικῶν ἀποδείξεων. ἀλλήλοισ μὲν οὖν λέγω διαφέρεισθαι τοὺς φιλοσόφους ἐν τῇ λογικῇ θεωρίᾳ, τοὺς Περιπατητικούς τε καὶ Στωικούς καὶ Πλατωνικούς, καὶ αὐτοῖς δὲ πάλιν ἰδίᾳ τοὺς καθ' ἑκάστην αἴρεσιν· μικρὰ μὲν δὴ πῶς ἔστιν ἢ παρὰ τοῖς Περιπατητικοῖς διαφωνία, μεγάλη δὲ παρὰ τοῖς Στωικοῖς καὶ Πλατωνικοῖς· ὅσοι τοίνυν ἐθέλουσι κατὰ τὰς γραμμικὰς ἀποδείξεις ἀσκηθῆναι, παιδευθῆναι μὲν [ἐν] αὐτοῖς ἐν ἐκείναις συμβουλευώ, μετ' ἐκείνας δὲ τὴν ἀναλέξασθαι περὶ τῆς ἀποδείξεως πραγματείαν, ἣν ἐν πεντεκαίδεκα βιβλίοις ἐποίησάμην.

A2. Hunayn ibn Ishāq, *Epistle on what was translated* 115 (47–48 Bergsträsser)

هذا الكتاب جعله في خمس عشرة مقالة و غرضه فيه أن يبين كيف الطريق في تبين ما يبين ضرورةً وذلك كان غرض أرسطو طالس في كتابه الرابع من المنطق. ولم يقع إلى هذه الغاية أحد من أهل دهرنا لكتاب البرهان نسخة تامة باليونانية على أن جبريل قد كان غني بطلبه عناية شديدة وطلبته أنا غاية الطلب و جئت في طلبه بلاد الجزيرة والشام كلها وفلسطين ومصر إلى أن بلغت الإسكندرية فلم أجد منه شيئاً إلا بدمشق نحواً من نصفه إلا أنها مقالات غير متوالية ولا تامة وقد كان جبريل أيضاً وجد منه مقالات ليست كلها المقالات التي وجدت بأعيانها وترجم له أيوب ما وجد وأما أنا فلم تطب نفسي بترجمة شيء منها إلا باستكمال قراءتها لما هي عليه من النقصان والاختلال وللطمع وتشوق النفس إلى وجود تمام هذا الكتاب ثم إنني ترجمت ما وجدت إلى السريانية وهو جزء يسير من المقالة الثانية وأكثر المقالة الثالثة

A1, 6 ἀσκηθῆναι Ambr. 659 : *del.* von Müller : *non legitur* Vlat. 14 A2, 3 غني Bergsträsser : غني والشام Bergsträsser : الشام و

Section A: General and Unlocated Testimonia

I. The Work

A1. Galen, *His own books* 14.6–8

This made me realize even more that I had to distance myself from the teachings of these [philosophers] and to follow the pattern of linear demonstrations. I mean that, as far as the study of reasoning is concerned, the philosophers differ from one another, the Peripatetic, the Stoic, and the Platonist; but they also differ among themselves individually within each school. (It is true that the disagreement is rather small among the Peripatetics, but considerable among the Stoics and the Platonists.) Therefore, I advise everyone who wants to be trained in linear demonstrations to educate themselves in them and after doing so to read my treatise *On demonstration*, which I composed in fifteen books. (H) 5

A2. Ḥunayn ibn Ishāq, *Epistle on what was translated* 115

This treatise is composed of fifteen books, and [Galen's] objective is to explain the method of establishing what is [capable of being] established necessarily. This was also Aristotle's objective in the fourth book of the *Organon*. No one has managed to obtain a complete Greek version of the treatise *On demonstration* in our time, although Ġibrīl has invested a lot into his research. I myself have searched a great deal [for this treatise], across Mesopotamia, all of Bilād al-Šām, Palestine and Egypt, all the way to Alexandria. I found nothing except in Damascus approximately half [of the treatise]. But they were neither books in consecutive order, nor were they complete. Ġibrīl also found some books, not all of which were the same books as the ones I had found. Ayyūb translated for him [Ġibrīl] that which he had found. For my part, I could not bring myself to translate anything before reading it completely, because of the gaps and corrupted passages, and because I always wanted and hoped to read a complete version of this treatise. Then I translated into Syriac what I had found, namely a small part of the second book, most of book three, about half of book four (from the 10

A1, 2 linear] I.e., geometrical. On their role as models of philosophical arguments, see, e.g., Gal. *Foet. form.* 6.21 (100,3–9 Nickel / IV.695 K); *Aff. dig.* 8.5–6 (28,19–24 De Boer / V.42 K); *PHP* VIII.1.25–26 (486,10–16 De Lacy / V.656 K). 3 study of reasoning] λογική θεωρία, “logic” in a broad sense, distinguished from the study of nature and ethics; cf. e.g. Sextus, *M* VII.12; Gal. *Opt. med.* 3.8 (290,19–291,5 Boudon-Millot / I.60–61 K); apart from other issues, such as entailment and incompatibility (see below, A14, 14–15), it includes the study of the criterion and the methods of solving problems; cf. e.g. Gal. *Thras.* 22 (59,7–21 Helmreich / V.842–843 K). A2, 3 fourth...Organon] I.e., *Posterior analytics*. 4 Ġibrīl] Ġibril ibn Buḥtišū'. 6 Bilād al-Šām] A transliteration of the Arabic endonym for the Greater Syria region. It corresponds roughly to the modern countries of Syria, Lebanon, Israel, Jordan, and Palestine, as well as southern regions of modern Turkey.

- 10 ونحو نصف المقالة الرابعة من أولها والمقالة التاسعة خلا شيئاً من أولها فإنه سقط وأما سائر المقالات الأخر فوجدت إلى آخر الكتاب خلا المقالة الخامسة عشرة فإن في آخرها نقصاناً [ترجم عيسى بن يحيى ما وجد من المقالة الثانية إلى المقالة الحادية عشرة وترجم إسحاق بن حنين من المقالة الثانية عشرة إلى المقالة الخامسة عشرة إلى العربية].

A3. Abū Bakr al-Rāzī, *Doubts about Galen* 2.1 (6,15–17 Koetschet)

فلنأخذ الآن في غرضنا الذي قصدنا ونبدأ من ذلك بكتاب البرهان إذ كان أجل الكتب عندي وأنفعها بعد كتب الله المنزلة.

A4. Galenus, *De ordine librorum suorum* 1.11–2.1 (90,19–91,15 Boudon-Millot / XIX.52–53 K)

- ἀλλὰ τῶν γε τοῖς φίλοις δοθέντων ἐκπεσόντων εἰς πολλοὺς ἐγράφη μὲν ἐξ ἀνάγκης δι' ἐκεῖνα καὶ τὸ περὶ τῆς ἀρίστης αἰρέσεως, εἴρηται δ' ἐν αὐτῷ καὶ ἡ τῆς γραφῆς αἰτία. ταῦτά τε οὖν εἴ τις ἀναγινώσκειν ἐθέλοι πρῶτα πάντων, ὀρθῶς ποιήσει, καὶ εἰ πεισθεὶς αὐτοῖς βουληθεῖη, πρὶν ἐπὶ τὴν μάθησίν τε καὶ κρίσιν ἡκεῖν ἀπασῶν τῶν αἰρέσεων, ἔχει
- 5 πραγματεῖαν τὴν ὑφ' ἡμῶν γεγραμμένην, τὴν περὶ ἀποδείξεως, ἧς ἐὰν μὴ μόνας μάθη τὰς μεθόδους ἀλλὰ κἄν γυμνάσῃται κατ' αὐτάς, ἐπὶ πάσης ὕλης πραγμάτων ἐξευρήσει τὴν ἀλήθειαν, ἐὰν γ' ἐραστῆς ὑπάρχη καὶ μὴ κατὰ πάθος ἄλογον αἰρήσεταιί τις, καθάπερ οἱ περὶ τὰς διαφορὰς τῶν χρωμάτων ἐν ταῖς ἵπποδρομίαις ἐσπουδακότες· ὁ δ' αὐτὸς οὗτος ἐπὶ τοῖς ἔμπροσθεν εἰρημένους παραγενόμενος ἐξευρήσει τάληθως αὐτοῖς
- 10 ἐγνωσμένα καὶ ψευδῶς ὑπελημμένα. μία μὲν οὖν ἦδε τῶν ἡμετέρων ὑπομνημάτων ἐστὶν ἀρχὴ τῆς ἀναγνώσεως ἐκείνοις τῶν ἀνδρῶν, ὅσοι καὶ φύσει συνετοὶ καὶ ἀληθείας ἐταῖροι.

A5. Galenus, *De ordine librorum suorum* 2.18 (95,17–25 Boudon-Millot)

ὅσοι δὲ διὰ τῆς ἀποδεικτικῆς πραγματείας ἀπασῶν πρώτης ἐπὶ τὰς ἄλλας ἔρχονται, τούτοις χρήσιμόν ἐστι καὶ τὸ πρότερον βιβλίον τῶν ἐπιγραφόμενων περὶ τεχνῶν συστάσεως· ἔτι δὲ δὴ μᾶλλον ἐπόμενον τουτῷ βιβλίον ἕτερόν ἐστιν ὁ Πατρόφιλος

A4, 6 ἐπὶ...πραγμάτων] Cf. A21, 2.

11 فوجدت Bergsträsser : فوجدت **A4, 1** δοθέντων Cornarius : ἐκπεσόντα Ambr. 659 **3** ποιήσει Aldina : ποιήσοι Ambr. 659, Vlat. 14

beginning), book nine, except for one passage from the beginning, because it was 15
 missing. As for all the remaining books, they were found, up to the end of the treatise,
 apart from book fifteen, because at the end of this book there is a passage missing.
 [ʿAysā ibn Yaḥyā translated what was available from book two to book eleven, and
 Ishāq ibn Ḥunayn translated from book twelve to book fifteen into Arabic.] (Ko [C])

A3. Abū Bakr al-Rāzī, *Doubts about Galen* 2.1

Let us now turn to the goal we are pursuing, starting with the book *On demonstration*,
 because it is, in my opinion, the noblest and most useful of books, next to those sent by
 God. (Ko)

A4. Galen, *The order of his own books* 1.11–2.1

However, since those writings which I had given to my friends had leaked out to the
 public, I was compelled for these reasons to write in addition the treatise *On the best*
school, and the reason which made me write it is also set out in it. One will do well if
 he wishes to read these books first of all; and if, having been persuaded by them, he
 wants to become skilled in demonstration before embarking on the study of all the 5
 schools and making a judgement about them, then he has the treatise written by me,
 the one *On demonstration*. And if he not only learns its methods but also trains himself
 in them, he will discover the truth in every instance of the things [in hand]—if, at any
 rate, he is a lover [of truth] and not one who joins a school on account of an irrational
 affection, like the supporters of the different colours at the horse races. That one who 10
 attends to what was said before will discover which things are truly known by others
 and which are falsely assumed. And so this is one starting point for reading my works,
 for those men who are naturally intelligent and companions of truth. (C-H)

A5. Galen, *The order of his own books* 2.18

The first book of those called *On the constitution of the arts* is also useful to [the read-
 ers] who approach all my other treatises through the treatise *On demonstration*. And
 even more [useful for them] is another book, following upon the one [just mentioned],
 whose title is *Patrophilos* and deals with the constitution of the art of medicine. Of the

A4, 2–3 On the best school] Not extant. 5 skilled in demonstration] Cf. B6*, 94. 7 trains himself] For
 the study of rational methods as training, see A1, 6–8; A6, 7; A7, 2–4; A13, 3; A16, 8–12; A17, 2; A18, 4;
 A24, 8–10; A26, 1–8; A28, 9. 9 lover of truth] See Plat. *Resp.* VI, 501d2; Gal. *At. bil.* 7.1 (84,31 De Boer /
 V.130 K), etc. 13 naturally...truth] Cf. *Pecc. dig.* 1.7 (43,5–6 De Boer / V.61 K); *MM* II.7.40 (198,9–10
 Lorusso / X.145 K); *Opt. med.* 3.4 (290,5–8 Boudon-Millot / 1.59 K), etc. A5, 1 On the constitution of the
 arts] Not extant. 4 Patrophilos] *CAM*, ed. Fortuna, CMG 5.1.3.

ἐπιγέγραπται περὶ συστάσεως ἰατρικῆς ὑπάρχον. ἔστιν ἐκ ταύτου γένους καὶ ὁ Θρασύ-
 5 βουλος ἐν ᾧ ζητεῖται πότερον ἰατρικῆς ἢ γυμναστικῆς ἔστι μόνιον τὸ ὑγιεινόν.

A6. Galenus, *Ars medica* 37.13–14 (391,20–392,12 Boudon / I.411 K)

πάντων δὲ ἀναγκαιότατα πρὸς τὴν θεραπευτικὴν μέθοδον ἔστιν τό τε περὶ τῆς τῶν
 νόσων διαφορᾶς, καὶ τὸ περὶ τῆς τῶν συμπτωμάτων, καὶ τρίτον ἐπ’ αὐτοῖς, ἐν ᾧ τὰς
 αἰτίας τῶν νοσημάτων διέξιμεν, ἐφ’ οἷς ἄλλα τρία, καθ’ ἃ τὰς ἐν τοῖς συμπτώμασι
 5 αἰτίας ἐξηγοῦμεθα, τὰ τε περὶ τῆς τῶν ἀπλῶν φαρμάκων δυνάμεώς ἔστιν, ὧν ἔμπροσθεν
 ἐμνημόνευσα, καὶ τὰ περὶ συνθέσεως φαρμάκων, οἷς τὰ τῆς θεραπευτικῆς ἔπεται
 μεθόδου γεγραμμένα ἡμῖν ἰδία, καὶ τῆς τῶν ὑγιεινῶν πραγματείας· ὅτι δὲ καὶ πρὸ
 ἀπάντων τούτων ἐγγεγυμνάσθαι χρή τῇ περὶ τῆς ἀποδείξεως πραγματεία τὸν μέλλοντα
 λογικῶς μεταχειρίζεσθαι τὴν τέχνην, ἐν τῷ περὶ τῆς ἀρίστης αἰρέσεως ἐπιδέδεικται
 γράμματι.

A7. Galenus, *De simplicium medicamentorum facultatibus* I.13 (XI.403 K)

ταῦτα ἐπιστημονικὴν μὲν ἔχει τὴν ἀπόδειξιν, οὐ μὴν πίστιν γε τοῖς ἀγυμνάστοις περὶ τὰ
 πρῶτα· χρή γὰρ κἄν τοῖς περὶ στοιχείων λογισμοῖς γεγυμνάσθαι κἄν τοῖς περὶ κράσεων
 τε καὶ περὶ χρείας σφυγμῶν ὑπομνήμασι καὶ πρὸ τούτων ἀπάντων ἐν ταῖς ἀποδεικτι-
 καῖς ἠσκήσθαι μεθόδοις.

A8. Galenus, *De ordine librorum suorum* 4.2; 4.7 (99,13–18; 100,15–20 Boudon-
 Millot / XIX.58, 60 K)

ἔστι δ’ ἐξ αὐτῶν σοὶ μὲν, ᾧ Εὐγενιανέ, καὶ ὅσοι τὴν ἰατρικὴν μόνην ἐσπουδάκατε, (τὰ)
 περὶ τῆς ἀποδείξεως αὐτάρκη, τοῖς δ’ ἄλλοις, ὅσοι φιλοσοφία σχολάζουσι, καὶ τᾶλλα,
 πλὴν εἴ τις ἀμφοτέρας δύναιτο καλῶς μετέρχεσθαι τὰς θεωρίας ἰατρικῆς τε καὶ φιλοσο-
 φίας. (...) τὰ γοῦν τῆς φιλοσόφου θεωρίας ἡμέτερα βιβλία μετὰ τὴν περὶ τῆς ἀποδείξεως
 5 πραγματείαν ἀναγιγνώσκειν χρή· τίνες δ’ αὐτῶν εἰσιν αἱ ὑποθέσεις καὶ πόσαι, καθ’
 ἕκαστον αὐτῶν γέγραπται, δι’ ἐκείνου δὲ δειχθήσεται τοῦ γράμματος, ἐν ᾧ τὴν γραφὴν
 ποιήσομαι ἀπάντων τῶν ἐμῶν βιβλίων.

A7, 1 πίστιν Havrda, cf. Gal. *Ut. resp.* 3.6 (18,11–12 Noll / IV.492 K); *PHP* VIII.1.45 (488,36–37 De Lacy / V.660 K) : πιστήν mss. **A8, 1** τὰ *add.* von Müller

same kind is also *Thrasyboulos*, which examines whether hygiene is the part of medicine or of gymnastics. (H) 5

A6. Galen, *Art of medicine* 37.13–14

Most necessary of all for the therapeutic method is the book *On the difference of diseases*, *On the difference of symptoms*, and a third after them in which we discuss *The causes of diseases*, after which there are three more in which we expound *The causes of symptoms*, and there are those *On the power of simple drugs*, which we mentioned before, and those *On the composition of drugs*, which are followed by those written by us specifically *On the therapeutic method*, and the treatise *On matters of health*. That one must, even before all these, be trained in the treatise *On demonstration* if one is going to practise the art in a rational way, has been shown in the book *On the best school*. (C-H) 5

A7. Galen, *The power of simple drugs* I.13

These things have scientific demonstration, but no credence to those untrained with regard to the first principles. For it is necessary to be trained also in the arguments about the elements and in the treatises *On mixtures* and *On the use of the pulse*, and before all these in the demonstrative methods. (H)

A8. Galen, *The order of his own books* 4.2 and 4.7

Of these [books], those *On demonstration* are sufficient for you, Eugenianus, and those of you who have only studied medicine, whereas the other books are for the others, who are engaged in philosophy—unless someone is able to do a good job pursuing both studies, medicine and philosophy. (...) At any rate, one should read our books pertaining to the philosophical study after the treatise *On demonstration*. What their subjects are and how many they are is written in each of them, but will be shown in the work in which I will make a list of all of my books. (C-H) 5

5 Thrasyboulos] *Thras.*, ed. Helmreich, SM 3, pp. 33–100. A6, 1–6 The works mentioned are *Morb. diff.*, VI.836–880 K.; *Symp. diff.*, ed. Gundert, CMG 5.5.1; *Caus. morb.*, VII.1–41 K; *Caus. symp.*, VII.85–272 K; *SMT*, XI.379–892, XII.1–377 K; *Comp. med. gen.*, XIII.362–1058 K, and *Comp. med. loc.*, XII.378–1007 K, XIII.1–361 K; *MM*, ed. Lorusso (Libri I–II: Roma 2018; Libri III–IV: Roma 2021); and *San. tu.*, ed. Koch, CMG 5.4.2, pp. 3–198. A7, 2–3 arguments...elements] See *Hipp. elem.*, ed. De Lacy, CMG 5.1.2. 3 On mixtures] *Temp.*, ed. Helmreich, Leipzig 1904. On the use of the pulse] *Us. puls.*, ed. Furley–Wilkie, Princeton 1984. 4 demonstrative methods] Probably a reference to *Dem.*; see A13, 3–5; A16, 1–2; A28, 8–10. A8, 6–7 the work] I.e., *Lib. prop.*

A9. Galenus, *De libris propriis* 14.17–23 (167,14–169,2 Boudon-Millot / XIX.43–45 K)

(1) ἃ δ' ἐγὼ μετὰ τὴν περὶ τῆς ἀποδείξεως πραγματείαν ἔγραψα πλατύτερον ἐξειργασμένα τῶν ἐν ἐκείνῃ συντόμως εἰρημένων, ταῦτ' ἐστὶ· περὶ τῶν ἀναγκαίων εἰς τὰς ἀποδείξεις ἔν· περὶ τῶν παραλειπομένων προτάσεων ἐν τῇ λέξει τῶν ἀποδείξεων ἔν· περὶ τῶν ἰσοδυναμουσῶν προτάσεων ἔν· (2) περὶ τῶν κατὰ τὸ διότι ἀποδείξεων ἔν· περὶ τοῦ τῶν συλλογισμῶν ἀριθμοῦ ἔν· περὶ παραδείγματος δύο· περὶ ἐπαγωγῆς ἔν· περὶ εἰκότος ἔν· περὶ ὁμοιότητος τρία· περὶ (τῶν) ἐξ ὑποθέσεων ἀρχῶν ἔν· (3) περὶ (τῶν) κατὰ τὸ γένος καὶ τὸ εἶδος καὶ τῶν συζυγούντων αὐτοῖς σημαινομένων ἡμῖν κατὰ τὴν αὐτόματον φωνὴν ἔν· περὶ τοῦ δυνατοῦ (ἔν)· περὶ τῶν πολλαχῶς λεγομένων τρία· περὶ τῶν ἐν ταῖς τέχναις κοινῶν καὶ ἰδίων ἔν· περὶ τῶν ἑαυτοὺς περιτρεπόντων λόγων ἔν· (4) περὶ τῶν ἐνδεχομένων προτάσεων ἔν· περὶ τῶν ἐκ μικτῶν προτάσεων [καὶ] συλλογισμῶν ἔν· ὅπως χρῆ διακρίνειν τὴν πραγματικὴν ζήτησιν τῆς κατ' ὄνομα καὶ τὸ σημαινόμενον ἔν· περὶ Κλειτομάχου καὶ τῶν τῆς ἀποδείξεως αὐτοῦ λύσεων· περὶ τοῦ κοινοῦ λόγου δύο· (5) περὶ τῆς ἀρίστης διδασκαλίας πρὸς Φαβωρίνον· ὑπὲρ Ἐπικτήτου πρὸς Φαβωρίνον ἔν· (...)' περὶ χρείας συλλογισμῶν· περὶ χρείας τῶν εἰς τοὺς συλλογισμοὺς θεωρημάτων δύο· περὶ τῆς ἀρίστης αἰρέσεως ἔν· περὶ ὀνομάτων ὀρθότητος τρία· περὶ τοῦ τῶν ὄντων ἕκαστον ἔν τ' εἶναι καὶ πολλά· περὶ τοῦ ὅτι τοῖς ἀντικειμένους ἔν καὶ ταῦτόν ἐξ ἀνάγκης ἀκολουθεῖν ἀδύνατόν ἐστιν ἔν· (6) περὶ τῆς ἀποδεικτικῆς εὐρέσεως ἔν· περὶ τῆς λογικῆς δυνάμεως καὶ θεωρίας ἐννέα· (...)' διάλογοι πρὸς φιλόσοφον (...)' (...)' ἰδίως τοῦ κατὰ τὰς κοινὰς ἐννοίας (...)' πρὸς τοὺς ἐπηρεαστικῶς ἀκούοντας τῶν ὀνομάτων ἔν· [περὶ τῶν ἰδίων καὶ κοινῶν ἐν ταῖς τέχναις]· περὶ τῆς τῶν τεχνῶν συστάσεως τρία· [περὶ τῶν σημαινομένων ἐκ τῆς (κατ') εἶδος καὶ γένος φωνῆς καὶ τῶν παρακειμένων αὐτοῖς]· (7) σύνοψις τῆς ἀποδεικτικῆς θεωρίας, ἔν· περὶ τῆς κρίσεως τῶν διαφωνούντων ἐν τοῖς δόγμασιν· ὅτι τῆς πρώτης οὐσίας ἀχώριστος ἡ ποσότης ἔν· περὶ τοῦ προτέρου ἔν· περὶ

A9, 2 ἐκείνη Vlat. 14 : ἐκείνους Ambr. 659 5 εἰκότος Ambr. 659, Vlat. 14 : εἰκότος Boudon-Millot (*ref. ad* K. Kalbfleisch, *Über Galens Einleitung*, p. 685, *sed non ibi invenitur*) : *post* περὶ εἰκότος ἐν Chartier et Kühn περὶ εἰκότος ἐν *interpolaverunt* (*sic* von Müller) 6 τῶν¹ *add.* von Müller τῶν² *add.* Cornarius, Chartier 8 ἐν *add.* Cornarius *sec.* Fichardi *vers. lat.* (1531), Hunaini *vers. arab.* 10 ἐκ μικτῶν Vlat. 14, von Müller : ἐμμικτῶν Cornarius, Boudon-Millot *sec.* Hunaini *vers. arab.* : ἐν μικτῶν Ambr. 659, Aldina. Cf. e.g. Alex. Aphr. *In An. pr.* I.17 (219,21 Wallies). καὶ *del.* Cornarius, von Müller : *lect. ms. def.* Boudon-Millot 12 τῶν – λύσεων Chartier : τὰ ... αὐτῶν λύσις Ambr. 659, Vlat. 14 14 *lac. ind.* Boudon-Millot *sec.* Hunaini *vers. arab.* 14–15 *peri*² – δύο *secl.* von Müller, cf. *Lib. prop.* 18.2 (172,10–11 Boudon-Millot / XIX.47 K) : *lect. ms. def.* Boudon-Millot 15 δύο Boudon-Millot *sec.* Hunaini *vers. arab.* : α' καὶ β' Ambr. 659, Vlat. 14 αἰρέσεως Ambr. 659, Vlat. 14 : εὐρέσεως Boudon-Millot *sec.* Hunaini *vers. arab.* 17–18 *peri*² – ἐννέα *secl.* von Müller, cf. *Lib. prop.* 18.1 (172,7–8 Boudon-Millot, XIX.47 K) : *lect. ms. def.* Boudon-Millot 18 ἐννέα Boudon-Millot *sec.* Hunaini *vers. arab.* : ἐν Ambr. 659 *lac. ind.* Boudon-Millot *sec.* Hunaini *vers. arab.* 18–19 ἰδίως – ἐννοίας *ante* ἰδίως *lac. susp.* Havrda : *post* ἰδίως *peri add.* von Müller : *post* ἐννοίας *lac. susp.* Boudon-Millot 19 ἐπηρεαστικῶς Cornarius, Chartier : ἐπηρεαστικῶς Ambr. 659, Vlat. 14 19–20 *peri* – τέχναις] cf. 8–9 (168,3–4 Boudon-Millot / XIX.44 K); *om.* Hunaini *vers. arab.*, *secl.* von Müller, Boudon-Millot 20–21 *peri*² – αὐτοῖς] cf. 6–8 (167,23–168,2 Boudon-Millot / XIX.43 K); *om.* Hunaini *vers. arab.*, *secl.* Boudon-Millot 21 κατ' *add.* Chartier, *om.* Ambr. 659, Vlat. 14

A9. Galen, *His own books* 14.17–23

(1) There are also the [books] which I wrote after the treatise *On demonstration*, which provide a broader treatment of what was discussed concisely in that work: *On what is necessary for demonstration*, one book; *On premisses omitted in the expression of demonstrations*, one book; *On equivalent premisses*, one book; (2) *On demonstrations 'because'*, one book; *On the number of syllogisms*, one book; *On example*, two books; *On induction*, one book; *On simile*, one book; *On similarity*, three books; *On principles from hypotheses*, one book; (3) *On what is meant by "genus" and "species" and words connected to them in ordinary speech*, one book; *On the possible*, one book; *On what is said in many ways*, three books; *On the common and the peculiar in the arts*, one book; *On self-refuting arguments*, one book; (4) *On contingent premisses*, one book; *On syllogisms from mixed premisses*, one book; *How to discern inquiry into things from that into names and meanings*, one book; *On Clitomachus and his refutations of demonstration*; *On common reason*, two books; (5) *On the best teaching against Favorinus*; *In defence of Epictetus against Favorinus*, one book; (another book *On teaching for money*;) *On the use of syllogisms*, two books; *On the use of theorems for syllogisms*, two books; *On the best school*, one book; *On the correctness of names*, three books; *On each existing thing being both one and many*; *On the claim that it is impossible for one and the same thing to follow necessarily from contraries*, one book; (6) *On demonstrative discovery*, one book; *On the capacity and study of reasoning*, nine books; (one book *On the controversy regarding the apprehension of things*;) *Dialogues with (a man who does not consider the science of philosophy a science)*; (...) *in particular of the (...) in accordance with common notions*; *Against those who interpret names abusively*, one book; *On the constitution of the arts*, three books; (7) *Summary of the theory of demonstration*, one book; *On the judgment regarding disagreements in doctrines*; *That quantity is inseparable from the first substance*, one book; *On priority*, one book; *On demonstration through impossibil-*

A9, 1–2 With one exception noted below (A9, 13), all treatises mentioned in this testimonium are lost. 8 On the possible] For an Arabic fragment of the treatise, see Rescher–Marmura (eds.), *The Refutation by Alexander of Aphrodisias*, pp. 69–70; also partly edited and translated by Dmitry Gutas in Fortenbaugh et al. (eds.), *Theophrastus of Eresus*, I, pp. 188–189 (Theophrastus, fr. 100C). 13 On the best teaching] *Opt. doct.*, ed. Bariggazi, CMG 5.1.1. 14 another...money] This and the following inserted passages are supplied from Ḥunayn’s Arabic translation of *Lib. prop.*; see Boudon-Millot’s notes *ad loc.*

25 τῆς δι' ἀδυνάτου ἀποδείξεως ἐν· περι τῶν ἐνεκά του γιγνομένων ἐν [περι τῶν πολλαχῶς λεγομένων δύο]· περι τῆς κατ' ὄνομα καὶ σημαινόμενον ζητήσεως.

A10. Al-Ruhāwī, *The physician's conduct*, chap. 16 (p. 259 'Asīrī)

وإنما أفردنا كتاب البرهان فقط من جملة الستة عشر، لأنه لا يقوم بقراءته ولا يفهم جل ما فيه، إلا من قد تفلسف وقرأ المنطق والهندسة (...)

A11. Al-Ruhāwī, *The physician's conduct*, chap. 20 (p. 285 'Asīrī)

وأما إن علوت منزلة الأطباء، وأردت أن تكون طبيباً فاضلاً فعليك بمقالته التي يبين فيها أن الطبيب الفاضل فيلسوف، ثم بكتابه في آراء بقراط وفلاطن ثم بكتابه في البرهان كأنك تبلغ المراد من آداب النفس ومصالحها.

A12. Galenus, *De optima doctrina* 5.2 (106,10–108,1 Barigazzi / I.51–52 K)

(1) Γελοῖος οὖν ἐστὶν ὁ Φαβωρίνος ἐπιτρέπων κρίνειν τοῖς μαθηταῖς ἄνευ τοῦ συγχωρηῆσαι τὴν πίστιν τοῖς κριτηρίοις· εἰ γὰρ οὐδέν ἐστὶν ἐναργὲς τῷ νῶ ἢ πιστὸν ἐξ ἑαυτοῦ, διέφθαρται πάντων ἡ κρίσις. εἰ δ' ἔστι μὲν, οἷός περ ὀφθαλμὸς ἐν σώματι, τοιοῦτος ἐν ψυχῇ νοῦς, οὐ μὴν ἅπασί γε ὁμοίως ὄξύς, ἐγχωρεῖ, καθάπερ (ὁ) βλέπων ὀξύτερον ἐπάγει πρὸς τὸ θέαμα τὸν ἀμβλύτερον ὀρώντα, κατὰ τὸν αὐτὸν τρόπον κάπῃ τῶν νοημάτων ὑπὸ τοῦ φθάσαντος ἰδεῖν ἐναργῶς τὸ νοητὸν ἐπάγεσθαι πρὸς τὴν θέαν αὐτοῦ τὸν ἀμβλύτερον. (2) καὶ τοῦτ' ἐστὶν ὁ διδάσκαλος, ὡς Πλάτων τέ φησι κάγῳ πείθομαι. καὶ γέγραπται γέ μοι περὶ τούτων ἐπὶ πλέον ἐν τῇ (περι) τῆς ἀποδείξεως πραγματεία, ἵτοιαυτή τις οὔσα τῇ πρὸς τὴν νόησιν ἐναργῶς ἢ διδασκαλία† γέγραπται δὲ καὶ ὅπως ἄν

24 ἐνεκά του Vlat. 14 *post corr.*, Prantl : ἐνεκ' αὐτοῦ Ambr. 659, Vlat. 14 *ante corr.* 24–25 περι² – δύο] cf. 8 (168,3 Boudon-Millot / XIX.44 K), *secl.* von Müller, Boudon-Millot 25 σημαινόμενον Chartier : σημαινόμενων Ambr. 659, Vlat. 14 **A12**, 2 ἑαυτοῦ Aldina : αὐτοῦ Laur. 74,3 : *eo Nicolai vers. lat.* (s. XIV) 4 ὁ ed. Basileensis (1538) 5 κάπῃ Barigazzi : καὶ ἐπὶ Aldina : ὑπὸ Laur. 74,3 8 περι² *add.* Havrda, cf. A1, 8; A6, 7; A8, 4; A9, 1; A17, 5; D1, 9; F6, 2–3; G26, 8. 9 τοιαύτη – διδασκαλία *secl.* Marquardt : *ante* τοιαύτη *add.* ὅτι Aldina (*quod Nicolai vers. lat.*) : *ante* τοιαύτη *lac. ind. et suppl.* ἐνθα (*vel* καὶ) δέδεικται Brinkmann : *post* πείθομαι (7) *transposuerit* Havrda τῇ Laur. 74,3 : ἦν Aldina : *del.* Barigazzi : ἡ *coni.* Havrda ἐναργῶς Barigazzi : ἐναργ^{ως} Laur. 74,3, f. 134^v : ἐναργῆς Aldina : *evidens Nicolai vers. lat.* : ἐπάγουσα *coni.* Havrda (*cf.* 6: ἐπάγεσθαι) ἢ *del.* Havrda

ity, one book; *On things that come-to-be for the sake of something*, one book; *On the inquiry by name and meaning*. (C-H)

A10. Al-Ruhāwī, *The physician's conduct*, chap. 16

We have singled out the book *On demonstration* only from the sixteen books, because only those who have learned philosophy, read logic and geometry can read it and understand the best part of it. (Ko)

A11. Al-Ruhāwī, *The physician's conduct*, chap. 20

If you have elevated yourself to the status of physician and want to be an excellent physician, you should read the treatise where he (i.e. Galen) explains that the excellent physician is also a philosopher, then his book *On the doctrines of Plato and Hippocrates*, then his treatise *On demonstration*. You would have reached the goal set for the knowledge of the soul and its benefits. (Ko)

5

II. Tenets

The Criteria

A12. Galen, *The best teaching* 5.2

(1) And so, it is ridiculous for Favorinos to refer the matter to his students to judge, without granting credence to the criteria. For if nothing is evident to the intellect or credible by virtue of itself, then the judgment of everything is destroyed. If it is the case, however, that intellect is in the soul like the eye is in the body, but not equally sharp in all people, it is possible that, just as the person who sees more sharply leads the one who sees more dimly to the object of vision, the same applies to thoughts: one who already sees the object of thought evidently leads the one who sees it more dimly to the vision of it. (2) And this is the teacher, as Plato says and as I am convinced. And in fact, I have written about these things at length in the treatise *On demonstration*;

5

A12, 2 credence] See B6*, 19, with references. **3** credible...itself] See B6*, 62–63 and B6*, 68; Gal. *Inst. log.* 17.7 (44,13 Kalbfleisch), on axioms. **4** intellect...body] Plat. *Resp.* VII, 518c1; Arist. *Top.* I.17, 108a11; Philo Alex. *Opif.* 53, etc. **8** as Plato says] Cf. *Resp.* VII, 518d3–7. as I am convinced] This should possibly be followed by: “and such is the teaching that leads to intellectual insight” (a reconstruction based on the assumption that this part of the sentence was accidentally misplaced in the manuscript, and on several modifications; see apparatus). **9** On demonstration] In Greek, these words are followed by an unintelligible clause that may have entered the text from another place. We are omitting it in the translation (but see the previous note).

- 10 τις ὁρμώμενος ἀπὸ τῶν ἐν ἐκάστῳ στοιχείῳ τε καὶ ἀρχῶν ἀποδεικνύοι μάλιστα πᾶν ὅσον ἀποδειχθῆναι δυνατόν.

A13. Galenus, *De simplicium medicamentorum facultatibus* IV.4 (XI.632 K)

- ὁ δὲ χρὴ πρότερον συμβουλευσαὶ τοῖς τὰ τοιαῦτα χωρὶς ἀλαζονείας σοφιστικῆς αὐτῆς ἔνεκεν τῆς ἀληθείας ἐπισκοπούμενοις, ἥδη μοι καιρὸς εἰπεῖν, ὡς οὐ χρὴ μόνῳ τῷ λόγῳ γεγυμνάσθαι δι' ὧν αἰεὶ παρακελεύομαι μεθόδων λογικῶν, ἃς ἐν τοῖς περὶ τῶν ἀποδείξεων ὑπομνήμασιν εἶπον, ἀλλὰ καὶ τὴν αἴσθησιν τὴν γευστικὴν ἐπὶ τῶν χυμῶν γυμνάζειν
5 ἐπιμελῶς, ἀρχομένους ἀπὸ τῶν ἐναργεστάτην ἔχόντων ἡντιναοῦν ποιότητα μίαν.

A14. Galenus, *De placitis Hippocratis et Platonis* IX.1.10–13 (542,4–20 De Lacy / V.722–723 K)

- (1) δειξομεν οὖν ἥδη πῶς ἂν τις εὐρίσκοι τὴν ἀρχὴν τῆς τῶν ζητουμένων εὐρέσεως, ἀναμνήσαντες ἃ διὰ μακρῶν ἔν τε τῇ περὶ τῆς ἀποδείξεως πραγματεία λέλεκται καὶ κατ' ἄλλας τινάς. εἰ μὲν γὰρ οὐδὲν ἡμῖν ἔστι φυσικὸν κριτήριον, οὐδὲ τεχνικὸν οὐδὲν εὐρεῖν δυνησόμεθα· φυσικὰ δ' ἔχοντες εὐροῖμεν ἂν τι καὶ τεχνικόν. (2) ἄρ' οὖν ἔχομεν τινα
5 φυσικὰ κριτήρια κοινὰ πάντες ἄνθρωποι; οὐδὲ γὰρ ἐνδέχεται φυσικὰ λέγειν [αὐτὰ] τὰ μὴ κοινὰ πάντων ὄντα· χρὴ γὰρ δήπου τὰ φυσικὰ πρὸς τῷ πάντων εἶναι κοινὰ καὶ τὴν φύσιν ἔχειν κοινήν. (3) ἐγὼ μὲν ἔχειν φημί πάντας ὑμᾶς φυσικὰ κριτήρια καὶ τοῦτ' ἀναμνήσκων οὐ διδάσκων οὐδ' ἀποδεικνύς οὐδ' ὡς αὐτὸς εἰρηκῶς λέγω. (4) τίνα δὲ [ἔστι] ταῦτα; τοὺς κατὰ φύσιν ἔχοντας τῶν ὀφθαλμῶν ὀρώντας τὰ ὄρατὰ καὶ <τὰ> κατὰ
10 φύσιν ἔχοντα τῶν ὠτων ἀκούοντα τὰ ἀκουστὰ καὶ γλῶτταν γευομένην χυμῶν καὶ ρίνας ὀσμῶν καὶ σύμπαν τὸ δέρμα τῶν ἀπτῶν, ἐπὶ δὲ τούτοις τὴν γνῶμην ἢ ἔννοιαν ἢ ὃ τί ποτ' ἂν ἐθέλη τις ὀνομάζειν, ᾧ διαγιγνώσκομεν ἀκόλουθόν τε καὶ μαχόμενον καὶ ἄλλα ἃ καταπέπτωκε τούτοις, ἐν οἷς ἔστι καὶ διαίρεσις καὶ σύνθεσις ὁμοιότης τε καὶ ἀνομοιότης, ἀφ' ὧν ὁ παρῶν ὠρμήθη λόγος.

10 μάλιστα Aldina : κάλιστα Laur. 74,3 : κάλλιστα Barigazzi et al. **A14, 1** δειξομεν Chartier : δειξω μὲν Ham. 270 : δειξωμεν Aldina **5** αὐτὰ del. von Müller, “Über Galens Werk,” p. 29 **7** φύσιν Cornarius : φυσικὴν Ham. 270 **9** ἔστι del. von Müller **τὰ²** add. von Müller **10** ἔχοντα – ἀκούοντα von Müller : ἔχοντας ... ἀκούοντας Ham. 270 **11** ἔννοιαν] διάνοιαν von Müller

and I have also written there how, starting from the elements and principles in each case, one can best demonstrate everything that is capable of being demonstrated. (C-H) 10

A13. Galen, *The power of simple drugs* IV.4

It is now right time for me to say what advice needs to be given in advance to those who are inquiring into these things without sophisticated pretension for the sake of the truth itself: that they must not be trained in reason alone, through those rational methods which I always encourage and which I discuss in the books on demonstrations, but must also carefully train the sense of taste using flavours, beginning from those that have some single quality that is especially evident. (C) 5

A14. Galen, *The doctrines of Hippocrates and Plato* IX.1.10–13

(1) So then, I will now show how someone can discover the starting point of the discovery of what is being sought, recalling the issues which I discussed at length both in the treatise *On demonstration* and in certain others. For if we possess no natural criterion, we will not be able to discover a technical one either. But if we have natural criteria, we could also discover a technical one. (2) So then, do all we human beings possess some common natural criteria? For it is not possible to call ‘natural’ those things which are not common to everyone; for surely what is natural must, in addition to being common to all, also have a common nature. (3) I declare that you all have natural criteria and I say this as one reminding you, not teaching it or demonstrating it or as making an assertion on my own authority. (4) What are they? Those who have eyes in accordance with nature that see visible objects, those who have ears in accordance with nature that hear audible objects, a tongue that tastes flavours, nostrils [that smell] scents, and the entire skin [that touches] the objects of touch; and besides these, mind or thought or whatever one wants to call it, by which we discern what is entailed and what is incompatible and other things that fall under these, among which are division, composition, and similarity and dissimilarity, which prompted the present discussion. (C-H) 5 10 15

A14, 4–5 But...one] Cf. *Opt. doct.* 4.3–4 (104,6–15 Barigazzi / I.49–50 K); Clem. Alex. *Strom.* VII.16.93.2. 14–15 entailed...incompatible] Cf. B6*, 77.

A15. Galenus, *De methodo medendi* I.4.14 (50,9–20 Lorusso / X.36–37 K)

οἱ δ' αὖ παλαιοὶ φιλόσοφοι διττὸν γένους εἶναι φασὶ τῶν φαινομένων, ἓν μὲν ὅπερ καὶ τοῖς ἐμπειρικοῖς ὁμολογεῖται, τῶν αἰσθήσει τινὶ διαγιγνωσκομένων οἷον λευκοῦ καὶ μέλανος καὶ σκληροῦ καὶ μαλακοῦ καὶ θερμοῦ καὶ ψυχροῦ καὶ τῶν ὁμοίων, ἕτερον δὲ τῶν ὑποπιπτόντων νοήσει κατὰ πρώτην ἐπιβολὴν ἀναπόδεικτον ὡς τὰ τῷ αὐτῷ ἴσα καὶ
 5 ἀλλήλοις ὑπάρχειν ἴσα καὶ ἐὰν ἴσοις ἴσα προστεθῆ, καὶ τὰ ὅλα ἴσα γίνεσθαι, καὶ ἐὰν ἀπὸ ἴσων ἴσα ἀφαιρεθῆ, καὶ τὰ λοιπὰ ἴσα εἶναι. τοῦ τοιοῦτου γένους εἶναι φασὶ καὶ τὸ μηδὲν ἀναιτίως γίνεσθαι καὶ πάντ' ἐξ ὄντος τινός, ἐκ δὲ τοῦ μηδὸς ὄντος οὐδὲν οὕτω δὲ καὶ τὸ φθειρέσθαι μηδὲν εἰς τὸ τελέως οὐκ ὄν καὶ τὸ περὶ παντός ἀναγκαῖον ἢ καταφάσκειν ἢ ἀποφάσκειν ἕτερά τε τοιαῦτα πολλὰ περὶ ὧν ἐν ταῖς λογικαῖς πραγμα-
 10 τεῖαις ἐπισκέπτονται· καὶ ἡμῖν δ' εἰς ὅσον οἷόν τε σαφέστατα διὰ τῶν ὑπὲρ ἀποδείξεως ὑπομνημάτων εἴρηται περὶ τούτων.

A16. Galenus, *De methodo medendi* I.5.1–4 (54,7–56,11 Lorusso / X.39–41 K)

(1) Καὶ σοὶ τὸν ἐξῆς λόγον ἤδη ἅπαντα ποιήσομαι χρώμενος ταῖς μεθόδοις ἃς ἐν τοῖς περὶ τῆς ἀποδείξεως ὑπομνήμασι κατεστησάμην· ὅτι τε γὰρ ἀρχαί πάσης ἀποδείξεως εἰσι τὰ πρὸς αἴσθησίν τε καὶ νόησιν ἐναργῶς φαινόμενα καὶ ὡς ἐπὶ πάντων τῶν ζητού-
 5 μένων εἰς λόγον χρῆ μεταλαμβάνεσθαι τοῦνομα, δι' ἐκείνων ἀποδέδεικται· (2) νυνὶ δὲ ὅπως μὲν εὐρίσκειν ἢ ἀποδεικνύειν προσήκει, λέγειν οὐ πρόκειται, τοῖς δὲ ἤδη μεμαθη-
 10 κόσι τε καὶ ἡσκηκόσιν ἅμα μὲν ἀποδοῦναι τινα καρπὸν τῶν πόνων εὐκαιρότατον ἐξευρόντας οὐ μικρὸν πρᾶγμα τὸ νῦν ἡμῖν προκείμενον, ἅμα δ' εἴ τινες ἐπιθυμηταὶ τῆς μεγίστης τέχνης εἰσὶν ἢ περὶ τὴν ψυχὴν τάνθρώπου καταγίνεται, προγυμνάσαι καὶ τούτους εὐλογον ἐν τοῖς μικροτέροις· τούτου γὰρ χρῆ μάλιστα κατὰ πάσας τὰς
 10 μεθόδους ἀντέχεσθαι, τοῦ γυμνάζεσθαι κατ' αὐτὰς ἐπὶ πολλῶν πολλακῶν προβλημάτων μικροτέρων πρὶν ἐπιχειρεῖν τοῖς μείζοσι. (3) ἢ δ' οὖν ἡμῖν ἀρχὴ τῆς ἀληθοῦς ἔστω διδασκαλίας ἢ ἂν εὐθὺς ἀπ' ἀρχῆς ἐποισάμεθα ζητοῦντές τε τὴν τέχνην αὐτοὶ καὶ ποδηγοῦντες ἑτέρους μηδέπω διεστραμμένους· ὥστ' ἐπειδὴ πρόκειται θεραπείαν ἐξευρεῖν ἀπάντων τῶν νοσημάτων, ἀναγκαῖον ἐπίστασθαι πρότερον ὅποσα τὰ σύμπαντ'
 15 ἐστίν· ἀλλ' ἐπειδὴ μήτε διαφορὰς μήτ' εἶδη δυνατὸν ἐξευρεῖν γένους μηδενὸς ἄνευ τοῦ βεβαίως αὐτὸ τὸ τεμνόμενον ἐπίστασθαι, χρῆ δήπου καὶ νῦν ὃ τί ποτ' ἐστὶ νόσημα τῷ λόγῳ διελθεῖν ἴν' οὕτως ἐπιχειρήσωμεν ὀρθῶς αὐτοῦ τῆ διαιρέσει. (4) πῶς οὖν ἐξεύρω-

A15, 4 κατὰ πρώτην ἐπιβολὴν] Cf. Clem. Alex. *Lib. log.* (= *Strom.* VIII) 8.23.6 (95,3 Stählin–Havrda); cf. Havrda, *The So-Called Eighth Stromateus*, p. 254; Chiaradonna, “Ἀθρόα ἐπιβολή”, pp. 109–118. A16, 3 τὰ...φαινόμενα] Cf. B6*, 59. 4 εἰς...τοῦνομα] Cf. B6*, 19. 16–17 τῷ λόγῳ διελθεῖν] cf. B6*, 2.

The Starting Points

A15. Galen, *The therapeutic method* I.4.14

Now ancient philosophers claim that there are two kinds of manifest things: one kind, also acknowledged by the Empiricists, of those discerned by a particular sensation, such as pale, dark, hard, soft, warm, cold, and the like; and the other undemonstrated kind of things that present themselves immediately to intellection, for instance, that items equal to the same item are equal to one another; that when equal parts are added to equal parts, the wholes will also be equal; and when equals are subtracted from equals, the remainders will be equal too. That nothing happens without a cause, and everything comes to be from something existent and nothing comes to be from the wholly non-existent, is also, according to them, of the latter kind. Likewise, that nothing perishes into the completely non-existent, and that one must necessarily either affirm or deny about everything, and many other things of this sort discussed in logical treatises. We too have spoken about these things as clearly as possible in our books about demonstration. (H)

A16. Galen, *The therapeutic method* I.5.1–4

(1) It is for you that I will now make the whole subsequent argument using the methods I established in the books *On demonstration*. It was demonstrated in those books that the starting points of every demonstration are things evidently manifest to sense perception and intellection and that in every case of the things we seek we must change the name into an account. (2) At present, however, it is not our task to say how one should discover or demonstrate; rather, it is to give to those who have already learned and practised it a most timely fruit of their labour by discovering the thing which now lies before us and which is of some importance. At the same time, if anyone desires the greatest art, namely that concerned with the human soul, it is reasonable that he also train beforehand in less significant matters. For in all methods, one must keep to this especially, that one practise in accordance with them many times at many less significant problems, before attempting more important ones. (3) Let this, then, be a starting point for the true teaching, which we should have established straight from the start, as we were seeking the art ourselves and leading others who had not yet gone astray. So, since the task before us is to discover the therapy for all diseases, it is necessary to know how many they are in total. But since it is not possible to discover either the *differentiae* or the species of any genus at all without the object of division itself being firmly known, one must surely also now explain with an account what a disease is, so that we may thus properly attempt a division of it. (4) How then do we

A15, 1 two...things] Cf. B6*, 71–72. 4 immediately] Lit. “at first application”; see references under the Greek text. A16, 3–4 evidently...intellection] Cf. B6*, 71–72 5 change...account] Cf. B6*, 22.

μεν αὐτὸ ὀρθῶς μεθόδω; πῶς δ' ἄλλως ἢ ὡς ἐν τοῖς περὶ ἀποδείξεως ἐλέγγο; τῆς ἐννοίας πρότερον ὁμολογηθείσης ἢς χωρὶς οὐχ οἷόν τ' ἐστὶν εὐρεθῆναι τὴν οὐσίαν τοῦ
 20 προκειμένου πράγματος· αὐτὴν δὲ τὴν ἐννοιαν ὁμολογουμένην ἅπασιν ἐλέγομεν χρῆναι λαμβάνειν ἢ οὐδ' ἂν ἀρχὴν δεόντως ὀνομάζεσθαι. τίς οὖν ὑπὸ πάντων ἐστὶν ἀνθρώπων ὁμολογουμένη περὶ τοῦ νοσεῖν ἐννοια; καὶ κατὰ τίνος μάλιστα φέρουσι ὑποκειμένου πράγματος τοῦτ' ἰσχυρὰ τὸ νοσεῖν;

A17. Galenus, *De placitis Hippocratis et Platonis* VII.1.21–23 (432,27–434,1 De Lacy / V.592–593 K)

ὥσπερ οὖν ἐν τούτοις οὐκ ἐγὼ τοῦ μήκους τῶν λόγων αἴτιος, ἀλλ' ὅσοι μὴτ' ἠσκήθησαν ἐν ἀποδεικτικῇ μεθόδω μὴτ' ἀληθείας ἐρώσιν, οὕτω κάπὶ τοῦ πλήθους τῶν ἀρετῶν ὁ μὲν ἐπιστημονικὸς λόγος ἐλάχιστος, οἱ δ' ἐξ ἀμαθίας τε καὶ φιλονεικίας ὀρμώμενοι πολλοί. τίς οὖν ὁ ἐπιστημονικὸς λόγος; ὁ ἀπ' αὐτῆς δηλόνοτι τῆς τοῦ πράγματος οὐσίας
 5 ὀρμώμενος, ὡς ἐν τῇ περὶ τῆς ἀποδείξεως ἐδείχθη πραγματεία. χρῆ γὰρ ἄρξασθαι μὲν ἀπὸ τῆς κατὰ τὴν ἀρετὴν ἐννοίας, μεταβῆναι δ' ἐντεῦθεν ἐπὶ τὴν τῆς οὐσίας εὐρεσι, ἐπισκοπούμενον εἴτε μία τῆς κατὰ ψυχὴν ἀρετῆς εἴτε πλείους εἰσὶν αἱ οὐσίαι, κατὰ τὸ κοινότατον τῶν σημαινομένων, ὡς ἐν τοῖς περὶ τῆς ἀποδείξεως εἴρηται βιβλίοις, ἀκούοντων ἡμῶν τοῦ τῆς οὐσίας ὀνόματος, ὅπερ ἐστὶν οἷον ὑπαρξίς.

A18. Galenus, *Thrasylbulus* 1 (33,1–15 Helmreich / V.806–807 K)

Οὐκ ἄλλα μὲν, ὦ Θρασύβουλε, παραχρῆμα περὶ τοῦ προβληθέντος ὑπὸ σοῦ ζητήματος εἶπον, ἄλλα δὲ συγγράφασθαι τοῖσδε τοῖς ὑπομνήμασιν ἔχω· πάντως γὰρ που γινώσκεις ὡς αἰεὶ τε τὰ αὐτὰ περὶ τῶν αὐτῶν διεξέρχομαι καὶ ὡς εἰς οὐδὲν ἐπιχειρῶ λέγειν, ὦν οὐτε μέθοδον ἔμαθον οὐτ' ἐγυμνασάμην πω κατ' αὐτήν. ἀρχὴ τοίνυν εὐρέσεως οὐ
 5 τούτῳ μόνῳ τῷ νῦν προκειμένῳ σκέμματι τὸ γνῶναι τί ποτ' ἐστὶ τὸ ζητούμενον, ἀλλὰ καὶ τοῖς ἄλλοις ἅπασιν. αὐτὸ δὲ δὴ τοῦτο τὸ γνῶναι διττόν ἐστιν· ἢ γὰρ τὴν ἐννοιαν μόνην τοῦ πράγματος ἢ καὶ τὴν οὐσίαν γινώσκωμεν. ὅτω δ' ἀλλήλων ταῦτα διαφέρει, γέγραπται μὲν ἐπὶ πλεόν ἐν τοῖς περὶ ἀποδείξεως, ἵναπερ καὶ τὰς ἄλλας ἀπάσας μεθόδους ἐκτιθέμεθα, γένοιτο δ' ἂν καὶ νῦν δῆλον ἐξ αὐτῆς τῆς χρήσεως.

A18a. Galenus, *In Hippocratis Prorrheticum I commentaria* I.4 (16,32–17,1 Diels / XVI.517 K)

δέδεικται γὰρ ἐν τοῖς περὶ ἀποδείξεως ἀρίστη πάντων τῶν ῥηθήσεσθαι μελλόντων ἀρχὴ τοῦ ζητουμένου πράγματος ἢ ἐννοια.

20 ὁμολογουμένην ἅπασιν] Cf. B6*, 17

discover this properly with a method? How else than as it was said in *On demonstra-* 20
tion? First, having agreed on the notion, without which it is not possible for the
 substance of the thing before us to be discovered. We said that one must get hold of a
 notion that is itself agreed on by everyone, or else it is not suitably called a starting
 point. What notion concerning being sick is agreed upon by all human beings? And to
 what underlying subject do they apply this verb, ‘being sick’? (C-H) 25

A17. Galen, *The doctrines of Hippocrates and Plato* VII.1.21–23

And so, as in these matters it is not I who am responsible for the length of the discus-
 sion, but rather those who are neither practised in demonstrative method nor love
 truth, so too in the case of the number of virtues, the scientific account is very short,
 but those that begin from ignorance and contentiousness are many. What, then, is the
 scientific account? Obviously, the one that begins from the substance of the thing, as 5
 we have shown in the treatise *On demonstration*. For one must start from the notion of
 virtue and pass from there to the discovery of the substance, inquiring whether the
 substance of virtue in the soul is one or many, while we understand the word ‘sub-
 stance’, as I said in the books *On demonstration*, in its most common meaning, which is
 roughly ‘being.’ (C-H) 10

A18. Galen, *Thrasylbulus* 1

My arguments about the question you have proposed, Thrasylbulos, as I am going to
 write them in this treatise, are the same as when I was speaking offhand. For, as you
 surely know, when dealing with the same things, I give the same explanations; and I
 never attempt to speak on any subject unless I have learned and practised a method of
 dealing with it. Thus the starting point not only of this issue which lies before us, but 5
 also of all others, is to know what it is we seek. And this knowing is of two sorts: either
 we know solely the notion of the thing or we also know its substance. The difference
 between the two has been discussed at length in the books *On demonstration*, where
 we also set out all the other methods. And it should also become clear in the present
 writing from the way it is used. (H) 10

A18a. Galen, *Commentary on Hippocrates’ Prorrhetic* I.4

For it has been shown in the books *On demonstration* that the best starting point of all
 that is to be said is the notion of the thing being sought. (C-H)

21–22 having...discovered] Cf. B6*, 9–13.

A18b. Galenus, *In Hippocratis librum primum Epidemiarum commentarii* I.1 (19,9–11 Wenkebach / XVIIa.28 K)

τίνα τοίνυν οἰκεῖα στοιχεῖα τῶν καταστάσεων ἐστίν, ἴδωμεν ἀπὸ τοῦ πράγματος τῆς οὐσίας ὀρμηθέντες, ὡς ἐν τοῖς περὶ ἀποδείξεως ἐδιδάχθημεν.

A18c. Galenus, *De temperamentis* II.2 (53,4–7 Helmreich / I.592–593 K)

μακρὰν ἴσως σοι δόξω λέγειν τὴν ἐξέτασιν ἀλλ' ἀληθῆ γε παντὸς μᾶλλον ἐξ αὐτῆς τε τοῦ ζητουμένου τῆς οὐσίας λαμβανομένην, ὡς ἐν τοῖς ὑπὲρ ἀποδείξεως ἐλέγετο.

A19. Galenus, *De constitutione artis medicae ad Patrophilum* 9.3 (82,23–25 Fortuna / I.255–256 K)

ὁ διορισμὸς δ' ἀπὸ τῆς ἐννοίας ἑκατέρων τῶν πραγμάτων, ὡς ἐν τῷ περὶ ἀποδείξεως ἐδείκνυτο, τὴν πρώτην ἀρχὴν ἔξει.

A20. Galenus, *De temperamentis* II.2 (49,11–21 Helmreich / I.586–587 K)

ὥστε δι' ἀλλήλων καὶ ἐξ ἀλλήλων αὐτοῖς γίνεσθαι τὰς ἀποδείξεις, ἐκ μὲν τῶν νῦν ζητουμένων ὡς ἤδη γινωσκομένων, ἐπειδὴν ὑπὲρ τῶν ἐνεργειῶν διαλέγονται καὶ τὴν τῶν ἐδεσμάτων τε καὶ φαρμάκων ἐξευρίσκωσι δύναμιν ὑπνῶν τε πέρι καὶ τῶν ἄλλων τῶν τοιούτων ἐπισκέπτωνται. πάλιν δ' αὖ τὰ νῦν ἐνεστῶτα δι' ἐκείνων ὡς ἤδη προεγνωσμένων ἀποδεικνύουσιν. ἐγὼ δ' οὐκ ἐπαινῶ τὰς τοιαύτας ἀποδείξεις, ἀλλ', εἰ χρὴ 5 τάληθές εἴπειν, οὐδ' ἀποδείξεις εἶναι νομίζω, καθάπερ ἐπὶ πλεον δι' ἐτέρων ἐδήλωσα, καὶ βέλτιον εἶναί φημι κατὰ πᾶσαν διδασκαλίαν ὀρίσασθαι τὴν τάξιν τῶν νοημάτων.

A21. Galenus, *De placitis Hippocratis et Platonis* II.5.46 (136,26–30 De Lacy / V.250 K)

ἄπερ οὖν ἐν ταῖς περὶ τῆς ἀποδείξεως μεθόδοις ἐδιδάχθημεν καθόλου, ταῦθ' εὐρίσκεται κατὰ μέρος ἐπὶ πάσης ὕλης πραγμάτων ἀληθεύοντα. χρὴ γὰρ οὐκ ἀπὸ πάντων τῶν ὑπαρχόντων τῷ προκειμένῳ πράγματι τάληθές λαμβάνειν ἀλλ' ἀπὸ μόνου τοῦ συνημμένου τῷ προβλήματι.

A21, 2 ἐπὶ...πραγμάτων] Cf. A4, 6.

A18b, 2 ἐδιδάχθημεν] δεδίδαχαμεν Wenkebach, *sed cf. infra*, A21, 1

A18b. Galen, *Commentary on Hippocrates' Epidemics I I.1*

Now we know what the proper elements of the conditions are when we have begun from the substance of the thing, as we have been taught in the books *On demonstration*. (C-H)

A18c. Galen, *Mixtures II.2*

You will perhaps think that the examination I am describing is long; but it is also true above anything else, taken as it is from the very substance of the thing being sought, as discussed in the books about demonstration. (H)

A19. Galen, *The constitution of the art of medicine 9*

The distinction will take its first starting point from the notion of each of these things, as shown in *On demonstration*. (C-H)

A20. Galen, *Mixtures II.2*

And so their demonstrations are produced through each other and from each other. On the one hand, [they are produced] from things being sought right now as if they were already known, whenever they reason about activities and search for the power of foods and drugs and inquire about sleep and other such things. And then again they demonstrate the things currently under inquiry through those just mentioned, as if 5 they were already known. As for me, I do not approve of such demonstrations. Rather, to tell the truth, I do not even regard them as demonstrations, as I have explained at length in other [books], and I claim that in every teaching one should determine the order of thoughts. (H)

The Discovery of Premises**A21.** Galen, *The doctrines of Hippocrates and Plato II.5.46*

And so the [tenets] we have been taught in the inquiries *On demonstration* on a general level are discovered to be true on a particular level in each instance of the things [in hand]. For one should not take true [premisses] from all attributes of the thing before us, but only from that which is connected to the problem. (H)

A19, 1 each of these things] I.e., of imbalanced mixture on the one hand, and illness on the other. A20, 8 in other books] Probably a reference to *Dem.*; see Singer–van der Eijk, *Galen: Works on Human Nature I*, p. 114 n. 55.

A22. Galenus, *De methodo medendi* I.5.5–6 (56,23–58,7 Lorusso / X.41–42 K)

καὶ οὐδεὶς ὄλως Ἑλλήν οὐτ' ὠνόμασεν ἄλλως οὐτ' ἐπ' ἄλλό τι πρᾶγμα φέρει τῶν εἰρημέ-
νων ὀνομάτων ἕκαστον ὡς ἐπὶ πλεῖστον ἐδείξαμεν ἐν τῇ τῶν ἰατρικῶν ὀνομάτων ἐξηγή-
σει. καὶ αὐτοῦ γε τούτου μέμνησό μοι διὰ παντὸς τοῦ λόγου μάλιστα, ὅτι τὰς μὲν τῶν
5 ὀνομάτων ἐξηγήσεις ἐκ τῆς τῶν Ἑλλήνων συνηθείας ποιούμεθα καθότι κἀν τοῖς περι
τῆς ἀποδείξεως ὑπομνήμασιν ἐλέγετο, τὰς δὲ τῆς οὐσίας αὐτῆς τοῦ πράγματος εὐρέσεις
τε καὶ ζητήσεις καὶ ἀποδείξεις οὐκέτ' ἐκ τῶν τοῖς πολλοῖς δοκούντων, ἀλλ' ἐκ τῶν
ἐπιστημονικῶν λημμάτων ὑπὲρ ὧν τοῦ τρόπου τῆς εὐρέσεως ἐν ἐκείνοις εἴρηται.

A23. Galenus, *De methodo medendi* I.5.11–12 (60,17–62,12 Lorusso / X.44–45 K)

(1) εἴρηται δ' ὡς οἶσθα περὶ τῆς τῶν ὀνομάτων χρήσεως ἐπὶ πλέον ἐτέρωθι καὶ νῦν ὅσον
ἀναγκαῖον εἰς τὸ προκειμένον δειμι τοῦτ' ἐνδεικνύμενος μόνον, ὡς οὐ χρῆ περιέλκε-
σθαι τοῖς ὀνόμασιν οὐδὲ τοὺς ἐν τούτοις διαφερομένους ἤδη κἀν τοῖς πράγμασιν αὐτοῖς
ἠγεῖσθαι διαφέρεσθαι, καὶ τούτου δ' αὐτοῦ πάντας ὡς ἔπος εἰπεῖν ὁρᾶς ἀγυμνάστους,
5 οὐ τοὺς ἰατροὺς μόνον τοὺς νῦν ὄντας, ἀλλὰ καὶ τῶν φιλοσόφων τοὺς πλείστους· ὀλίγοι
γὰρ αὐτῶν ἴσασι διακρίνειν τὰς ἐν τοῖς ὀνόμασι διαφωνίας τῶν ἐν αὐτοῖς τοῖς πράγμα-
σιν· ἀλλ' ἐδείχθη καὶ τούτου μέθοδος ἐν τῇ λογικῇ θεωρίᾳ, καὶ νῦν ἤκει καιρὸς αὐτῆς,
εἴπερ ποτε καὶ ἄλλοτε. (2) τίς δ' ἦν ἡ μέθοδος; ἀπὸ τῆς τῶν πραγμάτων ἄρξασθαι διαφο-
ρᾶς, οὐκ ἀπὸ τῆς τῶν ὀνομάτων, καὶ δεῖξαι λόγου χάριν ἀλλήλοις παρακείμενα τέτταρα
10 πράγματα, κἀπειθ' ἐξῆς ἀποδείξει βεβαιώσασθαι τὸ μήτε πλείω τούτων εἶναι μήτ'
ἐλάττω, τὰ κατὰ τὸ προκειμένον σκέμμα περιεχόμενα· μετὰ τοῦτο δ' ἤδη καθ' ἑκάστου
τῶν πραγμάτων ἴδιον ὄνομα θέμενον οὕτω περαίνειν ἅπαντα τὸν ἐξῆς λόγον οὐκέτ'
οὐδαμόσε μετατιθέντα καὶ μεταφέροντα τῶν ὀνομάτων οὐδὲν, ἀλλ' ἀκριβῶς διαφυλάτ-
τοντα καθ' ὅτουπερ ἂν αὐτὸς ἐξ ἀρχῆς ἐπιθῆται πράγματος, καὶ γὰρ σαφῆς οὕτως ἡ
15 διδασκαλία γίνεται καὶ τῶν παρὰ τὰς ὁμωνυμίας σοφισμάτων ἐκτὸς καὶ ραδίως ἐξελέγ-
χεται τὰ μάρτην προσκείμενα καὶ διὰ ταχέων εὐρίσκεται τὰ λείποντα καὶ τὰ τε διαφο-
νούμενα καὶ τὰ συμφωνούμενα μάλιστα ἐν ταῖς τοιαύταις ἐρμηνείαις ἀκριβῶς γνωρίζε-
ται.

A24. Galenus, *De placitis Hippocratis et Platonis* II.2.3–5 (102,20–104,5 De Lacy / V.212–213 K)

φημί δὴ τῶν λημμάτων ἃ ἔνεκα τοῦ συμπεράσματος λαμβάνουσιν, [ὡς] τὰ μὲν ἄντικρυς
εἶναι ψευδῆ, τὰ δὲ οὐκ οἰκεῖα τοῦ προκειμένου σκέμματος· ἀντικρυς μὲν ψευδῆ τὰ

A22. Galen, *The therapeutic method* 1.5.5–6

And no Greek at all would name [these things] otherwise or apply any of the names mentioned to any other thing, as we have shown at length in the explanation of medicinal names. At any rate, keep this point especially in mind throughout my whole argument that we make the explanation of names based on the customs of the Greeks, just as we said also in the books *On demonstration*. But the discoveries, inquiries, and demonstrations of the very substance of the thing [in question] are not based on the opinions of the many, but on the scientific premises, the manner of whose discovery has been described in these [books]. (C-H) 5

A23. Galen, *The therapeutic method* 1.5.11–12

(1) Elsewhere, as you know, I have spoken about the use of names at length. Now I will discuss it to the extent that is necessary for the task in hand, indicating only that one should not become distracted by names nor suppose that those who differ in the names [they use] already also differ in regard to the things themselves. In fact you see pretty much everyone untrained in this very thing, not only doctors living now, but also most of the philosophers. For few of them know how to distinguish disagreements with respect to names from those with respect to things. But the method for doing this too has been shown in the study of reasoning and now the right time for it has come, if ever there was one. (2) What is the method? To begin from the differences between things, not from those between names, and to show that there are, for the sake of argument, four things closely connected with one another (and then confirm by successive demonstration that there are neither more nor less than this number of them) which come into consideration in view of the problem in hand. After this, once we have given distinctive names to each of these things, the whole successive argument should be concluded accordingly, without any of the names being changed or transferred to anything else, but kept precisely for that thing to which it was given at the beginning. For in this way the teaching becomes clear and free of sophisms based on homonymy, and pointless additions are easily exposed and omissions quickly discovered. Also, the points of agreement and of disagreement are both recognized with precision especially when things are expressed in this way. (C-H) 10 15 20

A24. Galen, *The doctrines of Hippocrates and Plato* II.2.3–5

Now I claim that, of the premisses which they take for the sake of the conclusion, some are outright false, and others are inappropriate to the issue lying before us. Outright

A22, 1–2 names mentioned] I.e. ‘being sick’ and ‘being healthy’. 2–3 explanation...names] *Med. nom.*; the first book of the treatise is preserved in an Arabic translation, ed. Meyerhof–Schacht, *Über die medizinischen Namen*. 4 customs of the Greeks] Cf. B6*, 3. A23, 8 study of reasoning] A reference to *Dem.*; “too” (καί) links this passage with A16, 20–24. For “the study of reasoning”, see A1, 3.

τοιαῦτα, περὶ ὧν ἐν τῷ πρώτῳ βιβλίῳ διήλθον ἐπὶ πλεόν, ὅταν ἦτοι μηδὲν τῶν ἀλόγων ζῶων ἐπιθυμῆιν τις ἢ θυμοῦσθαι φάσκη, καθάπερ οἱ ἀπὸ τῆς Στοᾶς, ἢ πάλιν ἐκ καρδίας
 5 πεφυκέναι τὰ νεῦρα· τὰ δὲ οὐκ οἰκεῖα τῶν λημμάτων ὅποσα (καὶ ὅποια) τὴν φύσιν ἐστίν, εἴρηται μὲν ἐπὶ πλεῖστον ἐν τοῖς περὶ ἀποδείξεως ὑπομνήμασιν, ἐν οἷς ἅπασαν ἐδήλωσα τὴν ἀποδεικτικὴν μέθοδον ὅποια τίς ἐστὶν παρεκάλουν τε διὰ τοῦ πρώτου τῶνδε τῶν ὑπομνημάτων ἐν ἐκείνῃ γυμνάσασθαι πρότερον, ὅστις ὀτιοῦν ἀποδεικνύειν ἐπιχειρεῖ. γεγράφθαι δὲ λέγω ὑπὲρ αὐτῆς ἄριστα τοῖς παλαιοῖς φιλοσόφοις τοῖς περὶ
 10 Θεόφραστον τε καὶ Ἀριστοτέλην κατὰ τὰ τῶν δευτέρων ἀναλυτικῶν βιβλία...

A25. Galenus, *De placitis Hippocratis et Platonis* II.2.23–3.3 (108,16–31 De Lacy / V.218–219 K)

(1) πάντ' οὖν ὅσα τοιαῦτα τῶν ἐπιχειρημάτων ἐν τοῖς περὶ ἀποδείξεως ἐδείξαμεν οὐκ οἰκεῖα τῷ ζητουμένῳ πράγματι καὶ διὰ τοῦτο νῦν οὐ χρῆ μῆκύνειν περὶ αὐτῶν, ὥσπερ οὐδ' ἐπὶ τῶν ἐκ τῆς ἐτυμολογίας ὀρμωμένων· εἴρηται γὰρ καὶ περὶ ἐκείνων αὐτάρκως ἐν τοῖς περὶ ὀνομάτων ὀρθότητος. (2) ἀλλὰ τίνα χρῆ ζητεῖν λήμματα τῷ προκειμένῳ
 5 προβλήματι προσήκοντά τε καὶ οἰκεῖα; γέγραπται μὲν δήπου καὶ περὶ τούτων ἐπὶ πλεῖστον ἐν τοῖς περὶ ἀποδείξεως ὑπὸ τε τῶν παλαιῶν εἰρημένους ἀσαφέστερόν τε καὶ συντομώτερον ὑπὸ τε ἡμῶν ἐξηγουμένων ἐκεῖνα σαφῶς τε ἅμα καὶ διὰ πολλῶν. ἀρκέσει δὲ νῦν ἐξ αὐτῶν τὸ κεφάλαιον ἀναμνήσασθαι μόνον ἐκείνῳ χρῆσασθαι σκοπῶ εἰς τὴν τῶν κατὰ μέρος εὐρεσιν. (3) ἦν δὲ τὸ κεφάλαιον ὡς ἀπ' αὐτῆς χρῆ τῆς οὐσίας τοῦ ζητουμένου
 10 πρᾶγματος ἐξευρίσκειν τὰ προσήκοντά τε καὶ οἰκεῖα λήμματα, καθάπερ ἐν τούτοις ἐν οἷς Χρῦσιππος ἐπισκοπεῖται περὶ τοῦ τῆς ψυχῆς ἡγεμονικοῦ τὸν τῆς οὐσίας λόγον εἰπόντας ὑπὲρ οὗ ζητοῦμεν πρᾶγματος ἐκείνῳ χρῆσθαι κανόνι τε καὶ σκοπῶ τῶν κατὰ μέρος ἀπάντων.

A26. Galenus, *De placitis Hippocratis et Platonis* II.3.23–26 (114,22–116,5 De Lacy / V.226 K)

(1) εἴ τις οὖν καλῶς ἤσκηται τὰς διαφορὰς τῶν λημμάτων ἐξευρίσκειν τε καὶ γνωρίζειν, οὐ δεήσομαι πρὸς αὐτὸν ἀντιλογίας μακροτέρας, ὥσπερ οὐδὲ πρὸς τοὺς ἐκ τοῦ Περιπάτου. (2) κατὰ γὰρ τὰς ἰδίας αὐτῶν διδασκαλίας ὁ λόγος ἔσται μοι πρὸς αὐτοὺς ὑπὲρ τοῦ τὴν τοῦ ἡγεμονικοῦ τῆς ψυχῆς ἀρχὴν ἐν ἐγκεφάλῳ περιέχεσθαι, τῆς δὲ θυμοειδοῦς ἐν
 5 καρδίᾳ, τῆς δ' ἐπιθυμητικῆς ἐν ἥπατι. (3) πρὸς μέντοι τοὺς Στωϊκοὺς ἀναγκαῖόν ἐστι μακρὸν ἀνύεσθαι λόγον, ἀνθρώπους ἐν μὲν τοῖς ἀχρήστοις τῆς λογικῆς θεωρίας ἰκανῶς

5 καὶ ὅποια *add.* Havrda A25, 6 ἀσαφέστερόν von Müller : ἀσφαλέστερόν mss.

false are such as those I discussed at length in the first book [of the present treatise], when someone claims, as the Stoics do, that none of the irrational animals is desirous or angry, or again that the nerves grow out from the heart. As far as inappropriate premisses are concerned, I have set out at great length how many they are (and what they are like) by nature in the books *On demonstration*, where I clarified what the demonstrative method is in its entirety and encouraged, though the first book of this treatise, anyone who attempts to give a demonstration of anything to train themselves in this method first. I say that the best account of it was given by the ancient philosophers Theophrastus and Aristotle in their books of the *Second analytics*. (C-H)

A25. Galen, *The doctrines of Hippocrates and Plato* II.2.23–3.3

(1) We have shown in *On demonstration* that all such arguments are inappropriate to the thing being sought and for this reason there is no need to speak at length about them, just as there is no need in the case of [arguments] that begin from etymology; for these have been discussed sufficiently in *On the correctness of names*. (2) But what premisses should one seek as suitable and appropriate to the problem before us? Surely these have also been written about at length in the [books] on demonstration, both by the ancients speaking rather unclearly and briefly, and by us explaining their statements at once clearly and extensively. For now, it will be sufficient to recall from [these accounts] only the main point and use it as an objective for the discovery of particular [premisses]. (3) The main point was that the suitable and appropriate premisses must be discovered from the very substance of the thing sought, just as in this case, when Chrysippus inquires about the ruling part of the soul, we should state the account of the substance of the thing with which our inquiry is concerned, and then use that as a standard and objective for [the discovery of] all particular [premisses]. (C-H)

A26. Galen, *The doctrines of Hippocrates and Plato* II.3.23–26

(1) If someone has been well practised in the discovery and recognition of the differences of premisses, I will not need a very long response to him, just as it is not needed in response to the Peripatetics. (2) For my argument against them will be in accordance with their own instructions, that the principle of the ruling part of the soul is enclosed in the brain, the spirited in the heart, and the appetitive in the liver. (3) Yet against the Stoics, it is necessary that a long argument be made, since they are people excessively trained in the useless parts of the study of reasoning, but completely untrained in the

A24, 6–7 how...nature] See *PHP* II.3.10–11 (110,24–112,2 De Lacy / V.221–222 K); *PHP* II.4.3–4 (116,23–31 De Lacy / V.227–228 K), etc. **A25**, 1 all such arguments] I.e., such as Chrysippus' cardiocentric argument from nodding. **4** On the correctness of names] Not extant. **A26**, 7 study of reasoning] Cf. A1, 3.

γεγυμνασμένους, ἐν δὲ τοῖς χρησίμοις ἀγυμναστοτάτους τε ἅμα καὶ μοχθηραῖς ὁδοῖς ἐπιχειρημάτων ἐντεθραμμένους· ὥστε ἀναγκαῖον εἶναι μὴ μόνον διδάσκειν αὐτοὺς ὅσον χρηστὸν ἀλλὰ πολὺ πρότερον ἀποστήσαι τοῦ μοχθηροῦ. (4) τοῦτο δὲ χαλεπῶς μὲν
 10 ἂν ἴσως, ἀνύσειν δ' ἠλπίσαμεν, εἴ τις αὐτῶν ὑπέμεινε τῇ περὶ ἀποδείξεως πραγματεία ἀκολουθήσας ἐπὶ πλεον ἐν αὐτῇ δοῦναί τε καὶ λαβεῖν λόγον ἐν εὐμενέσιν ἐλέγχους.

A27. Galenus, *Thrasymbulus* 5 (37,20–26 Helmreich / V.812–813 K)

δέδεικται δ' ἡμῖν ἐν τοῖς περὶ ἀποδείξεως, ὡς οὐ χρηστέον ἐπαγωγᾶς εἰς ἀποδείξεις ἐπιστημονικᾶς· ὡσθ' ὅστις ἐν ἐκείνοις ἐγυμνάσατο, καταφρονήσει μὲν τῆς τοιαύτης ὁδοῦ, ζητήσει δ' ἑτέραν βελτίω, ὃ μὴ γυμνασάμενος δὲ θάτερον τῶν μερῶν ἐλόμενος, ὁπότερον ἂν βουληθῆ, δι' ὅλης ἡμέρας ἐρίζειν ἔξει.

A28. Galenus, *De simplicium medicamentorum facultatibus* II.4 (XI.470–471 K)

(1) τὸ γὰρ ἐκ παραδείγματος ἢ ἐκ παραδειγμάτων πιστοῦσθαι τι διαφέρει τοῦ δι' ἐπαγωγῆς πιστουμένου τῷ τὸν μὲν ἐκ παραδειγμάτων πιστούμενον ἐν μὲν ἢ δύο τῶν ὁμογενῶν λέγειν, ἢ πάντως γε ὀλίγα τὰ πλείω παραλείποντα, τὸν δ' ἐξ ἐπαγωγῆς ἅπαντα περιλαμβάνειν πειρᾶσθαι τὰ διὰ τῆς ἐμπειρίας ἐγνωσμένα, καὶ μηδὲν ὡς οἷόν τε
 5 παραλιπεῖν ὃ προφανές τε καὶ δῆλον τοῖς πολλοῖς, ἀλλὰ ἀποκεκρυμμένον τε καὶ ὀλίγοις γνωστόν. (2) ὅθεν καὶ βίαιός ἐστιν καὶ πείθει σφοδρῶς ἢ διὰ πάντων τῶν ἐξ ἐμπειρίας γινωσκομένων ἐπαγωγή καὶ μόνοις αὐτοῖς ἢ ἀλαζονεία κατάφωρος γίνεται τοῖς γεγυμνασμένοις ἐν ἀποδεικτικαῖς μεθόδοις. (3) καὶ διὰ τοῦθ' ἡμεῖς ἐπιπλέον ὑπὲρ αὐτῆς ἐν τοῖς περὶ τῆς ἀποδείξεως ὑπομνήμασιν διήλθομεν. ἴσως δ' ἂν ποτε καὶ κατὰ μόνας ἐν
 10 ὑπὲρ αὐτῆς ἰδίᾳ συνθεῖημεν γράμμα.

A29. Ibn al-Ṭayyib, *Commentary on the Categories* (p. 103 Ferrari)

(1) فطائفة رابعة رئيسها جالينوس، زعمت أنّ أجناس الأجناس الشاملة لسائر الموجودات خمسة على ما ذكره رئيسها في البرهان. أما ثلاثة، فالجوهر والكمية والكيفية، وأما رابع

useful parts while at the same time having been nurtured in unsound ways of reasoning. Therefore, it is necessary not only to teach them what is good, but much more importantly to make them abandon what is bad. (4) This will be difficult to accomplish perhaps, but we would have hoped to succeed if any of them, having followed the treatise *On demonstration*, persevered by it at length in giving and taking an argument in friendly scrutiny. (C-H) 10

Induction

A27. Galen, *Thrasylbulus* 5

However, it has been shown in the [books] *On demonstration* that inductions should not be used for scientific demonstrations. Thus everyone who has been trained by these books will despise this method and look for another, better one; whereas those who have not been trained can take one side, whichever they choose, and argue contentiously all day. (H) 5

A28. Galen, *The power of simple drugs* II.4

(1) For to confirm something from an example or examples differs from confirming it through induction in the following way: the person who confirms from examples mentions one or two things of the same kind, at any rate a few, omitting the majority of cases. In contrast, the person who confirms from induction attempts to include everything that has been recognized through experience and to omit, as far as possible, nothing which is obvious and clear to the many, but only that which is hidden and known to a few. (2) For this reason, induction by all that has been recognized through experience is forceful and persuades strongly, and their false pretension is detected only by those trained in demonstrative methods. (3) And this is why we discussed it at length in our books *On demonstration*. Perhaps at some point we might also compose a separate single piece dealing specifically with it. (C-H) 5 10

Categories

A29. Ibn al-Ṭayyib, *Commentary on Aristotle's Categories*

(1) A fourth group whose head is Galen believes that there are five highest genera that comprise all the beings in accordance with what their head mentions in *On demonstration*. As for three [of the highest genera], they are substance, quantity, and quality, the

13 friendly scrutiny] Cf. Plat. *Epist.* VII, 344b5.

فالأطراف التي تأخذ من الكيفية شيئاً ما، فأما الخامس فالإضافة إلى شيء آخر. (2) وينبغي أن تعلم أنّ هذا الفعل غير موافق للفلسفة، ولا لمن يجب علمها على الصحة. (3) أمّا أولاً فجنس الأطراف التي تأخذ من الكيفية، أمرٌ لا يقتدر على فهمه أحد أو يعرف معناه. (4) وأمّا ثانياً فمن قبل الغاية مقولات شديدة الظهور لا تذهب على أحد، بمنزلة متى وأين ويفعل وينفعل والموضوع وله. وإن ظنّ أنّ هذه كلّها تدخل في المضاف، فيقبح به لأن المضافين ليس هما اللذين لأحدهما إلى الآخر نسبة حسب لكن اللذين ذات كل واحد منهما تقال بالقياس إلى الآخر.

A30. Elias, *In Aristotelis Categorias commentarium* 4 (160,20–23 Busse)

ἄλλοι διὰ τί μὴ πέντε αἱ κατηγορίαι, ὡς ὁ Γαληνός, οὐσία ποσὸν ποῖον πρὸς τί πρὸς τί πως ἔχον. πρὸς ὃ φαμεν ὅτι οὐ δύναται τὸ πρὸς τί πως ἔχον γένος εἶναι τῶν λοιπῶν κατηγοριῶν.

fourth are terms that take something from quality, and the fifth is relation to something else. (2) You must know that doing this does not correspond to philosophy nor to him who affirms its knowledge correctly. (3) First, no one is able to understand the genus ‘terms that take something from quality’ or to know what it means. (4) Second, regarding the aim, clearly apparent categories do not escape anyone, such as when, where, acting, being acted upon, position, and having, even if one believes that all these are included in (the category of) the relative. However, one is wrong in that, because two relatives are not those of which only one has a link to the other, but the essence of each one of the two is said in reference to the other and is only completely understood through the other. (Wakelnig)

A30. Elias, *Commentary on Aristotle’s Categories* 4

Others suggest why not there be five categories, for instance Galen: substance, quantity, quality, relative, relative disposition. To this we say that relative disposition cannot be the genus of the remaining categories. (H)

A29, 4 terms] The word *ṭaraf* (pl. *aṭrāf*) means “extreme”, “limit”, and in the context of this discussion, “term” (W). terms...quality] The expression is unclear, as al-Ṭayyib notes (A29, 6–7), perhaps due to a mistranslation of the Greek source. 5 doing this] I.e., postulating five categories (W). 8 the aim] I.e., of the ten categories (W). 9–10 even...relative] A view attributed to Galen by al-Ṭayyib (W). 10 wrong in that] I.e., in the belief that the categories when, where etc. are included in the category of the relative (W). 11–13 two...other] In what follows, Ibn al-Ṭayyib gives several examples to explain the difference between the category of the relative and the other categories: “Substance and time are understood separately, but they are also the two terms (*ṭarafān*) of when. Substance and place are understood separately, but they are also the two terms of where. Property and possessor are understood separately, but they are also the two terms of having. Do understand our expression ‘separately’ to mean ‘not inasmuch as they are relatives’, unless these two terms are taken insofar as they are terms of a relation (*idāfa*), for (then) each one of the two is only understood in reference to (*bi-al-qiyās*) the other” (Ibn al-Ṭayyib, *Tafsīr K. al-Maqūlāt*, ed. Ferrari, pp. 103–104, translated by Wakelnig). A30, 1 for instance Galen] Probably a reference to *Dem.*; see A29, 2–3. The doctrine is otherwise unattested.

B1. (= A24 pars). Galenus, *De placitis Hippocratis et Platonis* II.2.3 (102,26–104,2 De Lacy / V.213 K)

... ἐν τοῖς περι ἀποδείξεως ὑπομνήμασιν, ἐν οἷς ἅπασαν ἐδήλωσα τὴν ἀποδεικτικὴν μέθοδον ὅποια τίς ἐστὶν παρεκάλουν τε διὰ τοῦ πρώτου τῶνδε τῶν ὑπομνημάτων ἐν ἐκείνῃ γυμνάσασθαι πρότερον, ὅστις ὀτιοῦν ἀποδεικνύειν ἐπιχειρεῖ.

B2. Nemesius, *De natura hominis* 21 (82,5–18 Morani)

τῆς δὲ λύπης ὄργανον τὸ στόμα τῆς κοιλίας· τοῦτο γάρ ἐστι τὸ τῆς δήξεως αἰσθανόμενον ἐν ταῖς λύπαις, ὡς ὁ Γαληνὸς ἐν τῷ τρίτῳ τῆς ἀποδεικτικῆς φησὶν οὕτω πως· « τοῖς λυπούμενοις οὐκ ὀλίγον εἰς τὴν γαστέρα καταρβέει ξανθῆς χολῆς, ὃ τὴν δῆξιν αὐτοῖς παρέχει, καὶ οὐ πρότερον παύονται λυπούμενοι καὶ δακνόμενοι πρὶν ἐξεμέσαι τὴν χολήν. γίνεται γὰρ ἡ δῆξις αὐτοῖς ὑποκάτω τοῦ κατὰ μέσα στέρνα χόνδρου τοῦ ξιφοειδοῦς ὀνομαζομένου. πολὺ δὲ ἀνωτέρω κεῖται ἡ καρδία· τοῦ γὰρ διαφράγματος ἡ μὲν γαστήρ κατωτέρω ἐστίν, ἡ δὲ καρδία ἀνωτέρω. συνήθως δὲ οἱ παλαιοὶ καρδίαν καὶ τὸ στόμα τῆς γαστρὸς καλοῦσιν, ὡς Ἱπποκράτης καὶ Θουκυδίδης ἐν τῷ λοιμῷ λέγων οὕτως· «ὅποτε εἰς τὴν καρδίαν στηρίζαι, ἀνέστρεφέν τε αὐτὴν καὶ ἀποκαθάρσεις χολῆς πᾶσαι, ὅποσαι ἀπ' ἰατρῶν ὀνομασμένοι εἰσίν, ἐπήεσαν.» τὸ γὰρ ἀναστρεφόμενον τὸ στόμα τῆς γαστρὸς ἐστὶν ἀναγκαζόμενον ἐμεῖν, οὐ τὸ σπλάγχνον ἢ καρδία. »

B3. Galenus, *De usu partium* XV.5 (II.357,24–28 Helmreich / IV.238–239 K)

περὶ δὲ τοῦ ζῶον ἤδη τὸ κατὰ γαστρὸς ὑπάρχειν, ὅταν γε διαπεπλασμένον ἅπασιν ἢ τοῖς μορίοις, ἐν τε τοῖς περι ἀποδείξεως ὑπομνήμασιν εἴρηται κἀν τοῖς περι τῶν Ἱπποκράτους τε καὶ Πλάτωνος δογμάτων.

B2, 5–7 Cf. *PHP* II.8.6 (158,13–15 De Lacy / V.274 K). 7–8 Cf. *PHP* II.8.8 (158,20–21 De Lacy / V.274 K). 9–10 Thucydides II.49.3; cf. *PHP* II.8.11 (158,26–28 De Lacy / V.275 K). **B3**, 1–2 διαπεπλασμένον... μορίοις] Cf. B7*, 60–61.

Section B: Books I–III and Related Testimonia

Book I

B1. (= A24 pars). Galen, *The doctrines of Hippocrates and Plato* II.2.3

... in the books *On demonstration*, where I clarified what the demonstrative method is in its entirety and encouraged, though the first book of this treatise, anyone who attempts to give a demonstration of anything to train themselves in this method first. (C-H)

Book III

B2. Nemesius, *The nature of man* 21

The mouth of the belly [i.e., the cardia] is the organ of distress. For this senses biting pain in distress, as Galen says in the third book of the *Apodeictics* in these words: “For those who are in distress, a large amount of yellow bile runs down into the stomach, which makes them feel biting pain, and they do not stop being distressed and feeling the pain until they vomit out the bile. For the biting pain is produced in these cases 5 below the cartilage in the middle of the chest, which is called ‘ensiform.’ The heart is situated much higher up. For the stomach is lower than the diaphragm, while the heart is higher up. The ancients also customarily called the mouth of the stomach ‘heart’ (kardia), as did Hippocrates and Thucydides in [his account of] the plague, saying: ‘When it settled in the heart, it upset it, and all the purging secretions of bile which 10 have been named by the doctors followed after.’ For the thing that is upset is the mouth of the stomach that is forced to vomit, not the internal part, the heart.” (C-H)

Issues Probably Discussed in Books II–III

B3. Galen, *The use of parts* XV.5

Of the [proposition] that the thing in the womb is already an animal, at least when it has been formed in all its parts, we have spoken in the books *On demonstration* and *On the doctrines of Hippocrates and Plato*. (C-H)

B2, 10–11 Thucydides II.49.3; cf. Gal. *PHP* II.8.11 (158,26–28 De Lacy). **B3, 2** formed...parts] Cf. B7*, 73–74.

B4. Abū Bakr al-Rāzī, *Doubts about Galen* 13.1 (84,1–13 Koetschet)

(1) فأما في كتابه في القوى الطبيعية فقال: "لما كان الحسّ والحركة الإرادية خاصّين بالحيوان والنمو والتغذّي عامّين للحيوان والنبات، صارت الأولى أفعالاً للنفس والثانية أفعالاً للطبيعة". وقد كان ينبغي له أن يلحق بالحسّ أيضاً زيادةً وفضلاً كما ألحقهما بالحركة، إذ كان هذا شيئاً قد اختلف فيه، لا سيما وقد قال هو في غير موضع إنّ للنبات حسّاً ما (2) فإنّه قال في آرائه إنّ للنبات إحساساً بما خالفه وبما وافقه. وقال في كتاب الذبول إنّ الأجسام التي لها حياة ثلاثة: 5 الحيوان والنبات والبزور. وقال في الثانية من الأخلاق وأوجب أن يكون في النبات حسّ ولذة وكراهة. ثم أيضاً فإنّه لم يقل في شيء من كتبه - فضلاً عن أن يبيّن - أنّه ليس للنبات شعور بما ماسّه. وقال في كتاب البرهان (3): كلّ ما له شعور بما يمسه حيوان. فكيف يجوز مع هذا أن يأخذ شيئاً مختلفاً فيه لم يتقدّم منه فيه قول - فضلاً عن بيان - كالشيء المتفق عليه أو المبيّن، فيقول قولاً جماً إنّّه لما كان الحسّ والحركة الإرادية خاصّين بالحيوان كأنّه قد بيّن هذا وبرهنه، 10 لا كأنّه قد كاد يحكم بصحّة نقيضه؟

B5. Nemesius, *De natura hominis* 2 (23,24–24,4 Morani)

Γαληνὸς δὲ ἀποφαίνεται μὲν οὐδὲν, ἀλλὰ καὶ διαμαρτύρεται ἐν τοῖς ἀποδεικτικοῖς λόγοις ὡς οὐδὲν εἶη περὶ ψυχῆς ἀποφηνάμενος· εἶκοι δὲ, ἐξ ὧν λέγει, δοκιμάζειν μᾶλλον τὸ κρᾶσιν εἶναι τὴν ψυχὴν (ταύτη γὰρ ἐπακολουθεῖν τὴν τῶν ἡθῶν διαφορὰν),

B4. Abū Bakr al-Rāzī, *Doubts about Galen* 13.1

(1) In his treatise *On the natural faculties*, he [i.e., Galen] says: “Since sensation and voluntary motion are peculiar to animals, while growth and nutrition are common to animals and plants, the former are activities of the soul, and the latter are activities that belong to nature”. He should have added to “the sensation” some other [word] to determine it, as he did for the motion, since this is a topic about which there is disagreement, and since he himself has said in several places that plants possessed a form of sensation. (2) Indeed, he says in *On his own opinions* that plants have a sensation of what is alien to them and of what agrees with them; in the treatise *On decay*, he says that bodies endowed with life are of three kinds: animals, plants, and seeds; in the second book of the treatise *On character traits*, he says in a decisive manner that plants possess sensation, pleasure and aversion. Then, in addition to this, at no time in his books does he say – and a fortiori clearly establishes – that plants do not feel what comes into contact with them. (3) Whereas, in his treatise *On demonstration*, he says: “Everything that feels what comes into contact with it, is an animal”. How then, in spite of this, can he take up a subject about which there is disagreement, without having said anything about it beforehand, and a fortiori without having established it clearly, as [if it were] a clear notion or one on which there is agreement, and declare in a clear-cut manner that sensation and voluntary motion are peculiar to animals”, as if he had established this proposition clearly and demonstrated it, and not as if he had already practically decided the contradictory [of this proposition] to be true. (Ko)

B5. Nemesius, *The nature of man* 2

Galen asserts nothing, and even attests in the accounts on demonstration that he would prefer not to assert anything about the soul. But it seems from what he says that he rather considers the soul to be a mixture (for the difference among character traits follows from mixture), his argument being based on those of Hippocrates. If this is the

B4, 1–4 *Nat. fac.* 1.1 (101,1–5 Helmreich / II.1 K). 7 *Prop. plac.* 13.6 (Garofalo–Lami). 9–10 *Marc.*, VII.666 K. 10 On character traits] *De moribus*; the treatise survives only in an Arabic summary edited by Kraus, “Kitāb al-akhlāq li-Jālinūs”. This summary was translated into English by Mattock, “A translation of the Arabic epitome”, and this translation was then revised by Davies (in *Galen. Psychological Writings*, ed. Singer, pp. 135–201). We haven’t been able to locate an exact parallel to this passage. However, in the opening section of the second book, Galen does speak about plants, states that they too possess a desiderative soul, equivalent to the (Aristotelian) vegetative/nutritive part of the soul: “This is the vegetative soul, which nourishes our bodies, makes them grow, and preserves life in them, and generates seed in both animals and plants in order that propagation may continue” (*Mor.* 2 [35 Kraus / 151 Davies]). 18–19 sensation...animals] Cf. B7*, 47–48; B7*, 94. B5, 2 not...soul] Cf. B7*, 126–127. 3–4 difference...mixture] Cf. *Gal. Mor.* 2 (38 Kraus, 155 Davies); *QAM* 2 (32,14–33,16 von Müller / IV.768–769 K). 4 Hippocrates] Probably a reference to Hipp. *Nat. hom.*, discussed by Galen in *Hipp. elem.* and *HNH*.

ἐκ τῶν Ἱπποκράτους κατασκευάζων τὸν λόγον. εἰ δὲ τοῦτο, δῆλον ὅτι καὶ θνητὴν αὐτὴν
 5 εἶναι οἶεται, οὐ πᾶσαν δέ, ἀλλὰ τὴν ἄλογον μόνην ψυχὴν τοῦ ἀνθρώπου. περὶ δὲ τῆς
 λογικῆς ἀμφιβάλλει, λέγων οὕτως· (***)

B6*. Clemens Alexandrinus, *Liber logicus* (= *Stromata* VIII) 2.3.1–3.8.3 (81,9–84,23
 Stählin–Havrda)

(1) τίς ἂν οὖν ἄλλη βελτίων ἢ ἐναργεστέρα μέθοδος εἰς ἀρχὴν τῆς τοιαύτης εἶη ἂν
 διδασκαλίας ἢ τὸ προταθὲν ὄνομα λόγῳ διελεθῆιν οὕτω σαφῶς ὡς πάντας ἀκολουθῆσαι
 τοὺς ὁμοφώνους; ἄρ' οὖν τοιοῦτόν ἐστι (τὸ) ὄνομα τῆς ἀποδείξεως οἷόν περ τὸ βλίτυρι,
 φωνὴ μόνον οὐδὲν σημαίνουσα; καὶ πῶς οὐθ' ὁ φιλόσοφος οὐθ' ὁ ῥήτωρ, ἀλλ' οὐδὲ ὁ
 5 δικαστὴς ὡς ἄσημον ὄνομα προφέρεται τὴν ἀπόδειξιν, οὕτε τις τῶν δικαζομένων ἀγνοεῖ
 τὸ σημαϊνόμενον ὅτι οὐχ ὑπάρχει; αὐτίκα ὡς ὑποστατὸν πορίζονται τὴν ἀπόδειξιν οἱ
 φιλόσοφοι, ἄλλος ἄλλως.

(2) περὶ παντὸς τοίνυν τοῦ ζητουμένου εἰ τις ὀρθῶς διαλαμβάνει, οὐκ ἂν ἐφ' ἑτέραν
 ἀρχὴν ὁμολογουμένην μᾶλλον ἀναγάγοι τὸν λόγον ἢ τὸ πᾶσι τοῖς ὁμοιοθέσι τε καὶ
 10 ὁμοφώνοις ἐκ τῆς προσηγορίας ὁμολογούμενον σημαίνεσθαι. εἶτα ἐντεῦθεν ὀρμηθέντα
 ζητεῖν ἀνάγκη, εἰ ὑπάρχει τὸ σημαϊνόμενον τοῦτο περὶ οὗ ὁ λόγος εἴτε καὶ μὴ· ἐφεξῆς
 δέ, εἴπερ ὑπάρχειν δειχθεῖν, ζητητέον τούτου τὴν φύσιν ἀκριβῶς, ὅποια τίς ἐστίν, καὶ
 μὴ ποτε ὑπερβαίνειν τὴν δοθεῖσαν τάξιν. (3) εἰ δ' οὐκ ἀρκεῖ τοῦτο μόνον ἀπλῶς εἰπεῖν
 15 περὶ τοῦ ζητουμένου τὸ δόξαν (ἔξεστι γὰρ καὶ τὸν ἀντικαθιστάμενον ἐπ' ἴσης ἀνταπο-
 φήνασθαι ὁ βούλεται), ἀλλὰ πιστώσασθαι χρὴ τὸ λεχθὲν, εἰ μὲν εἰς ὁμοίως ἀμφισβητού-
 μενον ἀναφέροιο αὐτοῦ ἢ κρίσις κάκεινον πάλιν ὁμοίως εἰς ἀμφισβητούμενον ἕτερον,

B6*, 1–2 ἀρχὴν...διδασκαλίας] Cf. Gal. *MM* I.5.1 (54,20 Lorusso / X.40 K) = A16, 11–12. 2 προταθὲν ὄνομα] Cf. Gal. *Diff. puls.* II.3 (VIII.569,10–11 K). λόγῳ διελεθῆιν] Cf. *MM* I.5.2 (56,4 Lorusso / X.40 K); cf. A16, 16–17. 3 ὁμοφώνους] Cf. *Diff. puls.* IV.2 (VIII.704,11–12 K). 13–14 ἀπλῶς...δόξαν] Cf. *Diff. puls.* IV.2 (VIII.708,15–16 K); *Tum. pr. nat.* 2 (VII.707,9–10 K). 15 πιστώσασθαι] Cf. *MM* I.3.17 (40,7 Lorusso / X.29 K).

B5, 6 *lac. ind.* Matthai **B6***, 6 πορίζονται] ὀρίζονται Barnes, *sed cf.* Clem. Alex. *Strom.* VII.16.103.4: πορίζεσθαι ἀποδείξεις, *Simpl. In Cael.* II.8 (460,30 Heiberg) *et al.* 8–11 ζητουμένου – λόγος *del.* Morani : *lect. ms. def.* Sharples and van der Eijk, *Nemesius: On the Nature of Man*, p. 144 n. 728; cf. Gal. *PHP* II.8.11 (158,26–28 De Lacy / V.275 K). 8 βελτίων – ἐναργεστέρα Sylburg : βελτίω καὶ ἐναργεστάτη Laur. *Plut.* 5.3 (*a modo*: “ms.”) τὸ¹ *add.* Stählin : ἐστιν ms. 11 περὶ οὗ Stählin : που ms. 13 ὑπερβαίνειν Havrda : ὑπερβαίνει ms.

case, it is clear that he also thinks it is mortal, not completely, but only the irrational 5
soul of man. Concerning the rational, he is ambivalent, saying the following. (Text
missing) (C-H)

Presumed excerpts from *Dem. in Liber logicus*

B6*. Clemens Alexandrinus, *Liber logicus* 2.3.1–3.8.3

(1) What other method, then, of arriving at the starting-point of such a teaching could
be better or more evident than to explain the proposed name with an account so
clearly that all who speak the same language will follow? Now, is the name ‘demonstra-
tion’ of such a kind as ‘blituri’, a mere sound meaning nothing? But why, then, is it so
that no philosopher, rhetor, or judge proposes ‘demonstration’ as a meaningless name 5
and none of the litigants ignores the fact that the signified item exists? Philosophers, at
any rate, furnish demonstration as something real, each in a different way.

(2) Indeed, it is true of everything sought that if one wants to argue correctly about
it, he will refer the argument to an agreed starting-point, which is no other than what
people of the same nation and language agree to be the meaning of the noun. Then, 10
having started from there, one must inquire whether the signified item, with which the
argument is concerned, exists or not. Next, if it is shown to exist, one must precisely
investigate its nature, what it is like, and never transgress the given order. (3) And if it
is not sufficient to say simply what seems to be the case about the thing sought (for an
opponent can equally assert whatever he wants to the contrary), but it is necessary to 15
confirm what has been said, then, if judgment about it is referred to something equally
disputed, and judgment about the latter again to something else that is disputed as
well, [the argument] will proceed to infinity and [what has been said] will be indemon-

5–6 only...man] Cf. *QAM* 3 (36,16–19 Müller / IV.773 K). 6 ambivalent] Cf. *QAM* 3 (36,12–16 Müller / IV.772–773 K). 6–7 The missing passage is often believed to have been a quotation from *QAM*; see Sharples and van der Eijk, *Nemesius*, p. 61. However, the argument in *QAM* is not “based on those of Hippocrates”, and the only treatise mentioned by Nemesius is *Dem*. It cannot be ruled out, then, that the missing quotation was from *Dem*. **B6***, 4 sound meaning nothing] Cf. Gal. *MM* II.7.38 (196,19–20 Lorusso / X.144 K). For ‘blituri’ see also Artemidorus, *Onir*: IV.2.47; DL VII.57; Sextus, *M* VIII.133. 6 that...exists] Cf. Sextus, *M* VIII.337 (an Epicurean argument), trans. Bett: “Either you understand what demonstration is, or you do not. And if you understand and have a conception (ἐννοια) of it, there is demonstration.” 9–10 what...noun] Cf. Gal. *Diff. puls.* IV.2 (VIII.704,5–706,3 K), on “notional definition”. See above, A16, 21–22. 11–12 whether...not] Cf. *MM* II.7.38 (196,20–21 Lorusso / X.144 K). For the distinction between the meaning of the proposed name and the existence of the signified object, see also *Diff. puls.* IV.2 (VIII.696,18–697,8 K). 13 the given order] Cf. Gal. *Opt. corp. const.* 1 (8,12–14 Helmreich / IV.738–739 K); *MM* I.4.6 (44,8–11 Lorusso / X.32 K); *Simpl. In Phys.* IV.10 (696,10–13 Diels). 15 assert...contrary] Cf. Sextus, *M* VIII.281–282. 18 proceed to infinity] Cf. Arist. *An. post.* I.3, 72b5–73a20; Sextus, *M* VIII.347; *PH* I.166; Aspasius, *In Eth. Nic.* III.5 (74,21–22 Heylbut).

εἰς ἄπειρον προβήσεται καὶ ἀναπόδεικτον ἔσται, εἰ δ' εἰς ὁμολογούμενον ἅπασιν ἢ τοῦ (μὴ) ὁμολογούμενου πίστις ἀναφέροίτο, ἐκεῖνο τὴν ἀρχὴν τῆς διδασκαλίας ποιητέον.

(4) πᾶν οὖν τὸ προβληθὲν ὄνομα μεταλαμβάνειν χρὴ εἰς λόγον ὁμολογούμενόν τε καὶ
 20 σαφῆ τοῖς κοινωνοῦσι τῆς σκέψεως, ἀρχὴν μὲν τῆς διδασκαλίας ἐσόμενον, ἐξηγησόμενον δὲ τὴν τῶν ζητουμένων εὐρεσιν. φέρε οὖν προβεβλήσθω ὁ ἥλιος τοῦνομα. φασὶν οὖν οἱ Στωϊκοὶ τοῦτ' εἶναι « ἀναμμα νοερόν ἐκ θαλαττίων ὑδάτων ». ἄρ' οὐκ ἀσαφέστερος ὁ λόγος αὐτοῦ τοῦ ὀνόματος, ἄλλης ἀποδείξεως δεόμενος εἰ ἀληθής ἐστιν; ἄμεινον οὖν εἰπεῖν κοινῶ καὶ σαφεῖ τῷ λόγῳ ἥλιον ὀνομάζεσθαι « τὸ λαμπρότατον τῶν κατ'
 25 οὐρανὸν ἰόντων »· πιστότερος γάρ, οἶμαι, καὶ σαφέστερος καὶ πᾶσιν ὁμοίως ὁμολογούμενος ὁ λόγος οὗτος. ὡσαύτως δὲ καὶ τὴν ἀπόδειξιν πάντες ἄνθρωποι ὁμολογήσαιεν ἂν λόγον εἶναι τοῖς ἀμφισβητούμενοις ἐκ τῶν ὁμολογούμενων ἐκπορίζοντα τὴν πίστιν.

(5) οὐ μόνον δὲ ἀπόδειξις καὶ πίστις καὶ γνῶσις, ἀλλὰ καὶ πρόγνωσις λέγεται διχῶς, ἢ μὲν ἐπιστημονικὴ τε καὶ βεβαία, ἄλλη δὲ μόνον ἐλπιστικὴ. κυριώτατα μὲν οὖν ἀπόδειξις
 30 λέγεται ἢ τὴν ἐπιστημονικὴν πίστιν ἐντιθεῖσα ταῖς τῶν μανθανόντων ψυχαῖς, δοξαστικὴ δὲ ἡ ἑτέρα, ὡς καὶ ἄνθρωπος ὁ μὲν ὄντως ἄνθρωπος ὁ τὰς κοινὰς φρένας κεκτημένος, ὁ δὲ ἄγριος καὶ θηριώδης. οὕτω τοι καὶ ὁ κωμικὸς ἔλεγεν· « ὡς χαρίεις ἐστὶν ἄνθρωπος, ἔστ' ἂν ἄνθρωπος ἦ ». καὶ ἐπὶ βοῶς καὶ ἵππου καὶ κυνὸς ὁ αὐτὸς λόγος παρὰ τὴν ἀρετὴν τοῦ ζώου ἢ κακίαν. εἰς γὰρ τὴν τοῦ γένους τελειότητα βλέποντες ἐπὶ τὰ κυριώτατα τῶν
 35 σημαιομένων ἐρχόμεθα. αὐτίκα ἰατρὸν νοοῦμεν ᾧ μὴδὲν τῆς ἰατρικῆς δυνάμεως ἐνδεῖ, γνωστικὸν δὲ ᾧ μὴδὲν λείπει τῆς ἐπιστημονικῆς εἰδήσεως.

(6) καὶ διαφέρει ἐνδείξις συλλογισμοῦ ἢ τὸ μὲν ἐνδεικνύμενον ἑνὸς ἐστὶ δηλωτικὸν ἐν ὑπάρχον καὶ αὐτό, ὡς τοῦ μηκέτι εἶναι παρθένον ἐνδείξιν εἶναι τὸ κυεῖν φαμεν, τὸ δὲ

17 ὁμολογούμενον ἅπασιν] Cf. A16, 20. 19 μεταλαμβάνειν...λόγον] Cf. *MM* I.5.1 (54,10–11 Lorusso / X.39 K); A16, 4. 20–21 ἐξηγησόμενον...εὐρεσιν] Cf. Gal. *UP* II.7 (I.85,23–25 Helmreich / III.117 K). 27 λόγον...πίστιν] Cf. Clem. Alex. *Strom.* II.11.48.1: φήσαμεν δ' ἂν αὐτὴν (sc. τὴν ἀπόδειξιν) λόγον εἶναι τοῖς ἀμφισβητούμενοις ἐκ τῶν ὁμολογούμενων ἐκπορίζοντα τὴν πίστιν. ἐκπορίζοντα τὴν πίστιν] Cf. Arist. *Rhet.* I.2, 1356a1; Gal. *Dig. puls.* IV.3 (VII.954,10 K). 28 ἀπόδειξις...διχῶς] Cf. Clem. Alex. *Strom.* II.11.48.2: πίστεως δ' οὐσης διττῆς, τῆς μὲν ἐπιστημονικῆς, τῆς δὲ δοξαστικῆς, οὐδὲν κωλύει ἀπόδειξιν ὀνομάζειν διττὴν, τὴν μὲν ἐπιστημονικὴν, τὴν δὲ δοξαστικὴν, ἐπεὶ καὶ ἡ γνῶσις καὶ ἡ πρόγνωσις διττὴ λέγεται, ἢ μὲν ἀπικριβωμένην ἔχουσα τὴν ἑαυτῆς φύσιν, ἢ δὲ ἐλλιπῆ. 28–29 πρόγνωσις...ἐλπιστικὴ] Cf. Gal. *Hipp. Prog.* I.4 (203,31–33 and 204,17–18 Heeg / XVIIb.12–14 K); *Hipp. Off. med.* I.1 (XVIIIb.636,14–15 K). 30 ἢ...ψυχαῖς] Cf. *Strom.* II.11.49.3: ἢ γὰρ ἀνωτάτω ἀπόδειξις, ἢν ἠνιξάμεθα ἐπιστημονικὴν, πίστιν ἐντίθεισι ... ταῖς τῶν μανθάνειν ὀρεγομένων ψυχαῖς, ἥτις ἂν εἴη γνῶσις, ἐπιστημονικὴν πίστιν] Gal. *Ut resp.* 3.6 (18,11 Noll / IV.492 K). ἐντιθεῖσα...ψυχαῖς] Gal. *Hipp. Epid.* III, I.4 (23,5–6 Wenkebach / XVIIa.517 K). 30–31 δοξαστικὴ δὲ ἡ ἑτέρα] Cf. *Strom.* II.11.49.2: ἢ δὲ δοξαστικὴ ἀπόδειξις ἀνθρωπικὴ τε ἐστὶ καὶ πρὸς τῶν ῥητορικῶν γινομένη ἐπιχειρημάτων ἢ καὶ διαλεκτικῶν συλλογισμῶν. 34–35 τὰ κυριώτατα τῶν σημαιομένων] Cf. Gal. *Hipp. Aph.* III.2 (XVIIb.565,5–6 K); *PHP* VI.1.20 (364,28 De Lacy / V.511 K).

18 μὴ *add.* Potter 21 δὲ Potter : τε ms. 26–27 ἂν λόγον Sylburg : εὐλογον ms. 27 ἐκπορίζοντα Sylburg : ἐμπορίζοντα ms. 32 χαρίεις Sylburg (cf. Menander *Sent.* 852 Pernigotti) : χαρίης ms.

strable. Yet if credence concerning that on which there is no agreement is referred to something everyone agrees with, then the latter should be taken as the starting-point of teaching. 20

(4) Every proposed name, then, has to be changed into an account that is agreed and clear to those who participate in the research. This will be the starting-point of teaching, one that will show the way to the discovery of the things sought. For example, let us propose the name ‘sun’. The Stoics say that it is ‘intelligent ignited mass from the waters of the sea’. Is not such an account less clear than the name itself? Does it not need another proof to demonstrate if it is true? It is better to use a common and clear account and call the sun ‘the brightest thing traversing the sky’. This account, I think, is more credible, clear, and agreed to by all alike. In the same vein, all human beings will agree that demonstration is an argument that furnishes credence from something agreed to something disputed. 25 30

(5) However, not only demonstration, credence, and knowledge are spoken of in two ways, but foreknowledge, too: One is scientific and firm, and the other merely based on expectation. Now demonstration in the proper sense is the one that instills scientific credence into the souls of students, whereas the other is doxastic. Similarly, we call ‘human being’ the truly human being, i.e. the one equipped with common reason, but also the one that is savage and brutish. Thus the comic writer says: “How graceful the human being, if human being it is.” And the same is true of ox, horse, or dog, with respect to the virtue or vice of the animal in question. We have to look at what is perfect within a genus to arrive at the most proper meaning of names. For example, by ‘doctor’ we mean someone with a perfect capacity to heal and by ‘gnostic’ someone with flawless scientific knowledge. 35 40

(6) And indication differs from deduction in that the item which indicates something shows one thing while being itself one. For example, when a woman gives birth to a child we call it an indication that she is no longer a virgin. But when reached by deduction, one thing follows from more than one item. Thus, for instance, in the 45

19 credence] For the meaning of πίστις, see Havrda, *The So-Called Eighth Stomateus*, p. 154. Cf. A12, 2; B6*, 30–35; B6*, 67–70; C13, 13; F6, 1. 22 changed...account] Cf. A16, 5. 25–26 intelligent...sea] Cf. Aët. II.20.6 and 15, with Mansfeld–Runia, *Aetiana* V.2, pp. 987–991, for parallels. 28 brightest...sky] Cf. Plat. *Th.* 208d; Arist. *Top.* V.3, 131b25–30, with Gal. *Diff. puls.* IV.2 (VIII.705,14–17 K), on the notional definition in terms of τὰ συμβεβηκότα ἰδίως. 30–31 demonstration...disputed] Cf. Cicero, *Ac.* II.8.26; DL VII.45; Sextus, *M.* VIII.314 and 422–423. Cf. also Alex. Aphr. *In An. pr.* I.4 (44,14–15 Wallies), on deduction in general. 34 based on expectation] Possibly a hint to Arist. *Mem.* 1, 449b12, describing divination as ἐπιστήμη τις ἐλπιστική. Cf. Gal. *CAM* 17.8 (116,1–2 Fortuna / I.292 K). 35 doxastic] I.e., based on, or producing, δόξα, opinion. 36–37 common reason] Cf. Plutarch, *Comm. not.* 37, 1077e4. 37–38 How...is¹] Menander, fr. 484 Koerte; cf. Gal. *Di. dec.* I.9 (IX.815,2–6 K). 38–39 ox...dog] Cf. Gal. *Temp.* I.6 and 9 (24,10–15 and 36,12–16 Helmreich / I.547 and 566 K). 41 doctor...heal] Cf. Arist. *Met.* Δ.16, 1021b14–17. 41–42 gnostic...knowledge] Probably Clement’s addition to his source. 43 indication...deduction] Cf. Gal. *Inst. log.* 11.1 (24,14–17 Kallbfleisch); *Dig. puls.* IV.1 (VIII.923,12–14 K). 44–45 when...virgin] Cf. Ps.-Gal. *Hist. phil.* 9 (*Doxographi Graeci*, ed. Diels, 605,15–18). For the example, cf. Arist. *Rhet.* I.2, 1357b15–16; *An. pr.* II.27, 70a6–16; Cicero, *Inv.* I.40.72: *si peperit, virgo non est*.

συλλογισμῶ λαμβανόμενον ἐν ὑπάρχον ἔπεται πλείοσιν, ὡς τοῦ Πύθωνα προδιδόναι
 40 Βυζαντίους, εἰ οὕτως ἔτυχεν, οὐχ ἓν, ἀλλὰ πλείω λαμβάνεται τὰ δηλωτικά.
 (7) καὶ τὸ μὲν περαίνειν ἐξ ὁμολογουμένων συλλογίζεσθαι ἐστίν, τὸ δέ γε ἐξ ἀληθῶν τι
 περαίνειν ἀποδεικνύειν ἐστίν, ὥστ' εἶναι σύνθετόν τινα τῆς ἀποδείξεως τὴν νόησιν ἔκ
 τε τοῦ τὰ λαμβανόμενα πρὸς τὰ ζητούμενα ἀληθῆ λαμβάνειν κὰκ τοῦ τὸ συμπέρασμα
 45 αὐτοῖς ἀκόλουθον ἐπιφέρεισθαι. εἰ δ' ἦτοι μὴ ὑπάρχοι τὸ πρότερον ἢ μὴ ἔποιτο αὐτῷ τὸ
 δεύτερον, οὐκ ἀπέδειξεν μὲν, συνελογίσασθαι δέ. τὸ μὲν γὰρ οἰκεῖον ἐπενεγκεῖν συμπέρα-
 σμα τοῖς λήμμασιν συλλογίσασθαι μόνον ἐστίν, τὸ δέ καὶ τῶν λημμάτων ἕκαστον
 ὑπάρχειν ἀληθές οὐ συλλογίσασθαι μόνον, ἀλλὰ καὶ ἀποδεδειχέναι. (8) περαίνειν δ'
 ἐστίν, ὡς καὶ ἐκ τοῦ ὀνόματος δηλόν, τὸ ἄγειν ἐπὶ τὸ πέρασ. ἔστι δὲ διήπου πέρασ ἐν
 ἐκάστω λόγῳ τὸ ζητούμενον, ὃ δὴ καὶ συμπέρασμα καλεῖται. οὐδεις δὲ ἀπλοῦς καὶ
 50 πρῶτος λόγος ὀνομάζεται συλλογισμὸς, κὰν ἀληθῆς ᾖ, ἀλλ' ἔστι τοῦλάχιστον ἐκ τριῶν
 τοιούτων σύνθετος, δεεῖν μὲν ὡς λημμάτων, ἐνός δὲ ὡς συμπεράσματος.
 (9) ἦτοι δὲ πάντα ἀποδείξεως δεῖται ἢ καὶ τινα ἐξ αὐτῶν ἐστι πιστά. ἀλλ' εἰ μὲν τὸ πρότε-
 ρον, ἐκάστης ἀποδείξεως ἀπόδειξιν αἰτοῦντες εἰς ἄπειρον ἐκβησόμεθα καὶ οὕτως
 ἀνατραπήσεται ἢ ἀπόδειξις· εἰ δὲ τὸ δεύτερον, ταῦτα αὐτὰ τὰ ἐξ αὐτῶν πιστὰ τῶν
 55 ἀποδείξεων ἀρχαὶ γενήσονται. αὐτίκα οἱ φιλόσοφοι ἀναποδείκτους ὁμολογοῦσι τὰς τῶν
 ὄλων ἀρχάς. ὥστ' εἴπερ ἐστὶν ἀπόδειξις, ἀνάγκη πᾶσα πρότερον εἶναι τι πιστὸν ἐξ
 ἑαυτοῦ, ὃ δὴ πρῶτον καὶ ἀναπόδεικτον λέγεται. ἐπὶ τὴν ἀναπόδεικτον ἄρα πίστιν ἢ
 πᾶσα ἀπόδειξις ἀνάγεται. (10) εἶεν δ' ἂν καὶ ἄλλαι τῶν ἀποδείξεων ἀρχαὶ μετὰ τὴν ἐκ
 πίστεως πηγῆν, τὰ πρὸς αἴσθησίν τε καὶ νόησιν ἐναργῶς φαινόμενα· τὰ μὲν γὰρ πρὸς
 60 αἴσθησιν σύμπαντα ἐστὶν ἀπλᾶ τε καὶ ἄλογα, τὰ δὲ πρὸς νόησιν ἀπλᾶ τε καὶ λογικὰ καὶ
 (ταῦτα μὲν) πρῶτα, τὰ δὲ ἐξ αὐτῶν γεννώμενα σύνθετα μὲν, οὐδὲν δ' ἦττον ἐναργῆ καὶ
 πιστὰ καὶ λογικώτερα τῶν πρώτων. (11) ἀκολούθου καὶ μαχομένου οὖν (διαγνωστική)

45–46 οἰκεῖον ... συμπέρασμα] Cf. Gal. *Hipp. elem.* 4.12 (90,5–6 De Lacy / I.445 K); *Ven. sect. Er. Rom.* 7 (XI.230,1–2 K); *Alex. Aphr. In Top.* I.1 (14,2–4 Wallies). 59 τὰ¹... φαινόμενα] Cf. *MM* I.5.1 (54,9–10 Lorusso / X.39 K); A16, 3.

39 Πύθωνα Dindorf : Πύθωνος ms. 41 περαίνειν Potter : παραίνειν ms. 42 νόησιν Pohlenz, cf. Gal. *Diff. puls.* I.27 (VIII.555,14 K); *Syn. puls.* 21 (IX.494,8–9 K); *MMG* II.1 (XI.77,6 K) : ὄνησιν ms. 44 δ' ἦτοι Sylburg : δὴ τοι ms. 51 σύνθετος Barnes : σύνθετον ms. 60 σύμπαντα *corr. a secunda manu* ms. : συμβάντα ms. ἄλογα Barnes : ἄλυτα ms. 61 ταῦτα μὲν *add.* Barnes 62 διαγνωστική *add.* Havrda

case of the claim that Pytho betrayed the people of Byzantium, we take into account not one but many items to show it.

(7) Now, to conclude from agreed premisses is to deduce, but in order to demonstrate we must draw a conclusion from true premisses. Thus the notion of demonstration is a composite one consisting of two things: true assumptions are taken in view of the things sought and a conclusion following from these assumptions is drawn. If either the first does not obtain, or if it is not followed by the second, one has made a deduction, but not a demonstration. By drawing an appropriate conclusion from our premisses we only make a deduction; however, when each of our premisses is also true, we have not only deduced a conclusion, but also demonstrated it. (8) To conclude (perainein), as the word shows, is to bring something to an end (peras). Now the endpoint of every argument is the thing sought, and this is what we call 'conclusion'. A simple and primary assertion, even if true, is never called a deduction, because the latter consists of at least three such assertions, two of which function as premisses and one as a conclusion.

(9) Either everything needs demonstration, or there are certain things credible by virtue of themselves. If the first, we will have an infinite regress by demanding demonstration of every demonstration and so demonstration will be refuted. If the second, these very things that are credible by virtue of themselves will become the principles of demonstration. For example, philosophers agree that the principles of the universe are not demonstrated. Thus if demonstration exists, it is absolutely necessary that it is preceded by something credible by virtue of itself, and this is called primary and undemonstrated. Every demonstration, therefore, is based on undemonstrated credence. (10) But there are supposed to be yet other principles of demonstrations beyond the source springing from credence, namely things evidently manifest to sense-perception and intellection. For those [evidently manifest] to sense-perception are all simple and irrational, while those [evidently manifest] to intellection are simple and rational, and (these are) primary, whereas the things generated from them are composite, but no less plain and credible, and more rational than the primary ones. (11) Now it is a peculiar capacity of reason, available to all of us by nature, to recognize

47 Pytho] of Byzantium, a pupil of Isocrates. Cf. Philostratus, *Vitae soph.* I.20 (II.27,16–26 Kayser). 50 from true premisses] Cf. Gal. *Inst. log.* 11.1 (24,16–17 Kalbfleisch). 53–54 one has made a deduction] This is both false and in conflict with B6*, 86–87. 59 simple...assertion] Cf. Arist. *Int.* 5, 17a20–21. 60 three...assertions] Cf. Arist. *An. pr.* I.14, 34a17–19, etc. 62–63 credible...themselves] Cf. Arist. *Top.* I.1, 100b18–21; Gal. *MM* I.4.9 (46,11 Lorusso / X.33 K); *Inst. log.* 17.7 (44,13 Kalbfleisch); above, A12, 3. 66–67 principles...demonstrated] Cf. Theophrastus, fr. 159 Fortenbaugh *et al.* 68–69 primary and undemonstrated] Cf. Arist. *An. post.* I.2, 71b27. 71 beyond...credence] This is probably Clement's interpretation of his source. 71–72 evidently...intellection] Cf. A16, 3–4. 73 simple and irrational] Probably simple perceptible qualities; cf. A15, 2–3. 73–74 simple and rational] Presumably not the axioms, but elementary concepts; cf. *MM* II.7.54 (206,22–24 Lorusso / X.151–152 K).

ἐστὶν ἤνπερ ἰδίαν λόγου δύναμιν πεφυκυῖαν ἅπαντες ἔχομεν φύσει. ἐὰν οὖν τις εὐρεθῇ
 λόγος τοιοῦτος οἷος ἐκ τῶν ἤδη πιστῶν τοῖς οὕτω πιστοῖς ἐκπορίζεσθαι τὴν πίστιν
 65 δυνάμενος, αὐτὸν τοῦτον εἶναι φήσομεν οὐσίαν ἀποδείξεως.

(12) εἴρηται δὲ ὡς καὶ τὸ τῆς πίστεως καὶ τὸ τῆς ἀποδείξεως γένος διττόν, τὸ μὲν πειθῶ
 μόνον ταῖς ψυχαῖς τῶν ἀκουόντων, τὸ δὲ ἐπιστήμην ἀπεργαζόμενον. εἰ μὲν οὖν ἐκ τῶν
 πρὸς αἴσθησιν καὶ νόησιν ἐναργῶν ἄρξαιτό τις κάπειτα τὸ οἰκεῖον ἐπενέγκοι συμπέρα-
 σμα, ὄντως ἀποδείκνυσιν· εἰ δ' ἐξ ἐνδόξων μόνον, οὐ μὴν πρώτων γε, τουτέστιν οὔτε
 70 πρὸς αἴσθησιν οὔτε πρὸς νόησιν ἐναργῶν, εἰ μὲν οἰκεῖον ἐπιφέρει συμπέρασμα, συλλο-
 γιεῖται μὲν, οὐ μὴν ἐπιστημονικὴν γε ποιήσεται τὴν ἀπόδειξιν, εἰ δ' οὐκ οἰκεῖον, οὐδὲ
 συλλογιεῖται τὴν ἀρχήν.

(13) διαφέρει δ' ἀναλύσεως ἀπόδειξις· ἕκαστον μὲν γὰρ τῶν ἀποδεικνυμένων διὰ τινων
 ἀποδεικνυμένων ἀποδείκνυται, προαποδεδειγμένων κάκεινων ὑφ' ἐτέρων, ἄχρισ ἂν εἰς
 75 τὰ ἐξ ἑαυτῶν πιστὰ ἀναδράμωμεν ἢ εἰς τὰ πρὸς αἴσθησίν τε καὶ νόησιν ἐναργῆ, ὅπερ
 ἀνάλυσις ὀνομάζεται· ἀπόδειξις δὲ ἐστὶν, ὅταν ἀπὸ τῶν πρώτων (τις εἰς) τὸ ζητούμενον
 ἀφικνηται διὰ πάντων τῶν ἐν μέσῳ.

(14) χρή τοίνυν τὸν ἀποδεικτικὸν ἄνδρα τῆς μὲν ἀληθείας [ὡς] τῶν λημμάτων πολλὴν
 ποιήσασθαι πρόνοιαν, τῶν δὲ ὀνομάτων ἀφροντιστεῖν, εἴτε ἀξιωματὰ τις ἐθέλοι καλεῖν
 80 εἴτε προτάσεις εἴτε λήμματα, ὁμοίως δὲ καὶ τοῦ τίνων ὑποκειμένων τί περαίνεται
 πολλὴν ὡσαύτως πεποιήσθαι τὴν πρόνοιαν, εἴτε δὲ περαίνοντα λόγον εἴτε περαντικὸν
 εἴτε συλλογιστικὸν ἐθέλοι τις ὀνομάζειν αὐτόν, ἥκιστα φροντίζειν. δύο γὰρ ταῦτα ἐν
 ἅπασι χρῆναί φημι τὸν ἀποδεικτικὸν φυλάττειν, τὰ μὲν λήμματα ἀληθῆ λαμβάνειν,
 ἀκόλουθον δ' αὐτοῖς ἐπιφέρειν (τὸ) συμπέρασμα, ὅπερ τινὲς καὶ ἐπιφορὰν καλοῦσιν, τὸ
 85 ἐπιφερόμενον τοῖς λήμμασιν.

73–75 ἕκαστον... ἀναδράμωμεν] Cf. *MM* I.4.9 (46,9–11 Lorusso / X.33 K): ἑκατέρω δὲ πάλιν τούτων ἐτέρων τινῶν εἰς ἀπόδειξιν ἐδέξτο προτάσεων, εἴτ' ἐκεῖναι πάλιν ἐτέρων ἄχρι περ ἂν ἐπὶ τὰς πρώτας ἀνέλθωμεν αἰ οὐκέτ' ἐξ ἄλλων οὐδὲ δι' ἀποδείξεως, ἀλλ' ἐξ ἑαυτῶν ἔχουσι τὴν πίστιν. 78 χρή... ἄνδρα] Cf. *Gal. Sem.* II.6.27 (204,8–9 De Lacy / IV.649 K): τὸν δ' ἀποδεικτικὸν ἄνδρα ... προσήκει. 79–80 εἴτε... λήμματα] Cf. *Gal. SMT* I.13 (XI.401,18–402,1 K): εἰς τὴν ἀπόδειξιν ἀρχῶν, ἢ λημμάτων, ἢ ἀξιωματῶν, ἢ προτάσεων, ἢ ὅπως ἂν ἐθελήσης ὀνομάζειν.

64 οὕτω Hervetius : οὕτω ms. 76 τις εἰς *add.* Stählin 78 ὡς *del.* Stählin 84 τὸ¹ *add.* Wilamowitz

what is entailed and what is incompatible. So if an argument is found such that it will be able to furnish credence from things already credible to those not credible yet, we will describe this very argument as the essence of demonstration.

(12) However, as we have already said, there are two kinds of credence and demonstration: one producing mere persuasion in the souls of the auditors and one producing scientific knowledge. So if you start from things evident to sense-perception and intellection, and then infer an appropriate conclusion, you will truly demonstrate. But if you start from those that are merely reputable and not primary, i.e. not evident to sense-perception and intellection, then, should you draw an appropriate conclusion, you will make a deduction, but your demonstration will not be a scientific one. If the conclusion is not appropriate, it will not even be a deduction.

(13) Further, demonstration differs from analysis. Each of the things that are demonstrated is demonstrated by means of certain demonstrated premisses and these have been demonstrated by means of other premisses, until we ascend to premisses credible by virtue of themselves or those plain to sense-perception and intellection; and this is called ‘analysis’. But when we reach the thing sought through all the intermediates, it is demonstration.

(14) Thus a man skilled in demonstration must be very careful about the truth of premisses, but he need not be concerned about names, whether one prefers to call them ‘axioms’, ‘propositions’, or ‘premisses’. Likewise, he must be very careful about what conclusion is drawn from what suppositions, but not be at all concerned whether one prefers to call it a ‘concluding argument’, or a ‘concludent’, or a ‘syllogistic’ one. These, I claim, are two things that a man skilled in demonstration must always observe: he must take true premisses and infer a conclusion that follows from them, what some call an ‘inference’, that which is inferred from the premisses. (H)

77 entailed...incompatible] Cf. Gal. *PHP* III.5.13 (202,34–35 De Lacy / V.325 K); *PHP* IX.1.13 (542,17–18 De Lacy / V.723 K), etc. The description is of Stoic origin; see Cicero, *Leg.* I.16.45; *Ac.* II.7.22; Sextus, *M* VIII.276. Cf. A14, 14–15. 78 furnish credence] Cf. B6*, 19–21. 80 as...said] Cf. B6*, 32–33 with Clem. Alex. *Strom.* II.11.48.2, quoted under the Greek text. 81 one¹...auditors] Cf. B6*, 35, on doxastic demonstration. According to *Strom.* II.11.49.2, it includes both rhetorical and dialectical arguments. For the word ἀπόδειξις in this sense, see e.g. Arist. *Rhet.* I.1, 1355a4–7; Gal. *Sem.* II.6.10 (200,1 De Lacy / IV.644 K). 83 appropriate conclusion] Cf. B6*, 54. 84 reputable] ἐνδοξα, cf. Arist. *Top.* I.1, 100a27–30; for the role of *endoxa* in persuasion, cf. Gal. *PHP* II.3.11 (110,31 De Lacy / V.221 K). 92 analysis] For similar descriptions see *MM* I.4.9 (quoted under the Greek text) and *Pecc. dig.* 4.4 (54,9–11 De Boer / V.79 K). 94 skilled in demonstration] Cf. A4, 5. For other (mainly Galenic) parallels, see Havrda, *The So-Called Eighth Stromateus*, p. 173 n. 146. 96 axioms...premisses] Characteristically Galenic indifference; in addition to *SMT* I.13 (quoted under the Greek text), see *PHP* II.3.12 (112,4–5 De Lacy / V.222 K). Contrast Alex. *Aphr. In An. pr.* I.4 (44,16–23 Wallies). 98 concluding...syllogistic] For the Stoic classification of arguments, see DL VII.77–78 and Galen’s criticism thereof mentioned in *Inst. log.* 19.6 (49,1–5 Kalbfleisch). 101 some] The Stoics; cf. Ammonius, *In An. pr.* (68,13–14 Wallies).

B7*. Clemens Alexandrinus, *Liber logicus* (= *Stromata* VIII) 3.8.4–5.15.1 (84,24–88,33 Stählin–Havrda)

- (1) περὶ παντὸς τοῦ ζητουμένου καθ' ἕκαστον πρόβλημα διαφόρων μὲν δεῖ τῶν λημμάτων, οἰκείων δὲ τῷ προβληθέντι, καὶ (τὸ) προβληθὲν αὐτὸ εἰς λόγον μεταλαμβάνει ἀναγκαῖον τὸν τε λόγον τοῦτον ὁμολογούμενον ἅσασιν εἶναι προσήκει. τῶν δὲ λημμάτων μὴ οἰκείων τῷ προβλήματι λαμβανομένων (***) οὐκ ἐνδέχεται καλῶς οὐδὲν αὐτῶν
- 5 ἐξευρεῖν ἀγνοουμένης ὄλου τοῦ προβλήματος, ὃ καὶ ζήτημα καλεῖται, τῆς φύσεως.
- (2) ἐν πᾶσιν οὖν τοῖς ζητούμενοις ἔστι τι προγινωσκόμενον (ὃ πάντως ἐξ ἑαυτοῦ πιστὸν ὄν ἀναποδείκτως πιστεύεται), ὃ χρηὶ ποιεῖσθαι τῆς ζητήσεως αὐτῶν ὀρητήριον καὶ τῶν εὐρησθαι δοκούντων κριτήριον. πᾶσα γὰρ ζήτησις ἐκ προὑπαρχούσης εὐρίσκεται γνώσεως. εἶναι δὲ τὴν γνῶσιν τὴν προὑπάρξασαν τοῦ ζητουμένου παντὸς ποτὲ μὲν τῆς
- 10 οὐσίας ψιλῶς, ἀγνοουμένων δὲ τῶν ἔργων αὐτῆς (οἷον λίθων, φυτῶν, ζώων, ὧν τὰς ἐνεργείας ἀγνοοῦμεν) ἢ παθῶν ἢ δυνάμεων ἢ ἀπλῶς εἰπεῖν [ἐν] τῶν ὑπαρχόντων τοῖς οὐσίαις ἐνίοτε δὲ γινώσκεισθαι μὲν τι τούτων τῶν δυνάμεων ἢ παθῶν ἢ τινα τούτων, ὡς τῆς ψυχῆς τὰς ἐπιθυμίας καὶ τὰ πάθη, ἀγνοεῖσθαι δὲ καὶ ζητεῖσθαι τὴν οὐσίαν· ἐν
- 15 ζήτησιν εἶναι, τίτι τῶν οὐσιῶν ἂν τούτων ἐν ὑπάρχει· ἀμφοτέρων γάρ, τῆς τε οὐσίας τῆς τε ἐνεργείας, τὰς ἐπινοίας ἐν τῇ διανοίᾳ λαβόντες οὕτως ἐπὶ τὴν ζήτησιν ἐρχόμεθα. ἔστιν δὲ ὧν καὶ τὰς ἐνεργείας εἰδότες ἅμα ταῖς οὐσίαις ἀγνοοῦμεν τὰ παθήματα.
- (3) ἔστιν οὖν ἡ μέθοδος τῆς εὐρέσεως τοιαύτη· ἀρκτέον γὰρ ἐξ αὐτοῦ τοῦ γνωρίζειν τὰ προβλήματα· πολλὰκις γοῦν ἐξαπατᾷ τὸ τῆς λέξεως σχῆμα καὶ συγχέει καὶ ταράττει τὴν

B7*, 4–5 οὐκ... ἐξευρεῖν] Cf. Gal. *Cris.* III.5 (184,11 Alexanderson / IX.729 K): οὐκ ἐνδέχεται περὶ σωτηρίας οὐδὲν ἐξευρεῖν; *UP* IV.13 (I.226,10 Helmreich / III.308 K): οὐτ' ἐνδέχεται καλῶς εὐρεῖν χρεῖαν οὐδεμίαν. 7 ὀρητήριον] Cf. *Sem.* II.5.42 (188,5 De Lacy / IV.634 K); *MM* III.1.4 (4,4 Lorusso / X.158), etc. 8–9 ἐκ... γνώσεως] Cf. Gal. *Inst. log.* 1.2 (3,6–8 Kalbfleisch): ἐκ προγινωσκομένων εἶναι τὴν εὐρεσιν. 19–20 ταράττει τὴν διάνοιαν] Cf. *SMT* III.12 (XI.569,3–4 K): ἡ τῶν ὀνομάτων χρήσις παραχθῆῖσα καὶ τὴν τῶν πραγμάτων ἐπιταράττει γνῶσιν.

B7*, 2 τὸ *add.* Bunsen αὐτὸ Bunsen : αὐτῶι ms. 4 *** *lac. ind.* Havrda : *post* καλῶς *lac. ind.* Schwartz (*post* ἐξευρεῖν *olim* Havrda) αὐτῶν Havrda : αὐτῶι ms. 5 ἀγνοουμένης Wilamowitz : ἀγνοουμένου ms. 6 ὃ Stählin : τὸ ms. 10 φυτῶν Sylburg : πάντων ms. 11 ἐν *del.* Schwartz 15 τούτων ἐν Havrda : οὕτω μὲν ms.

B7*. Clemens Alexandrinus, *Liber logicus* 3.8.4–5.15.1

(1) For everything sought in the case of each problem we need premisses that are different from, but appropriate to what is set forth. What is set forth must itself be changed into an account and the account should be agreed to by all. If premisses are taken that are not appropriate to the problem, (...) it is impossible to succeed in finding any one of them, if the nature of the whole problem, also called the question, is unknown. 5

(2) In all things being sought, then, there is something known in advance (which, insofar as it is credible in virtue of itself, is necessarily believed without demonstration), and this should be taken as a base of inquiry about the thing sought and as the criterion of everything that seems to have been found. For everything sought is found on the basis of pre-existent knowledge. And sometimes pre-existent knowledge regarding everything sought concerns solely the substance, while we are ignorant of its works (as in the case of stones, plants, or animals, whose activities we do not know), affections or powers or generally speaking attributes of beings. At other times, some of these powers, affections, or other such things, like desires and affections of the soul, are known, but we are ignorant about, and seek for, the substance. In many cases, while this understanding of ours presupposes all these things, we seek to which of these substances one of these attributes belongs: having conceived in our mind the notions of both a substance and an activity, this is how we embark on inquiry. There are also cases in which we know activities and substances, but do not know affections. 10
15
20

(3) Now the method of discovery is like this. We must start by recognizing the problems. For the form of expression is often deceptive and confounds and confuses our thought, and it is, therefore, not easy to find the kind of thing it expresses, as with

B7*, 1–2 The phrase is reminiscent of Alex. Aphr. *In An. pr.* 1.29 (317,25–28 Wallies). For appropriate premisses, see A24 and A25. 3 changed...account¹] Cf. B6*, 22; Alex. Aphr. *In An. pr.* 1.5 (75,24–26 Wallies). agreed...all] Cf. B6*, 22–23. 4 A part seems to be missing, possibly in the sense of: “the problem will not be solved; but”; cf. *PHP* II.2.14 (106,21 De Lacy / V.216 K): μή μέντοι μηδ’ ἐνταῦθα διαλύεσθαι τό προβληθέν. 8 credible...itself] Cf. *Diff. puls.* IV.2 (VIII.705,10 K): the first definition – i.e., the one which “clearly sets out the notion of the thing (ἐξηγούμενον σαφῶς τὴν τοῦ πράγματος ἔννοιαν, 704,8f.) – is “believed by itself (ἐξ αὐτοῦ πιστεύεσθαι), as it expresses plainly manifest things”; cf. also B6*, 62–63. 10 criterion] Cf. *Diff. puls.* IV.2 (VIII.708,13–14 K), on the notional definition being the criterion of the substantial one (κρίτηριον ... τοῦ κατὰ τὴν οὐσίαν). 10–11 found²...knowledge¹] Cf. Arist. *An. post.* I.1, 71a1–2; *EN* VI.3, 1139b26. For the notion of discovery, see Gal. *Inst. log.* 1.2 (quoted under the Greek text); *Simpl. In Phys.* VIII.5 (1250,2–4 Diels); Philoponus, *In An. post.* 1.1 (4,8–9 Wallies). 13 stones...animals] Possibly a reference to pharmacological research; for stones, cf. Gal. *SMT* IX.2 (XII.192,4–11 K); for plants, *SMT* VIII prooem. (XII.83,1–5 K); animal parts are discussed in *SMT* X–XI. 16 ignorant...substance] Cf. Arist. *De an.* I.1, 402a7–11 and 402b21–22. 21–22 recognizing the problems] Finding out what the problems are, in other words, changing them into accounts; cf. 2–3; also A25, 10–11, on the substance of the thing sought. 22 form of expression] The phrase is not used in the technical sense of Aristotle’s *Soph. el.* 4, 165b27 and 166b10–19. Rather, it refers more loosely to verbal ambiguity, as in Gal. *PHP* II.5.26–30 (132,23–134,7 De Lacy / V.245 K).

- 20 διάνοιαν, ὥστε μὴ ῥαδίως εὐρίσκειν ἐκ ποίας ἐστὶ διαφορᾶς, οἷον εἰ (ζῶον ἢ) μὴ ζῶον τὸ κυούμενον· ἔχοντες γὰρ καὶ ζῶου τι νόημα καὶ κυουμένου ζητοῦμεν εἰ τῷ κυουμένῳ ζῶῳ εἶναι ὑπάρχει, τοῦτο δ' ἐστίν, εἰ τῇ κυουμένη οὐσία τό τε κινεῖσθαι δύνασθαι καὶ ἔτι τὸ αἰσθάνεσθαι ὑπάρχει· ὥστε ἐνεργειῶν ἐστὶ καὶ παθῶν ἢ ζητήσις ἐπὶ προγινωσκομένης οὐσίας.
- 25 (4) εὐθέως οὖν τὸν προβάλλοντα ἀντερωτητέον τί ποτε καλεῖ ζῶον· μάλιστα γὰρ τοῦτο ποιητέον, ἐπειδὴν εἰς διαφόρους χρήσεις ἡγμένον ἴδωμεν τοῦνομα· καὶ διερευνητέον εἴτε ἀμφισβητούμενόν ἐστὶ τὸ σημαινόμενον ἐκ τῆς προσηγορίας εἶθ' ὁμολογούμενον ἅπασιν. εἰ γὰρ ζῶον εἶποι καλεῖν ὅτιπερ ἂν αὐξάνη καὶ τρέφεται, πάλιν αὖ προσανερωτήσομεν εἰ καὶ τὰ φυτὰ νομίζει ζῶα· κἄπειτα φάντος μὲν οὕτως ἐπιδεικνύειν ἢ ἤδη χρῆ
- 30 [τι] τὸ κυούμενον (αὐξανόμενον) τε καὶ τρεφόμενον. (5) Πλάτων γὰρ καὶ τὰ φυτὰ ζῶα καλεῖ « τοῦ τρίτου τῆς ψυχῆς εἶδους », τοῦ ἐπιθυμητικοῦ, μόνου μετέχοντα, Ἀριστοτέλης δὲ τῆς φυτικῆς τε καὶ θεραπευτικῆς ψυχῆς μετέχειν οἶεται τὰ φυτὰ, ζῶα δ' ἤδη προσαγορεύειν οὐκ ἀξιοῖ· τὸ γὰρ δὴ τῆς ἐτέρας ψυχῆς τῆς αἰσθητικῆς μετέχον τοῦτο μόνον ἀξιοῖ καλεῖσθαι ζῶον. οὐ μὴν οἷ γε Στωϊκοὶ τὴν φυτικὴν δύναμιν ἤδη ψυχὴν ὀνομάζουσι.
- 35 (6) ἀποφήσαντος δὲ τοῦ προβαλόντος εἶναι ζῶα καὶ τὰ φυτὰ, δείξομεν ἑαυτῷ μαχόμενα λέγειν· τῷ γὰρ τρέφεσθαι τε καὶ αὐξάνεσθαι τὸ ζῶον ὀρισάμενος, ἀλλὰ καὶ τὸ φυτὸν οὐκ εἶναι ζῶον ἀποφηνάμενος, οὐδὲν ἄλλο ἔοικεν λέγειν ἢ ὅτι τὸ τρεφόμενον τε καὶ αὐξανόμενον καὶ ζῶόν ἐστὶ καὶ οὐ ζῶον. (7) τί οὖν βούλεται μαθεῖν, εἰπάτω· ἄρα γε εἰ αὖξεται καὶ τρέφεται τὸ κατὰ γαστρὸς ἢ εἰ αἰσθήσεώς τινος ἢ καὶ τῆς καθ' ὁρμὴν
- 40 κινήσεως αὐτῷ μέτεστιν; κατὰ μὲν γὰρ Πλάτωνα τὸ φυτὸν ἔμψυχόν τε καὶ ζῶον, κατὰ δὲ Ἀριστοτέλη ζῶον μὲν οὐπω, λείπει γὰρ αὐτῷ τὸ αἰσθητικόν, ἔμψυχον δὲ ἤδη· ἐστὶ γοῦν αὐτῷ τὸ ζῶον οὐσία ἔμψυχος αἰσθητικῆ· κατὰ δὲ τοὺς Στωϊκοὺς οὔτε ἔμψυχον οὔτε ζῶόν ἐστὶ τὸ φυτὸν· ἔμψυχος γὰρ οὐσία τὸ ζῶον. εἰ τοίνυν ἔμψυχον τὸ ζῶον, ἢ ψυχὴ δὲ φύσις αἰσθητικῆ, δῆλον ὡς αἰσθητικὸν ἤδη τὸ ζῶον.
- 45 (8) εἰ μὲν οὖν ἀντερωτηθεὶς ὁ ζητήσας εἰ ζῶον τὸ κατὰ γαστρὸς εἶποι καλεῖν ζῶον [ἐπὶ] τὸ τρεφόμενον καὶ αὖξον, ἔχει τὴν ἀπόκρισιν· εἰ δὲ φάσκοι τοῦτ' εἶναι ὁ ζητεῖ, πότερον

26 εἰς...ἡγμένον] Cf. Gal. *Symp. diff.* 1.2 (200,4–6 Gundert / VII.43 K); *SMT* IX.2.21 (XII.208,8 K). 30–34 Cf. *PHP* VI.3.7 (374,13–19 De Lacy / V.521 K); *Foet. form.* 6.31 (104,17–19 Nickel / IV.700 K). 35 ἑαυτῷ μαχόμενα] Cf. Gal. *San. tu.* II.4.34 (51,13 Koch / VI.113 K); *Hipp. Vict.* IV.86 (342,14 Helmreich / XV.873 K).

20 ζῶον ἢ *add.* Schwartz 29 νομίζει Sylburg : νομίζοι ms. 30 τι *del.* Wilamowitz : ὅτι Schwartz αὐξανόμενον *add.* Stählin 32 φυτικῆς Potter : φυσικῆς ms. 39 εἰ Sylburg : εἰς ms. 44 ζῶον Barnes : ἔμψυχον ms. 45 εἶποι καλεῖν Stählin (cf. 28) : ἔτι καλεῖ τὸ ms. ἐπὶ *del.* Stählin

the problem whether the embryo is an animal or not. Here we have a certain notion of an animal and of an embryo and we inquire whether it holds of the embryo to be an animal, i.e. whether the capacity to move and also to perceive belongs to the substance conceived in the womb. So the inquiry concerns activities and affections of a substance known in advance.

(4) Thus we should immediately respond to the person who has proposed this question by a counter question what it is he calls 'animal'. This is particularly important when we see that the name has been applied in different uses. Next we must investigate whether the meaning expressed by the noun is disputed, or whether everyone agrees with it. If he answers that he gives the name 'animal' to everything that grows and is nourished, we should again respond by asking whether he considers plants to be animals, too. If he affirms this, then it is already time to show that the embryo grows and is nourished. (5) For Plato calls even plants 'animals', such as partake only of "the third kind of the soul", the appetitive. Aristotle, on the other hand, thinks that plants partake of the vegetative and nutritive soul, but he does not deem it right to call them 'animals' yet. For he only deems it right to call 'animals' those beings which partake of a different soul, viz. the sentient one. As for the Stoics, they do not give the name 'soul' even to the vegetative capacity yet. (6) But if the person who has proposed the question denies that plants are animals too, we will show him that he contradicts himself. For if he defines the animal as that which grows and is nourished, but asserts that it is not the case that plants are also animals, he appears to be saying nothing less than this: that something which is nourished and grows is an animal and is not an animal at the same time. (7) So let him tell us what he wants to learn: whether the thing in the womb grows and is nourished, or rather whether it partakes of some sense-perception or motion by impulse? For, according to Plato, plants have souls and they are animals; whereas according to Aristotle, they are not animals yet, since they lack a capacity to perceive, but they already have souls. For, in his view, the animal is an ensouled substance having perception. But according to the Stoics, plants are neither ensouled nor animals, for the animal is an ensouled substance. Thus if the animal has a soul, and if the soul is a nature having perception, plainly the animal already has perception.

(8) So if someone who has raised the inquiry whether the embryo is an animal responds to the counter question by saying that he attaches the name 'animal' to that which is nourished and grows, then he has got the answer. But if he says he is seeking

24 whether...not] Cf. Aët. V.15 with Mansfeld–Runia, *Aetiana* V.3, pp. 1883–1896. 26 capacity... perceive] Cf. 47–48; 96–98. 37 Plat. *Tim.* 77b3–6; cf. Porphyry, *Gaur.* 4.7 (39,19–22 Kalbfleisch). 47–48 partakes...impulse] Cf. 26–27; Gal. *Mot. musc.* I.1 (3,15–16 Rosa / IV.372 K); *Prop. plac.* 13.7 (Garofalo–Lami); Ps.-Gal. *Def. med.* 26 (16,13–14 Kollesch); Porphyry, *Gaur.* 4.1 (38,1–2 Kalbfleisch). The definition seems to be of Stoic origin; see Gal. *PHP* II.3.4 (110,1–2 De Lacy / V.219 K); SVF II.458 and 821. 51 ensouled...perception] Not in Aristotle, but see *Top.* V.5, 135a16–19, with Alex. Aphr. *In Top.* V.5 (405,2–5 Wallies). See also Sextus, *PH* II.224; Ps.-Hippolytus, *Ref.* VII.18.4; Ps.-Gal. *Def. med.* 26 (16,13–14 Kollesch).

αισθητικὸν ἤδη τὸ κυούμενον ἢ καὶ καθ' ὄρμην τινὰ ἐστὶ κινητικὸν ἑαυτοῦ, ἤδη σαφῆς γίνεται ἢ διερευνησις τοῦ πράγματος, οὐ μενούσης ἔτι τῆς περὶ τοῦνομα ἀπάτης. μὴ ἀποκρινόμενος δὲ πρὸς τὸ ἀντερωτηθῆν μηδὲ βουλόμενος τί ποτέ ἐστιν εἰπεῖν ὁ νοῶν ἢ
50 κατὰ τίνος ἐπιφέρων πράγματος τὸ ζῶον ὄνομα τὴν πρότασιν ἐποιήσατο, κελεύων δ' ἡμᾶς αὐτοὺς διελέσθαι, ἐριστικὸς ὑπάρχων γνωρισθεῖη.

(9) εἰ δὴ δυοῖν τρόποιον ὑπαρχόντων, ἐτέρου μὲν τοῦ κατ' ἐρώτησίν τε καὶ ἀπόκρισιν, ἐτέρου δὲ τοῦ κατὰ διέξοδον, ἤρνηται τὸ ἕτερον, ἐπακουσάτω πάντα τὰ εἰς τὸ πρόβλημα διεξιόντων ἡμῶν· εἴτ' ἐπειδὴν τελεώσωμεν, ἐξέσται αὐτῷ τότε περὶ ἑνὸς ἐκάστου ἐν
55 μέρει διαλαμβάνειν. εἰ δὲ διακόπτειν ἐπιχειροῖη τὴν ἐξέτασιν πυθανόμενος, δῆλός ἐστιν οὐδὲ ἀκούειν βουλόμενος.

(10) ἀλλ' εἰ μὲν ἀποκρίνεσθαι ἔλοιτο, πάντων πρῶτον ἐρωτητέον αὐτὸν ἐφ' ὃ τι φέρει πρᾶγμα τὸ ζῶον ὄνομα, κάπειδὴν τοῦτο ἀποκρίνηται, πάλιν ἐρωτητέον ὃ τι ποτέ αὐτῷ σημαίνει τὸ κυούμενον ἢ τὸ κατὰ γαστρός, εἰ [τὰ διαπεπλασμένα ἤδη καὶ τὰ ζῶα] καὶ τὸ
60 σπέρμα αὐτὸ (τὸ) καταβεβλημένον τὸ κατὰ γαστρός αὐτῷ σημαίνει βούλεται ἢ μόνα τὰ διηρθρωμένα τε καὶ ἤδη διαπεπλασμένα, τὰ ἔμβρυα καλούμενα. ἀποκριναμένου δὲ καὶ πρὸς τοῦτο περαίνειν ἤδη τὸ προκείμενον ἐφεξῆς καὶ διδάσκειν χρή.

(11) εἰ δὲ ἡμᾶς λέγειν βούλοιτο αὐτὸς μὴ ἀποκρινάμενος, ἀκουσάτω· ἐπεὶ σὺ μὴ βούλει λέγειν καθ' ὅτου σημαινομένου λέγεις ὃ προῦβαλες (οὕτω γὰρ ἂν οὐ περὶ σημαινομένων ἐγὼ ἐποιοῦμην τὸν λόγον, ἀλλ' ὑπὲρ αὐτῶν ἤδη τῶν πραγμάτων ἐσκοπούμην),
65 γίνωσκε τοιοῦτόν τι ποιήσας οἷον εἰ καὶ προῦβαλες εἰ ζῶον ὁ κύων. εἰκότως γὰρ ἂν εἴποιμι· ποίου κυνός; ἐγὼ γὰρ καὶ περὶ τοῦ χερσαίου καὶ τοῦ θαλαττίου καὶ τοῦ κατ' οὐρανὸν ἄστρου, ἀλλὰ καὶ Διογένους καὶ τῶν ἄλλων ἐφεξῆς δίδεμι κυνῶν. οὐ γὰρ ἂν μαντευσαίμην πότερον ὑπὲρ πάντων ἐρωτᾶς ἢ τινός, ὅπερ οὖν ἐξ ὑστέρου ποιήσεις,
70 τοῦτ' ἤδη μαθεῖν περὶ ποίου ζητεῖς σαφῶς εἰπέ. (12) εἰ δὲ περὶ ὀνόματα στρέφη, τὸ κυούμενον αὐτὸ δὴ τοῦτο τοῦνομα παντὶ δῆλον ὅτι μήτε ζῶόν ἐστι μήτε φυτόν, ἀλλ' ὄνομά τε καὶ φωνὴ καὶ σῶμα καὶ ὄν καὶ τί καὶ πάντα μᾶλλον ἢ ζῶον. καὶ εἴπερ τοῦτο προῦβαλες, ἔχεις τὴν ἀπόκρισιν. οὐ μὴν οὐδὲ τὸ σημαινόμενον ἐκ τοῦ κυούμενον

55 διακόπτειν...ἐξέτασιν] Cf. Gal. Oss. prooem. 5 (39,14–40,1 Garofalo–Debru / II.734,1–5 K); Cris. III.8 (188,10–14 Alexanderson / IX.735 K). 57–58 ἐφ'...ὄνομα] Cf. Gal. Nat. fac. 1.2 (101,18–102,3 Helmreich / II.2 K); MM I.4.13 (50,1–2 Lorusso / X.35–36 K); MM II.7.37 (196,14 Lorusso / X.144 K); MM IV.4.45 (150,5–6 Lorusso / X.267 K). 60–61 μόνα...διαπεπλασμένα] Cf. B3, 1–2. 62 περαίνειν...προκείμενον] Cf. PHP III.8.35 (232,11–12 De Lacy / V.358 K). 67 ποίου κυνός] Cf. Gal. MM II.7.11 (178,11 Lorusso / X.131 K): τίνος γὰρ κυνός;

47 σαφῆς Heyse : σαφῶς ms. 49 ὁ Potter : ὁ ms. 56 οὐδὲ Wilamowitz : οὐδὲν ms. 59 εἰ Bunsen : ἢ ms. τὰ¹ – ζῶα del. Barnes 60 αὐτὸ αὐτὸ Potter : τὸ Barnes τὸ¹ add. Bunsen

something else, namely whether the embryo already has perception, or whether it moves itself by some impulse, then the name is no longer misleading and it becomes clear how the matter should be investigated. If he fails to respond to the counter question, not wishing to explain what he had in mind or what thing he was referring to by the name ‘animal’ when proposing the question, and tells us to decide it ourselves, then he has shown himself to be a contentious person.

(9) So if there are two modes [of argument], one by question and answer, the other by exposition, and [our opponent] has declined one of them, then let him listen to everything we have to say about the problem while we present our exposition. Then, when we have finished, he will have an opportunity to argue about each single point in turn. If he tries to interrupt the exposition by asking questions, it is clear that he does not even want to listen.

(10) However, if he chooses to respond, first of all we must ask him what thing he is referring to by the name ‘animal’. And when he answers this, we must ask again what he takes to be the meaning of ‘embryo’ or ‘the thing in the womb’. Is ‘the thing in the womb’ supposed to mean even the seed deposited [in the womb], or only beings that have been differentiated and formed already, the so-called fetuses? As soon as he responds to this, we should already bring the proposed matter to a conclusion and then teach.

(11) But if he fails to respond and wants us to speak, let him listen: Since you do not want to say in what sense you mean what you have proposed – for otherwise I would not be making an argument about meanings, but would already be looking into the things themselves – you should realize that what you have done is similar to proposing the question whether the dog is an animal. Of course I will say: ‘which dog?’ For I will go through them one after the other and speak about the terrestrial dog, the dogfish, the dog-star in the sky, even about Diogenes, and all the other ‘dogs’. I can hardly divine whether you are asking about all or some one of them. So do now what you would have to do later and tell me clearly which one is the dog you are looking to learn about.

(12) But if you are concerned with names, it is obvious to everyone that the word ‘embryo’ itself is not an animal neither a plant, but a name, a sound, a body, a being, a ‘something’, anything but an animal. So if this is the question you have proposed, then you have got the answer. Neither, of course, is the meaning of the word ‘embryo’ an

64–65 question...exposition] Cf. DL VII.42; Alex. Aphr. *In Top.* I.1 (5,7–13 Wallies); cf. already Plat. *Prot.* 334c–338e; Arist. *Soph. EL* 10, 171a38–b2. 74 differentiated...formed] Cf. B3, 1–2. fetuses] ‘Fetus’ translates the Greek ‘ἔμβρυον’, which is not coextensive with ‘embryo’, but refers to the embryo at its most developed stage. Cf. Gal. *Sem.* I.9.2–9 (92,21–94,11 De Lacy / IV.542–543 K). Cf. Boudon-Millot, “La naissance de la vie,” pp. 85–87. 81 which dog] A standard example of a homonym; cf. Arist. *Soph. el* 4, 166a16; Philo Alex. *Plant.* 151; Athenaeus, *Deipn.* X.78 (II.485,3–4 Kaibel); Sextus, *M* XI.29; Gal. *mm* II.7.5–6, 8 and 11 (174,20–21, 176,1–6, 176,11–19, and 178,10–15 Lorusso / X.128–131 K); *Soph.* 1 (1,9–11 Gabler / XIV.583 K); *Diff. puls.* II.3 (VIII.573,11–15 K); *Hipp. Off. med.* III.25 (XVIIIb.869,15–870,1 K). 83 Diogenes] I.e., the Cynic. 87 a body] Cf. DL VII.55–56. 87–88 a being a something] Cf. SVF II.329.

75 ὀνόματός ἐστι ζῶον, ἀλλ' ἐκεῖνο μὲν ἀσώματόν τε ἐστι καὶ λεκτὸν καὶ πρᾶγμα καὶ νόημα
 τοῦ πράγματος αὐτοῦ τοῦ ζητουμένου, λέγω δὲ τοῦ ἐμβρύου, τῆς φύσεως ὅποια τίς
 ἐστίν, ἕτερον ὑπάρχον πρόβλημα τὸ περὶ τῶν σημαιομένων ἐκ τοῦ ζῶον ὀνόματος.
 (13) λέγω τοίνυν, εἰ τοῦτο λέγεις ζῶον τὸ δυνάμενον αἰσθῆσθαι τε καὶ κινήθηναι καθ'
 80 ὄρμην, ζῶόν ἐστιν οὐχ ἀπλῶς τὸ κινούμενον καθ' ὄρμην καὶ αἰσθανόμενον· δύναται γὰρ
 καὶ κοιμᾶσθαι ἢ μὴ παρόντων τῶν αἰσθητῶν μὴ αἰσθάνεσθαι, τὸ δὲ δύνασθαι ἦτοι
 ὄρμᾶν ἢ καὶ αἰσθάνεσθαι πεφυκὸς ζῶου γνῶρισμα. τοιοῦτον γάρ τι σημαίνεται ἐκ τού-
 των, πρῶτον μὲν, εἰ τὸ κινούμενον ἤδη αἰσθάνεσθαι ἢ καθ' ὄρμην κινεῖσθαι δύναται,
 ὅπερ πρόκειται σκοπεῖσθαι, ἕτερον δέ, εἰ τὸ κινούμενον αἰσθήσεσθαι ποτὲ ἢ κινήθησε-
 σθαι δύναται καθ' ὄρμην, καθ' ὃ σημαινόμενον οὐδεὶς ζητεῖ ἐναργῆς ὄν.
 85 (14) ἐζήτητο δὲ πότερον ζῶόν ἐστιν ἤδη τὸ ἐμβρυον ἢ φυτὸν ἐτι κάπειτα μετελήφθη τοῦ
 ζῶου τοῦνομα εἰς λόγον, ἴν' ἢ σαφές. αἰσθήσει δὴ καὶ κινήσει τῇ καθ' ὄρμην εὐρόντες
 αὐτὸ διαφέρον τοῦ μὴ ζῶου, πάλιν τοῦτο διωρισάμεθα τῶν παρακειμένων αὐτῶ
 πραγμάτων ἕτερον μὲν εἶναι φάμενοι τὸ δυνάμει τοιοῦτον, ὃ μῆπω μὲν ἐστὶν αἰσθανό-
 90 μενόν τε καὶ κινούμενον, ἔσται δὲ ποτε τοιοῦτον, ἕτερον δὲ τὸ κατ' ἐνέργειαν ὑπάρχον
 ἤδη τοιοῦτον· τούτου δὲ τὸ μὲν ἤδη ἐνεργοῦν, τὸ δὲ ἐνεργεῖν μὲν δυνάμενον, ἡσυχάζον
 δὲ ἢ κοιμώμενον. τοῦτο δὲ ἐστὶ τὸ ζητούμενον. οὐ γὰρ ἐκ τοῦ τρέφεσθαι τὸ ἐμβρυον
 ζῶον εἶναι λεκτέον, ὃ τῆς οὐσίας ἐστὶν ἀποχωρούντων τοῦ ζητουμένου, τοῖς δ' ἄλλως
 συμβεβηκόσιν προσεχόντων τὸν νοῦν.
 (15) κοινὴ δ' ἐπὶ πᾶσι τοῖς εὐρίσκεσθαι λεγομένοις τέτακται ἢ ἀπόδειξις, ἥτις ἐστὶ λόγος
 95 ἐξ ἐτέρων ἕτερον τι πιστούμενος. ἐξ ὧν δὲ χρῆ πιστοῦσθαι τὸ ζητούμενον, ὁμολογεῖσθαι
 τε καὶ γινώσκεσθαι δεῖ τῶ μανθάνοντι. ἀρχὴ δὲ τούτων ἀπάντων ἐστὶ τὸ πρὸς αἰσθησίν
 τε καὶ νόησιν ἐναργῆς. (16) ἢ μὲν οὖν πρώτη ἀπόδειξις ἐκ τούτων [ἀπάντων] σύγκειται,
 ἢ δ' ἐκ τῶν ἡδη φθασάντων ἀποδεδείχθαι διὰ τῆσδε πάλιν ἕτερόν τι περαίνουσα πιστὴ
 100 μὲν οὐδὲν ἡττόν ἐστὶ τῆς προτέρας, οὐ μὴν καὶ πρώτη ὀνομάζεσθαι δύναται, διότι μὴδ'
 ἐκ πρώτων περαίνεται προτάσεων.
 (17) τὸ μὲν οὖν πρῶτον εἶδος τῆς τῶν ζητουμένων διαφορᾶς, τριῶν ὄντων, ἐδείχθη,
 λέγω δὲ τὸ τῆς οὐσίας γινωσκομένης ἀγνοεῖσθαι τι τῶν ἔργων ἢ παθῶν αὐτῆς. δευτέρα

81 ὀρμᾶν] Sc. κινεῖσθαι καθ' ὄρμην, cf. *PHP* III.7.25 (216,26 De Lacy / V.341 K); IV.2.17 (242,6 De Lacy / V.370 K); IV.6.37 (278,6 De Lacy / V.413 K); *Loc. aff.* VI.4.2 (398,14 Brunschön / VIII.402,16–17 K); *Hipp. Aph.* IV.1 (XVIIb.654,5). 92–93 ἄλλως συμβεβηκόσιν] Cf. *MM* II.3.20 (126,1 Lorusso / X.92 K); II.4.6 (130,3 Lorusso / X.95 K).

74 λεκτὸν Stählin : λεκτέον ms. 75 ἄν add. Bunsen 76 τοῦ ἐμβρύου Heinse : τῷ ἐμβρύῳ ms.
 80 δύνασθαι Stählin : δυνάμενον ms. 82 ἤδη – ὄρμην Stählin : καθ' ὄρμην μὴ αἰσθάνεσθαι ἢ ms.
 83 αἰσθήσεσθαι Havrda : αἰσθῆσθαι ms. 84 ἐναργῆς Stählin : ἐναργῶς ms. 97 ἀπάντων del. Stählin

animal, since this is incorporeal, a ‘sayable’, a ‘thing’, a notion, anything but an animal. 90
 The nature of an animal is surely something else. For, as regards the nature of the very
 thing we are seeking (I mean the fetus), we have evidently shown what it is like. But
 there is a different problem concerning the meaning of the name ‘animal’. (13) Thus if
 you say an animal is that which can perceive and move by impulse, I say an animal is
 not that which moves by impulse and perceives without qualification. It may also be 95
 asleep or it may not be perceiving because no perceptible objects are present; but the
 mark by which we recognize something as an animal is that it is capable by nature
 either of being moved by impulse or of perceiving. For the meaning conveyed by these
 words is, roughly, this: first, whether the embryo can already perceive or move by
 impulse (which is the problem we must explore); and another one, whether the 100
 embryo can perceive or move by impulse in the future, a meaning according to which
 nobody inquires, as the matter is evident.

(14) An inquiry was raised whether the embryo is already an animal, or still a
 plant. The name ‘animal’ was then changed into an account in order to make it clear. 105
 We have discovered that it differs from non-animals in perception and movement by
 impulse. We again distinguished it from similar things by pointing out the difference
 between, on the one hand, something that is such potentially, i.e. when something does
 not yet perceive and move, but will at some point; and, on the other hand, something
 that is already such in actuality. The latter is either something active at this moment, or
 something capable of being active, but at rest or sleeping. And this is what we are 110
 seeking. It is wrong to say that the fetus is an animal because it is nourished: those who
 say this are missing the essence of what is sought, while turning attention to attributes
 incidental to it in another way.

(15) Demonstration, which is an argument confirming one thing on the basis of
 others, has been applied in common to everything said to have been discovered. Those 115
 items on whose basis the thing sought is supposed to be confirmed must be agreed to
 and known by the student. The principle of all of them is that which is evident to sense-
 perception and intellection. (16) The primary demonstration is composed of these
 items; the one composed of the items previously demonstrated by the primary demon-
 stration and producing yet another conclusion is no less credible, but it cannot be 120
 called the primary demonstration, because it does not draw its conclusion from the
 primary propositions.

(17) Well, then, of the kinds distinguished among things we seek (there being three
 such kinds), the first one has been exhibited: I mean, when the substance is known, but

90 incorporeal...thing] Cf. Sextus, *M VIII.12*; for sayables, see LS §33. notion] Cf. Arist. *Int.* 1, 16a10 and
 14. 92 what it is like] Cf. 73–74. 96 asleep] Cf. Ps.-Gal. *Def. med.* 498 (162.1 Kollesch), on Asclepiades;
 Porphyry, *Gaur.* 1.2 (33,14–18 Kalbfleisch). 99–101 whether...future] Cf. Porphyry, *Gaur.* 1.2 and
 13.1–16.9 (33,14–18 and 52,3–58,16 Kalbfleisch), possibly responding to Galen’s argument.
 110–111 what we are seeking] Cf. 26–27. 111 fetus] Cf. 73–74. 118 primary demonstration] Cf.
 Alex. Aphr. *In Top.* I.1 and VIII.12 (16,30–18,5 and 574,6–7 Wallies), *In Met.* Δ.3 (356,29–34 Hayduck).
 123–124 three such kinds] Cf. 11–19.

δ' ἦν διαφορὰ προβλημάτων ἐφ' οὗ τὰ μὲν ἔργα καὶ πάθη γινώσκομεν ἅπαντες, ἀγνοοῦ-
 105 μεν δὲ τὴν οὐσίαν, οἷον ἐν τίνι τοῦ σώματος μορίῳ τὸ ἡγεμονικόν ἐστι τῆς ψυχῆς. ἢ δὲ
 αὐτὴ ἐπιχείρησις τῆς ἀποδείξεως κατὰ τούτου τοῦ προβλήματος.

(18) φασὶν οὖν τινες μὴ ἐγχωρεῖν πλείους ἀρχὰς ἐνὸς εἶναι ζώου. ὁμογενεῖς μὲν οὖν
 ἀρχὰς οὐκ ἐγχωρεῖ πλείους ὑπάρχειν ἐνὸς ζώου, διαφερούσας δὲ τοῖς γένεσιν οὐδὲν
 ἄτοπον.

some of its works or affections are not. The second kind of problems was the one 125
concerning things whose works and affections we all know, but do not know the
substance, like ‘In which part of the body is the ruling faculty of the soul?’. The reason-
ing of demonstration is the same in the case of this problem, too.

(18) Now some people say that it is impossible for one animal to have more than 130
one principle. It is surely impossible for one animal to have more than one principle of
the same genus, but if the principles are of different genera, there is nothing absurd
about it. (H)

127 In...soul] Cf. Aët. IV.5, with Mansfeld–Runia, *Aëtiana* V.3, pp. 1473–1494. Galen discusses the issue at length in *PHP* II–III and VI (with the summary in *PHP* VIII.1.1–24 (480,4–486,9 De Lacy / V.648–655 K). 129–132 Probably the beginning of a discussion of the ἡγεμονικόν problem; cf. *PHP* VI.1.1 (360,4–7 De Lacy / V.505 K), trans. De Lacy, modified: “It was my purpose at the beginning to inquire about the powers that govern us, whether they have the heart as their only principle, as Aristotle and Theophrastus supposed, or whether it is better to posit three principles (τρεῖς ἀρχάς) for them.” Cf. Tieleman, *Galen and Chrysippus*, p. 30 n. 94.

C1. Galenus, *De marcore* 2 (VII.671–672 K)

τὸ γὰρ ὅτι τὸ γεννητὸν πᾶν φθαρήσεται πάντως οὐτ' ἐπιστημονικὴν οὐτ' ἀναγκαίαν ἔχει τὴν ἀκολουθίαν, ἀλλ' ἄχρι τοῦ πιθανοῦ προιοῦσαν, ὡς ἐν τῷ περὶ ἀποδείξεως ἀποδέδεικται, καίτοι γε τούτῳ χρωῶνται τῷ λόγῳ σχεδὸν ἅπαντες, ὅσοι τὸ γηράσκειν ἀναγκαῖον ἐπιδεικνύουσι τοῖς ζώοις, ὁδὸν εἶναι φάσκοντες αὐτὸ πρὸς τὴν ἐξ ἀνάγκης
5 ἐπομένην φθορὰν τοῖς γεννητοῖς ἅπασιν.

C2. Abū Bakr al-Rāzī, *Doubts about Galen* 20.27 (216,4–7 Koetschet)

ثم قال: "والقول بأنّ كلّ متكوّن يفسد، ليس هو حقاً لا محالة لكن مقنعاً". وهذا يناقض النتيجة التي إليها يجري في كتابه في البرهان، التي هي أنّ كلّ ما لا يفسد فليس بمتكوّن لأته، إن كان
يمكن أن يكون متكوّن لا يفسد، جاز أن يكون العالم وإن لا يفسد متكوّنأ.

C3. Abū al-'Alā' ibn Zuhr, *Solution to the Doubts about Galen* 95.2–3, MS Rīḍawī 13997, fol. 72b, l. 27–fol. 73a, l. 9 (Koetschet–Rajab)

(1) وأما قول جالينوس إنّ القول بأنّ كلّ متكوّن يفسد ليس هو حقاً لا محالة لكن مقنعاً قول صحيح وقد بيّن ذلك في المقالة الرابعة من كتاب البرهان وذلك أنه ممكن أن يكون متكوّن لا يفسد لأنه أهل للبقاء بإصلاحه دائماً ومنعه عن قبول الموت. (2) وأما قول السوفسطائي إن قول جالينوس بأنّ القول إنّ كلّ متكوّن لا يفسد ليس حقاً لا محالة لكنه مقنع يناقض النتيجة التي يجري إليها في كتاب البرهان التي هي: كلّ ما لا يفسد <فليس> بمتكوّن فكذب منه. (3) وكذلك
5 أنّ جالينوس لا يقول ذلك، بل قال: "وأما قولنا في كل ما كان غير قابل للفساد أنه يجب ضرورة أن يكون غير متكوّن فيحتاج إلى تحديد وتمييز حتى يسهل قبوله وتمييز ذلك وتحديده يكون بالنظر إلى الجهة التي اتفق فيها أنه غير قابل للفساد فإنه لا يخلو من أن يكون كذلك إما

MS Rīḍawī 8 يخلو 8 مكونا MS Rīḍawī [متكوّن] 2 حقّ MS Rīḍawī [حقاً] مكتوب MS Rīḍawī [متكوّن] 1 C3, 1 يخلوا

Section C: Book IV

C1. Galen, *On decay* 2

For the [proposition] that every generated [thing] will by all means be corrupted does not involve a scientific or necessary consequence. Rather, as was demonstrated in *On demonstration*, it goes as far as the persuasive, even though nearly everyone who points out that aging happens necessarily to animals uses precisely this reason, claiming that aging is the path to corruption following of necessity to all generated [things]. (H) 5

C2. Abū Bakr al-Rāzī, *Doubts about Galen* 20.27

Then [Galen] says: “The proposition that every generated thing will be corrupted is not true by all means but it is (persuasive).” This contradicts the result that he obtained in his treatise *On demonstration*, that is: everything that is not subject to corruption is ungenerated. Because if it were possible for a generated being to be corrupted, it would be possible for the world, even if it is not subject to corruption, to be generated. 5 (Ko)

C3. Abū al-‘Alā’ ibn Zuhr, *Solution to the Doubts about Galen* 95.2–3

(1) What Galen says – that the proposition that every generated thing will be corrupted is not true by all means but it is (persuasive) – is correct. He explained it clearly in the fourth book of his treatise *On demonstration*: It is possible that there is a generated being that is not subject to corruption, because it obtained immortality by way of restoration and was forbidden to receive death. (2) In turn, what the Sophist claims, 5 [namely,] that what Galen says – the proposition that every generated thing will be corrupted is not true by all means but is persuasive – contradicts the result that he obtained in his treatise *On demonstration*, that is, that everything that is not subject to corruption is ungenerated, it is a lie. (3) Indeed, Galen does not say that, but he says: “What we said about everything incorruptible, that it must necessarily be ungenerated, 10 requires determinations and distinctions for us to readily accept it. The distinction and the determination consist in considering the ways in which a particular thing is conceded to be incorruptible, because it can be [incorruptible] either because it does (not) admit corruption at all, like what it is unique, perfectly simple and unaffected, or

C1, 1 every...corrupted] Cf. Arist. *Cael.* I.10, 279b21. C2, 1 Galen] I.e., in C1. 3–4 everything... ungenerated] Not Galen's view; cf. below, C3, 3–5 and C4, 41. C3, 1 Galen] I.e., in C1. 4–5 immortality...restoration] Cf. C4, 26–27. 5 the Sophist] I.e., al-Rāzī. 10–16 Cf. C4, 22–27.

لأنه <لا> يدخله من الفساد <شيء> إذا كان شيئاً واحداً مفرداً بسيطاً لا يقبل التأثير وإما لأنه
 10 أهل للبقاء بإصلاحه دائماً أو منعه من قبول الموت“.

C4. Philoponus, *De aeternitate mundi* XVII.5 (599,17–601,20 Rabe)

(1) ικανῶς μὲν οὖν οἶμαι τοῖς μὴ πάντῃ φιλονεῖκοις καὶ ἀπηρυθριακόσιν πρὸς τὴν ἀλήθειαν ὁ λόγος ἀπέδειξεν, ὡς οὔτε πᾶν ἀπλῶς τὸ ἀφθαρτον ἀγένητον, ἀλλ', εἴπερ ἄρα, τὸ φύσει, οὔτε Πλάτων φύσει ἀφθαρτον εἶναι τὸν κόσμον οἶεται καὶ διὰ τοῦτο οὐδὲ ἀγένητον. (2) εἰ δὲ δεῖ καὶ μαρτυρίαις ἀξιόπιστων ἀνδρῶν βεβαιῶσαι τὸν λόγον, εἰ τῷ
 5 δοκεῖ Γαληνὸς ἀξιόπιστος εἶναι τούτων μάρτυς, ἀνὴρ φυσικώτατός τε καὶ οὐδὲν ἤττον τῆς ἰδίας ἐπιστήμης τὰ κατὰ φιλοσοφίαν ἠκριβωκῶς θεωρήματα, παρίτω τῷ ἡμετέρῳ λόγῳ συνήγορος. (3) οὗτος οὖν ἐν τῷ δ' λόγῳ ἦς αὐτὸς συνέγραψεν ἀποδεικτικῆς πραγματείας φησὶν ἐπὶ λέξεως ταῦτα· « σύνθετός ἐστιν ἡ νόησις τοῦ αἰδίου· καὶ γὰρ ἀγένητος καὶ ἀφθαρτος· ἔπεται δὲ ἐκατέρῳ θάτερον. » (4) δηλονότι κἀνταῦθα δείξας
 10 ὀπότερον αὐτῶν εἶναι ᾧ ἔπεται θάτερον, ἐκεῖνο προλαβὼν ἀποδέδειχεν πῶς ἂν εἶη τὸ προκειμένον· « εἰ τοίνυν καλῶς ὑπὸ πάντων ὠμολόγηται τῷ ἀγενήτῳ τὸ ἀφθαρτον ἔπεσθαι σκοποῦντες, ἅμα μὲν ἀναπόδεικτόν τε καὶ πρῶτον καὶ ἐξ αὐτοῦ πιστόν εἶναι ἀξίωμα κατενοήσαμεν, ἅμα δὲ ὑφ' ἑτέρου τινὸς ἐναργοῦς μαρτυρούμενον ἀξιώματος, ὃ μικρὸν ἔμπροσθεν εἴρηται, τοιοῦτο ὑπάρχειν· εἰ τι λόγον οὐδ' ὄλως ἔχει γενέσεως, οὐδὲ
 15 φθορᾶς ἔξει τὸ τοιοῦτο λόγον. (5) ὅτι μὲν οὖν ἅπαν ἀγένητον εὐθὺς καὶ ἀφθαρτόν ἐστιν, ἐτοίμως ἢ διάνοια δέχεται καὶ εἴπερ τι καὶ ἄλλο τῶν πρὸς νόησιν ἐναργῶν πρῶτον ὑπάρχει καὶ τὸ τοιοῦτον ἀξίωμα. (6) τὸ μέντοι πᾶν ὅσον ἀφθαρτον ἐξ ἀνάγκης τοῦτο καὶ ἀγένητον εἶναι διορισμοῦ δεῖται τινος, ἵν' ἐτοίμως αὐτὸ δεχώμεθα. τίς οὖν ὁ διορισμός; ἐν τῷ διελέσθαι, πῶς ἀφθαρτον εἶναι τότε τι συγχωρεῖται, πότερον ὡς οὐδὲ τὸν λόγον
 20 ὄλως ἐπιδεχόμενον τῆς φθορᾶς, οἷον τὸ τελείως ἀπλοῦν ἐστιν καὶ ἀπαθές, ἢ ὡς ἐπισκευαστῆς τῆς ἀθανασίας τετυχηκός, οἷόν τι δοκεῖ καὶ περὶ τῶν θεῶν ἐν Τιμαιῷ λέγειν ὁ Πλάτων, ἐν οἷς πεποίηκεν τὸν πρῶτον θεὸν αὐτοῖς διαλεγόμενον. (7) ἔστιν δ' ἡ ῥῆσις ἡδε· «ἐπέπερ γεγόνατε, ἀθάνατοι μὲν οὐκ ἐστὲ οὐδὲ ἄλντοι τὸ πάμπαν· οὔτι μὲν δὴ

C4, 20–21 [ἐπισκευαστῆς τῆς ἀθανασίας] Cf. Plat. *Polit.* 270a4. 23–25 Plat. *Tim.* 41b.

9 يدخله] MS Riḏawī يدخل من] MS Riḏawī في **C4, 10** εἶναι ᾧ Havrda : εἶθ' ὡς mss. πῶς Havrda : ὡς Paris. 2058 : om. Marc. 236 : Rabe: “*locum corruptum non expedit*”

because it obtained immortality by way of restoration and was forbidden to receive death". (Ko) 15

C4. Philoponus, *The eternity of the world* XVII.5

(1) And so I think the argument has sufficiently demonstrated to those who are not completely contentious and shameless towards the truth, that neither is it the case that everything incorruptible without qualification is ungenerated; rather, if anything, it is what is [incorruptible] by nature; nor does Plato think the cosmos to be incorruptible by nature and for this reason ungenerated. (2) If, however, one also needs the testimony of trustworthy men to confirm the argument, and if anyone thinks Galen is a trustworthy witness concerning these things, a man who is both an exceptional natural philosopher and someone who has treated philosophical speculations with precision no less than his own science, let him come forward as an advocate for our argument. (3) So, in the fourth book of the treatise he wrote about demonstration, he says literally the following: "The thought of the eternal is composite. For it is ungenerated and incorruptible, and each of the two entails the other." (4) That is to say, having shown at this point that either of the two [predicates] entails the other, he took up the former first and demonstrated how the issue in hand might be: "Now exploring whether it has been correctly agreed by everyone that being ungenerated entails being incorruptible, we have realized that it is an undemonstrated and primary axiom credible by itself and, at the same time, that it is confirmed by another evident axiom, which was discussed a little earlier and which is this: if something has no account of generation at all, then such a thing will have no account of corruption either. (5) Therefore, thought readily accepts that everything ungenerated is immediately also incorruptible, and if anything else is the first among things evident to intellection, so is also such an axiom. (6) Nevertheless, [the proposition] that everything that is incorruptible is also necessarily ungenerated requires a distinction for us to readily accept it. What distinction is it? [It consists] in setting apart the ways in which a particular thing is conceded to be incorruptible, whether in the sense of not admitting the account of corruption at all, like what is perfectly simple and unaffected, or in the sense of having obtained immortality by restoration, like something Plato, too, seems to say about the gods in the *Timaeus*, in which he makes the first god discourse with them. (7) The speech goes as follows: 'Since you have been generated, you are not immortal nor completely indissoluble. And yet you will not be dissolved nor will you meet a fate of death, having

C4, 11–12 ungenerated and incorruptible] Cf. Arist. *Cael.* I.9, 277b28–29. 12 each...other] Cf. Arist. *Cael.* I.12, 282a23–283a3. 13 either of the two] I.e., "ungenerated" and "incorruptible". 21 evident to intellection] Cf. A16, 3–4 and B6*, 71–72. axiom] Cf. A15, 3–12 and F6, 1–2. 26 simple and unaffected] I.e., the aether; cf. Arist. *Cael.* I.2–3; C15, 6; E7, 2. 27 restoration] Cf. Plat. *Polit.* 270a4. 29–32 Plat. *Tim.* 41b.

λυθήσεσθε οὐδὲ τεύξεσθε θανάτου μοίρας, τῆς ἐμῆς βουλήσεως μείζονος ἔτι καὶ κυριω-
 25 τέρου δεσμοῦ λαχόντες ἐκείνων, οἷς ὅτε ἐγένεσθε συνεδεῖσθε.›(8) ταῦτο δὲ τοῦτο κὰν τῷ
 Πολιτικῷ περὶ τοῦ παντὸς οὐρανοῦ διεξέρχεται· ἐπινοεῖται γὰρ τι, κὰν εἰ γέγονεν, ὁμωσ
 οὐ φθαρησόμενον· οἷον ἢ τῶν Λακεδαιμονίων πόλις εἰ τύχοι· ἐγχωρεῖ γὰρ αὐτὴν φθαρή-
 ναι μηδέποτε, καίτοι τῶν κατὰ μέρος οἰκιῶν ἀπασῶν φθείρεσθαι φύσιν ἐχουσῶν, ἀλλὰ
 τῷ δύνασθαι κατὰ βραχὺ γίνεσθαι τὴν ἐπανόρθωσιν ἐνδέχεται μὴ φθαρῆναι τὸ σύμπαν·
 30 οὐ μόνον δὲ πόλιν οὕτως δυνατὸν ἄφθαρτον ἐπινοεῖν ἀλλὰ καὶ μίαν οἰκίαν, εἰ τὸ
 πονῆσαν αὐτῆς ἐπανορθώσεως ἐκάστοτε τυγχάνοι. (9) κατὰ λόγον οὖν, εἰ μὲν ἀγένητόν
 τι, πάντως καὶ ἄφθαρτον, εἰ δὲ ἄφθαρτον, οὐκ ἐξ ἀνάγκης ἀγένητον». (10) σαφῶς ἄρα
 καὶ οὗτος ὁ ἀνὴρ οὕτε τῷ ὀπωσοῦν ἀφθάρτω τὸ ἀγένητον εἶπεν ἔπεσθαι ἀλλὰ τῷ μηδὲ
 35 κεν τῷ οὐρανῷ. ἀλλὰ περὶ μὲν τούτων ἄλις κἀνταῦθα.

C5. Al-Ṭabarī, *Hippocratic treatments*, MS British Library, IO Islamic 1296, fol. 29b
 (Koetschet)

فلما بحث، رجع عن هذا الرأي ومما يدلّ على أنّ هذا صحيح أنّه يقول في كتاب البرهان: ”ما
 لا يفسد كجوهر النفس“، فلو لا أنّه عرف جوهر النفس لما ذكر هذا الذي ذكره.

C6. Abū Bakr al-Rāzī, *Doubts about Galen* 2.1 (8,3–6 Koetschet)

وذلك أنّه قال: ”لو فسد العالم لكانت لا تلبث الأجسام التي فيه بحال واحدة بعينها ولا الأبعاد
 التي فيما بينها والمقادير والحركات. وكان ينبغي أيضاً أن يفنى ماء البحر الذي قبّلنا. وليس
 شيء من هذه الأشياء زائلاً عن حاله أو تغير وقد رصدها المنجمون ألوفاً من السنين كثيرة.
 فيجب إذن أن يكون العالم لا يهرم فهو إذن غير قابل للفساد.“

25–26 τῷ Πολιτικῷ] Cf. Plat. *Polit.* 269d–270a.

obtained a bond of my will that is even greater and more authoritative than those by which you were bound together when you came to be.’ (8) In the *Statesman*, too, [Plato] explains exactly the same point concerning the whole heaven. For we can conceive of something that, although it has come to be, it is nevertheless not to be corrupted, like the city of the Spartans, for instance. For it is possible that it will never be corrupted: 35 even though all the particular houses have a corruptible nature, it is still possible for the whole not to be corrupted, as reparation can take place little by little. Not only is it possible to conceive of a city being incorruptible in this sense, but also of a single house, if its parts get repaired each time they have suffered damage. (9) It is therefore in accordance with reason that if something is ungenerated, it is by all means also 40 incorruptible, but if it is incorruptible, it is not necessarily ungenerated.” (10) So, this man also clearly said that being ungenerated is not entailed by being incorruptible in just any sense, but rather by not even having the account of corruption, and he acknowledged that Plato did (not) attribute incorruptibility to the heaven in this sense. But this is enough about these things for now. (C-H) 45

C5. Al-Ṭabarī, *Hippocratic treatments*, MS British Library, IO Islamic 1296, fol. 29b

When he [Galen] made further research, he reconsidered this opinion. Among the signs that this is true, [you may find] what he says in *On demonstration*: “What is not subject to corruption, like the substance of the soul.” If he did not know the substance of the soul, he would not have said this. (Ko)

C6. Abū Bakr al-Rāzī, *Doubts about Galen* 2.1

[Galen] says: “If the cosmos could be corrupted, the [celestial] bodies it contains would not remain in one and the same state, nor would the distances between them, or their sizes, or their movements. The water of the sea that existed before us would also have to disappear. But none of these things have ever departed from their initial state or changed, even though astronomers have been observing them for many thousands of 5 years. It follows, therefore, that the world does not age, and therefore is not subject to corruption.” (Ko [C-H])

32–33 Plat. *Polit.* 269d–270a. C5, 1 this opinion] I.e., that he does not know the nature of the soul. 2–3 What ...soul] This is in conflict with B5 and probably does not represent Galen’s own position. It is possibly a dialectical concession to Plato’s view, made in the context of the discussion reported in C4. C6, 5–6 astronomers...years] Cf. Arist. *Cael.* I.3, 270b13–17. Cf. C7, 11–12; C8, 5–7; C13, 4–9; C15, 13.

C7. Abū al-'Alā' ibn Zuhr, *Solution to the Doubts about Galen* 1.1–2, MS Riḍawī 13997, fol. 3a, ll. 1–13 (Koetschet–Rajab)

<...> (1) أفلاطن وأوجدنا ما ليس بفاقد ولا بمتكوّن على مذهب أرسطاطاليس وهو الفلك. وهذا نصّ لفظ جالينوس من كتاب البرهان: (2) ”وقد يقال في الشيء أنّه غير كائن على جهة أخرى بمنزلة قول أرسطاطاليس في الفلك والكواكب أنّها كذلك بسبب شكلها وحركتها إذ كان لا يوجد لها ضدّ، (3) وأمّا غير فاسد فلأنّ أشكالها وحركاتها وأبعادها بعضها من بعض لم تُوجد تغيّرات في ألوف من السنين، وقد كان ينبغي لو كانت جميعها تستحيل إلى طبيعة النار 5 إذا انحلت جوهرها كما ظنّ زينن ألاّ تلبث أجسامها بحال واحدة بعينها، ولا الأبعاد التي فيما بينها وكان ينبغي أن يفنى هذا البحر الذي قبلنا وليس من هذه الأشياء واحد زال عن حاله أو تغيّر عمّا رصده المنجمون ألوفاً من السنين كثيرةً فيجب إذا أن يكون العالم لا يهرم. (4) وكذلك لو كان شيء بارد يحيط به من خارج يجمّده ويجمّعه ويضعفه، لوجب لهذا السبب أن تتغيّر مقادير الأجسام التي فيه وأبعادها وحركاتها وعظم الشمس والقمر وسائر الكواكب فلا 10 نراه.“ (5) حكى ذلك عن أرسطاطاليس تاركاً آراءه كلّها ليفرد لها كتاباً كما فعل في كتاب اعتقاداته.

C8. Ps.-Gābir ibn Ḥayyān, *The book of morphology* (420,16–421,4 Kraus)

(1) وقد استعمل هذا أيضاً في كتابه المسمّى <البرهان> فإنه قال هناك مغالطاً أو على سبيل أنه خافٍ عليه. فإنه قال: (2) وقد ينبغي لنا أن نعلم أنّ هذا الجزء الشريف – يعني جزء السماء – غير مكوّن من أنّ آباءنا وجميع القدماء لم يزلوا يرونه على مثال واحد، وقد رصده المنجمون قبل ألوف السنين فوجدوه على مثال واحد في أعظامه وحركاته. (3) ومدّ في هذا الكلام وتوسّع فقد تعلق بهذا الاستدلال وما يأتيه. 5

C9. Abū Bakr al-Rāzī, *Doubts about Galen* 2.2 (8,7–15 Koetschet)

أول ما أقول في هذا أنّه يناقض ما قاله في كتابه الذي يسمّيه ما يعتقد جالينوس رأياً فإنّه قال <هناك إنّه ليس له علم يثق به هل العالم قديم أو محدّث وما قاله> في كتابه الموسوم بالتجربة

C7. Abū al-‘Alā’ ibn Zuhr, *Solution to the Doubts about Galen* 1.1–2

⟨...⟩ (1) Plato, and he presented us what is incorruptible and is not generated according to Aristotle, that is the celestial sphere. This is literally what Galen says in the treatise *On demonstration*: (2) “One can say of a thing that it is ungenerated in another way, equivalent to the argument Aristotle gives about spheres and planets, namely that they are such (i.e. ungenerated) because of their shape and movement, because they have no contrary. (3) As for [saying] that it is incorruptible, it is because their shapes, their movements and the distance separating them from each other have not undergone any change over thousands of years. In fact, if all these things transformed into the nature of fire when their substance dissolved, as Zeno thinks, their bodies should not remain in one and the same state, nor the distances between them, and this sea that was there before us should have disappeared. But not one of these things is going to change or be removed from what astronomers have observed over thousands of years. So, it necessarily follows that the world is not aging. (4) Likewise, if a cold thing were to surround it from the outside, condense it, gather it together, and compress it, it would be necessary for this reason that the sizes of the bodies in [the world] change, as well as the distance between them, their movement, the size of the sun, the moon, and all the planets. But we don't see that.” (5) He takes this from Aristotle, and leaves out his own opinions, and puts them in a separate book, as he did in the treatise *On his own opinions*. (Ko [C-H])

C8. Ps.-Ġābir ibn Ḥayyān, *The book of morphology*

(1) [Galen] also uses this (i.e. the inference based on induction) in his book entitled ⟨*On demonstration*⟩. Indeed, what he says is misleading, even if he is unaware of it. He says: (2) “We must come to know that this noble part – I mean the part that corresponds to the heaven – is not generated from the fact that our fathers and all the ancients have always observed it to be one and the same, and astronomers have made observations for thousands of years, and have seen that its dimensions and movements are one and the same.” (3) He spent time on this and expanded his remarks, and he established a connection based on this sign and what results from it. (Ko [C-H])

C9. Abū Bakr al-Rāzī, *Doubts about Galen* 2.2

The first thing I want to say on this [topic] is that [Galen] contradicts what he said in his book *On his own opinions*, where he says he does not have secure knowledge whether the world is eternal or whether it has come into being, and what he said in his

C7, 5–6 because...contrary] Cf. Arist. *Cael.* I.3, 270a13–23. 6 shapes] I.e., those of spheres and planets. 9 as Zeno thinks] Cf. SVF I.107–109; Koetschet, “Galien, al-Rāzī, et l'éternité du monde,” p. 185 n. 40. 13–14 Cf. SVF II.804–806. C8, 5–6 observations...years] Cf. C6, 5. C9, 1–3 Gal. *Prop. plac.* 2.1 (Garofalo–Lami). 3–5 Cf. Gal. *Med. exp.* 19 (47,2–18 Walzer).

الطبية. فإنّه يروم هناك أن يبرهن ببرهان أنّه لا يمكن أن يُعلم أقديماً العالم أم محدثاً، وقد أقرّ في الرابعة من كتاب البرهان فأطلق القول في غير موضع بأنّ ما لا يفسد فليس بمكوّن. ومعلوم عند من قرأ جميع كتب جالينوس أنّ هذا الكتاب الموسوم بما يعتقد جالينوس رأياً لم يؤلفه إلا بعد استحكامه وثبات آرائه وأنّه آخر كتبه وآخر تأليفاته. فإن كان ما ذكره في كتاب البرهان حقاً، فليس لتوقفه عن إطلاق القول بقدم العالم وجه البتّة، إذ كانت النتيجة عن هاتين المقدمتين - أعني القائلة بأنّ العالم لا يفسد، والقائلة إنّ ما لا يفسد فليس بمكوّن - أنّ العالم ليس بمكوّن وقد ناقض قوله إنّّه لا يمكن أن يُعلم أقديماً العالم أم محدثاً.

C10. Abū al-'Alā' ibn Zuhr, *Solution to the Doubts about Galen* 1.6, MS Riḍawī 13997, fol. 3b, ll. 9-13 (Koetschet-Rajab)

وأما قوله: أنّ جالينوس قد أطلق القضية في كتاب البرهان على أنّ ما لا يفسد فليس بمكوّن فكذب منه، إذ جالينوس قد قال في كتاب البرهان وبيّن أنّ هذه القضية لا تصحّ إلا بعد تحديد وتمييز، وسأذكر ذلك التحديد والتمييز عند تقصي شكوك كتاب الذبول إذ أحسب الضرورة تدعوني إلى ذلك.

C11. Abū al-'Alā' ibn Zuhr, *Solution to the Doubts about Galen* 1.3-4, MS Riḍawī 13997, fol. 3a, ll. 13-25 (Koetschet-Rajab)

(1) وأمّا الفصل الذي حكاه عن جالينوس من كتاب اعتقاداته فليس الذي يذكره السوفسطائي لفظ جالينوس، الذي ذكره جالينوس فيه، على ما تراه، أنّه ليس له علمٌ يثق به هل العالم مكوّن من شيء أو مكوّن من غير شيء. فليس إذاً ما توهمه هذا السوفسطائي متناقضاً في جالينوس. (2) ولو حفظ شروط النقيض لم يأت بهذا الجهل لأنّ جالينوس ذكر في كتاب البرهان طرق البرهان جاعلاً مثل ذلك أقوال أربابه كأفلاطون وأرسطاطاليس فيما لم يجد سبيلاً إلى تيقّنه التيقّن التام لأنّ أقوالهم أولى أن يُقتدى بها وأيضاً فإذا علمنا كيف تؤخذ المقدمات البرهانية وكيف نطّم القياسات الصحيحة النتج فله أن يأتي بأيّ مثال اتفق له، ولحافظ ذلك الطريق العام أن ينظر هل ذلك المثال جار على ما يوجبه القانون أم فيه شكّ، وأما في كتاب اعتقاد رأيه فإنه

book *On medical experience*, where he sets out to demonstrate apodictically that it is impossible to know whether the world is eternal or created. Now he admits in the fourth [book] of the treatise *On demonstration* and makes the same argument in several places that what is incorruptible is also ungenerated. Now it is known to anyone who has read all the books of Galen that the book *On my own opinions* was composed only after he had consolidated and firmly established his opinions, and that it is the last of his books and treatises. Thus, if what he says in *On demonstration* is true, then there is no reason to suspend his judgment about the eternity of the world. Indeed, the conclusion of these two premisses, I mean [the premiss] that “the world is incorruptible” and the premise that “that which is incorruptible is ungenerated” is the following: “the world is ungenerated”. [This conclusion] contradicts what he says: that it is impossible to know whether the world is created or not. (Ko)

C10. Abū al-‘Alā’ ibn Zuhr, *Solution to the Doubts about Galen* 1.6

When [al-Rāzī] says: “Galen, in the treatise *On demonstration*, states the opinion that what is not corrupted is not generated”, it is a lie on his part, since Galen explicitly says in *On demonstration* that this assertion can only be correct after we have made determinations and distinctions. I will recall these determinations and distinctions when I examine the doubts against the work *On decay*, if I decide necessity obliges me to do so. (Ko [C-H])

C11. Abū al-‘Alā’ ibn Zuhr, *Solution to the Doubts about Galen* 1.3–4

(1) As for what [al-Rāzī] quotes from Galen and the treatise *On his own opinions*, what the Sophist mentions does not correspond to Galen's text. What Galen's text says here, as we can see, is that he does not have a secure knowledge that would allow him to affirm that the world is generated from something or that it is generated from nothing. This is therefore not the contradiction on Galen's part imagined by this Sophist. (2) If he had kept in mind the conditions under which a contradiction would arise, he would not have shown such ignorance. For Galen mentions in the treatise *On demonstration* methods of demonstration, using as examples what his predecessors Plato and Aristotle said on topics where a path to perfect certainty has not been found, because it is reasonable to be guided by what they have said. Moreover, since he taught us how demonstrative premisses should be acquired and how to construct syllogisms that draw their conclusion correctly, it is up to him to start from any example that suits him, and it is up to the one who learns this general method to contemplate if this example conforms to the rules or whether it is open to doubt. In his book *On my own*

C10, 4 determinations and distinctions¹] Cf. C3, 11; C4, 22–27. 5 when ...decay] See C2. C11, 1 On his own opinions] Cf. C9, 7–10. 4 the ...nothing] This alternative is not found in *Prop. plac.*

ذكر فيه ما رضي به وصحّ عنده مما لم يرضه وشكّ فيه فإنما كان يكون القولان متناقضان لو كانت اعتقادات أرسطاطاليس كلها يصحّحها جالينوس ويتفقّدها.

10

C12. Abū Bakr al-Rāzī, *Doubts about Galen* 2.3 (10,1–13 Koetschet)

ثمّ أقول من بعد إنّه قد فارق الوصية التي لا يزال يوصينا بها من التحفّظ في أخذ المقدمات واكتسابها من المواضع اللازمة للأمر المطلوب ضرورةً. وليس في أن تكون أعظام الكواكب والأرض ومقدار ماء البحر وسائر أجزاء العالم محفوظة بأعيانها وجوب امتناع العالم من الفساد، إذ كان ليس سبيل كل فاسد أن يكون ذلك يقع به على سبيل التناقص والذبول بل قد يكون يمكن أن يفسد الشيء وهو أعظم ما كان وأكمّله كالبيت المبنّي على عمُد إذا خرت عمُده من تحته وكالشجرة التي تُقلع والنار التي تُطفأ ونحو ذلك. فلم يكن ينبغي له أن يُثبِت الحكم بما أثبت به دون أن يبيّن أنّ العالم من الأشياء التي <لا> يمكن فسادها إلا على جهة الذبول، ولم يعرّض لهذا بتّة، بل ضمّ إلى هذا المقدم وهو قوله ”لو فسد العالم“ هذا التالي وهو قوله ”لكانت لا تلبث الأجسام التي فيه بحالة واحدة بعينها“ كأنّه لا يمكن أن يكون فساداً إلا على هذه الجهة فقط. وإنّما يصحّ لزوم هذا التالي لهذا المقدم بزيادة شرط فيه - حتى يكون على هذه الصفة: 5
”لو فسد العالم فساداً ذبولياً لكانت الأجسام التي فيه لا تلبث بحالة واحدة بعينها“ - أو مقدّم فتبيّن أنّ الفساد لا يعرض لشيء بتّة إلا على جهة الذبول فقط.

10

C13. Abū al-'Alā' ibn Zuhr, *Solution to the Doubts about Galen* 1.7, MS Riḍawī 13997, fol. 3b, ll. 13–21 (Koetschet–Rajab)

(1) وأمّا قوله: إنّه لو زاد في جرم الشمس أو نقص منه أعظم ما يكون من الجبال، لما لحق بصرنا منه إلا مثل ما يلحق بصرنا منه قبل الزيادة. (2) فليس لهذا القول معنى، إذ جالينوس إنّما قال: وقد رصدها المنجمون وليس رصد المنجمين لها بالبصر بل بالألات المحقّقة التي لا يدخلها خطأ وأيضاً لو زاد الفلك أو نقص لظهر ذلك النقصان أو الزيادة في المركز ولكانت أحواله لا نجدّها اليوم على ما حكاهما من كان قبلنا بألوف من السنين. (3) وجالينوس لا يرضى 5
بما يقوم من البراهين على أمثال هذه المطالب لشدة تحقيقه إذ كلّ رأي منها مقارب فمن بعضها

opinions, however, he mentions what he accepts and deems correct, not what he does not accept and what he doubts. Thus, there would be a contradiction between these two propositions, only if he had deemed all Aristotle's doctrines to be correct after having examined them. (Ko [C-H]) 15

C12. Abū Bakr al-Rāzī, *Doubts about Galen 2.3*

Next, I note that he goes against the recommendation he keeps giving us all the time, namely to be cautious when adopting our premisses and to acquire them from the attributes that necessarily follow the thing under inquiry. Now, that the sizes of the heavenly bodies and the earth, the quantity of water in the sea and all the world's parts remain as they are does not necessarily imply that it is impossible for the world to be corruptible. For, not all corruption is brought about by diminution and decay, but it is also possible for something to be corrupted when it is as large and perfect as it can be, like the house built on columns when its columns collapse, or like the tree that is uprooted, or like the fire that is put out, and other similar cases. Thus he should not assert this proposition based on the [premisses] from which he started without explaining that the world is one of those things that are corrupted only by decay. Not only did he not allude to this at all, but he also added to this antecedent clause, namely “if the world were corruptible”, the following consequent, “then the bodies would not remain in one and the same state”, as if it were impossible for anything else to be corruptible except in this way. Now, the implication of the consequent from the antecedent is valid if one adds a condition to [the antecedent], so that [this implication] reads as follows: “if the world were corruptible by decay, then the bodies in it would not remain in one and the same state”, or [by the addition of] an antecedent which makes it clear that nothing is ever corrupted except by the decay. (Ko [C-H]) 5 10 15

C13. Abū al-‘Alā’ ibn Zuhr, *Solution to the Doubts about Galen 1.7*

(1) [Al-Rāzī] says: If the volume of the sun were to increase or decrease [by an equivalent amount] to [the size of] the highest mountain, our vision could not perceive the [sun] as anything other than what it perceived before the increase. (2) This argument makes no sense, since Galen only says: astronomers have observed [the sun]; but the observation [of the sun] by astronomers does not operate by vision [alone], but by instruments of exploration where no error is made. Moreover, if the celestial sphere were to increase or decrease, this decrease or increase would appear in the centre, and we would not find the sun on a given day to be in the same state as what an observer who lived several thousand years before us recorded. (3) Moreover, Galen is not satisfied with demonstrations based on such statements because of his rigorous approach to this issue, since every opinion that would result from them is approxim- 5 10

C13, 4 astronomers] Cf. C6, 5.

يحصل على الشيء المقارب لليقين وذلك تصديق جدلي، ومن بعضها على الشيء الذي تسكن إليه النفس وذلك تصديق بلاغي، والبرهان غير هذين.

C14. Abū al-'Alā' ibn Zuhr, *Solution to the Doubts about Galen* 1.8, MS Riḍawī 13997, fol. 3b, ll. 21–23 (Koetschet–Rajab)

ويجب أن يحمد جالينوس إذ قال فيما تقصر أفهام البشر عنه إنه لم يدر ولم يقف أحداً من الفلاسفة فيخدع عقله.

C15. Abū al-'Alā' ibn Zuhr, *Solution to the Doubts about Galen* 2.1–4, MS Riḍawī 13997, fol. 3b, l. 26–fol. 4a, l. 15 (Koetschet–Rajab)

- (1) قال السوفسطائي: "قال جالينوس إنه يمكن في مثل دائرة البروج أن نبين أنها سبب كون الحيوان والنبات وما يوجد فيها من الصنائع، وذلك موجود في كتب أرسطاطاليس الموضوعة في أعضاء الحيوان، وفي كتب ثاوفرسطس في النبات، ومع ذلك في كتابنا في منافع الأعضاء.
- (2) [...] قال أبو العلاء بن زهر إن جالينوس قصد في هذا الموضع من كتابه النظر في أربعة أشياء أحدهما: هل يوجد في العالم جوهر أزلي؟ والثاني: هل ذلك الجوهر حساس؟ والثالث: هل هو خبير؟ والرابع: هل هو حكيم؟ (3) فقال إن الثاني من هذه الأربعة يشتهه ألا يمكن استخراج المقدمات الملائمة منه، وأما الأول والثالث والرابع فيمكن ذلك فيها كثيراً، أما الأول فبالقياسات التي وصفناها فيما تقدم، وأما الثالث والرابع فبالصناعات الموجودة في العالم والأجرام السماوية. واستخراج هذه المقدمات يدخل في صناعة النجوم وفي الأشياء التي على وجه الأرض من تركيب الحيوان، وذلك أنه يمكن في مثل دائرة البروج أن نبين أنها سبب كون الحيوان والنبات، فجالينوس لم يخرجها بعد عن عنصر الإمكان، وهذا السوفسطائي أجرى عنصر الإمكان مجرى عنصر الإيجاب.

ate: some [statements] produce something approximating certainty, and this is dialectical credence, and some [produce] something which persuades the soul, and this is rhetorical credence. Demonstration, however, corresponds to neither. (Ko [C-H])

C14. Abū al-‘Alā’ ibn Zuhr, *Solution to the Doubts about Galen* 1.8

Galen should be praised, since he says, regarding that which human intellect fails to grasp, that he does not know, and he does not follow any of the philosophers who would mislead him. (Ko [C])

C15. Abū al-‘Alā’ ibn Zuhr, *Solution to the Doubts about Galen* 2.1–4

(1) The Sophist says: “Galen says: ‘It is possible, concerning something like the circle of the zodiac, to show that it is the cause of the generation of animals, plants, and of the arts found in them’ and [he says that] ‘this is present in the books of Aristotle *On the parts of animals*, and in the books of Theophrastus *On plants*, and in addition to this, in our book *On the use of parts*.” (2) [...] Abū al-‘Alā’ ibn Zuhr says: Galen, at this point in his treatise, aims to examine four questions. The first: Is there an eternal substance in the world? The second: is this substance sentient? The third: is it knowledgeable? The fourth: Is it skillful? (3) He [Galen] says: “It is likely impossible to discover the appropriate premisses for the second of these four [questions]. On the other hand, with regard to the first, third and fourth, it is very well possible to [achieve] this. In the case of the first [question], it is [achieved] by the arguments described above, and in the case of the third and fourth, it is [achieved] through the arts found in the world and in the heavenly bodies. Discovering these premisses belongs to astronomy and, as far as the things that are on the surface of the earth are concerned, [to the study of] the composition of the animals. For it is possible, in the case of the circle of the zodiac, to show that it is the cause of the generation of animals and plants.” Galen does not take this [inference] beyond the realm of the possible. Now, this Sophist transforms [the course of] the possible into the course of the necessary. (Ko [C-H])

C15, 1–5 Cf. C15a, 1–5. **3–4** On the parts of animals] It is not clear which passage Galen refers to. Cf. Arist. *GA* IV.10, 777b18–778a5. **5** On the use of parts] Cf. Gal. *UP* XVII.1 (II.447,7–448,15 Helmreich / IV.359–361 K). **6** questions] Lit. ‘things’. **6–15** See comments above, pp. 44 and 75–77. **6** eternal substance] Cf. C4, 26. **10** this] I.e., to find the appropriate premisses. **13** astronomy] Cf. C6, 5. **16–18** Galen...necessary] See comments above, pp. 85–86.

C15a. Abū Bakr al-Rāzī, *Doubts about Galen* 2.7 (14,11–14 Koetschet)

وقال جالينوس في هذه المقالة أيضاً إنّه يمكن في مثل دائرة البروج أن يبيّن أنّها سبب كون الحيوان والنبات وما يوجد فيها من الصنائع والحكم وقال: وذلك يتبيّن في كتب أرسطاطاليس الموضوعّة في أعضاء الحيوان وفي كتب ثاوفرسطس في النبات ومع ذلك في كتابنا في منافع الأعضاء.

C16. Ibn Rušd, *Averrois Cordubensis commentum magnum super libro De caelo et mundo Aristotelis* (44,83–45,91 Carmody–Arnzen)

Deinde dixit et ratio testatur visui et visus rationi etc., tales propositiones in eis dixit Albinacir quod fides est propinquissima veritati certe; et cum Galienus estimavit quod nullus potest scire mundum esse eternum nisi per has propositiones quarum origo est a sensu et testimonio vetustatis, dixit in suo libro quem posuit in eis que
 5 credit quod nullum certum habebat de mundi utrum esset novus aut antiquus; et manifestum est quod ipse non utitur in antiquitate mundi nisi talibus propositionibus ex verbis suis in libro suo quem appellavit *Demonstrationem*.

C15a. Abū Bakr al-Rāzī, *Doubts about Galen 2.7*

In the same book, Galen explains that it is possible, in the case of the circle of the zodiac, to show that it is the cause of the generation of animals, plants, and what is found in them of art and wisdom. He states that [this proposition] becomes clear in Aristotle's books *On the parts of animals*, in Theophrastus' books on plants, and in addition to these, in his book *On the use of parts*. (Ko [C])

5

C16. Ibn Rušd, *Commentary on Aristotle's De caelo*

Then Aristotle says: “And reason testifies in favour of evidence and evidence in favour of reason” etc. Of such propositions, Abū Naṣr [al-Fārābī] said about them that belief is very close to certain truth. And since Galen was of the opinion that no one could know whether the world was eternal except by means of these propositions that originate in sensation and in the testimony of the past, he said in his book *On his own opinions* that he had no certain knowledge on the question of whether the world was created or eternal *a parte ante*; and it is clear from what he said in his book *On demonstration* that he himself only uses this kind of propositions about the eternity of the world. (Rashed [Ko])

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C16, 1–2 Arist. *Cael.* I.3, 270b4–5. 4–5 except...past] Cf. C6; C7, 6–17; C8, 3–7. 8 he...propositions] Cf. C13, 9–14.

D1. Galenus, *De placitis Hippocratis et Platonis* VII.5.33–40 (460,4–33 De Lacy / V.625–627 K)

- (1) τὸ δ' οἰκεῖον αἰσθητὸν ὄψεως, ὅπερ καὶ πρῶτον αὐτῆς αἰσθητὸν ὠνόμασα, τὸ τῶν χρωμάτων ἐστὶ γένος. ἐκείνου μὲν γὰρ πρώτου τε καὶ καθ' αὐτὴν καὶ μόνη τῶν ἄλλων αἰσθάνεται, καθάπερ ἡ γεῦσις τῶν χυμῶν. (2) συνδιαγιγνώσκει δ' αὐτῷ τὸ κεχρωσμένον σῶμα, καθάπερ ἡ γεῦσις τὸ τοὺς χυμοὺς ἔχον· (3) ἀλλ' ἡ μὲν γεῦσις ὁμοίως ταῖς ἄλλαις
- 5 αἰσθήσεσιν ἐπὶ τὸ τοῦ ζώου σῶμα περιμένει παραγενέσθαι τὸ αἰσθητὸν, ἡ δ' ὄψις ἐκτείνεται διὰ μέσου τοῦ ἀέρος ἐπὶ τὸ κεχρωσμένον. ὅθεν αὐτῇ μόνη συνδιαγιγνώσκειν ὑπάρχει τῇ χροιά τοῦ βλεπομένου τό τε μέγεθος αὐτοῦ καὶ τὸ σχῆμα μηδὲ τούτου δυναμένης αἰσθάνεσθαι αἰσθήσεως ἄλλης, ὅτι μὴ κατὰ συμβεβηκὸς ἐνίστε τῆς ἀφῆς. ἐξείργασται γοῦν τῶν τοιούτων ὁ λόγος ἐν τῷ πέμπτῳ περὶ ἀποδείξεως.
- 10 (4) τῇ δ' οὖν ὄψει πρὸς τοῖς ἄλλοις ὑπάρχει καὶ θέσιν καὶ διάστημα συνδιαγιγνώσκειν τοῦ κεχρωσμένου σώματος οὐδενὸς τῶν ἄλλων αἰσθέσθαι δυναμένου. (5) ὅσοι δ' ἐπιχειροῦσι καὶ ὀσφρήσει καὶ ἀκοῇ τῆς θέσεως τοῦ τὸν ἀτμὸν ἀποπέμποντος σώματος ἢ τοῦ πλήξαντος τὸν ἀέρα μεταδιδόναι τῆς διαγνώσεως ὅπως ἀμαρτάνουσιν οὐ νῦν καιρὸς ἐρεῖν. εἴρηται γὰρ ἐπὶ πλείστον ὑπὲρ ἀπάντων τῶν κατὰ τὰς δύο αἰσθήσεις φαινομένων
- 15 ἐν τῷ πέμπτῳ περὶ τῆς ἀποδείξεως, ὥσπερ γ' ἔφαμεν· ἐν ἧ πραγματεία γυμνασάμενός τις ἐτοιμότερον ἀκολουθήσει τοῖς νῦν λεγομένοις. (6) ἐπιδέδεικται γὰρ ἐν ἐκείνοις ἅπαντα μαρτυροῦντα τῷ τὸ βλεπόμενον σῶμα καθ' ὃν ἂν ὑπάρχη τόπον ὁρᾶσθαι. (7) φαίνεται δὲ τοῦτ' ἐναργῶς καὶ δι' αὐτῆς τῆς αἰσθήσεως· ὅθεν οὐδ' οἱ γεωμετρικοὶ μετ' ἀποδείξεως ἀλλ' αὐτόθεν ὡς ἐναργῆς αὐτὸ τιθέασιν, καίτοι τοῦ γε κατ' εὐθείας ὁρᾶν
- 20 ἡμᾶς γραμμὰς ἢ τοῦ τὴν ὄψιν, ἐπειδὴν ἀκριβῶς τινὶ λείψω καὶ στίλβοντι προσπέσει, κατὰ τὴν ἴσην ἀνακλᾶσθαι γωνίαν ἢ προσέπεσεν ἀποδείξεις φέρονταί τινες.

D1, 9 τῶν τοιούτων Einarson : τὸ τοιοῦτον Ham. 270 **12** τῆς θέσεως von Müller : τὴν θέσιν Ham. 270

Section D: Book V

D1. Galen, *The doctrines of Hippocrates and Plato* VII.5.33–40

(1) The proper sensible of sight, which I have also called its primary sensible, is the genus of colours. For colour is what sight senses primarily, in itself, and alone among the other senses, just as taste does flavours. (2) Along with colour, it also discerns the coloured body, just as the body having flavour is also discerned by taste. (3) Taste, however, and likewise the other senses, waits for the sensible object to come to the body of the animal, while sight extends through the medium of the air to the coloured body. For this reason, it belongs to it alone to discern, along with the colour of the object seen, also its size and shape, and this none of the other senses are able to sense, except sometimes touch accidentally. At any rate, an argument concerning these matters has been elaborated in the fifth book *On demonstration*. 5 10

(4) And so it belongs to sight to discern, in addition to other things, also the position and distance of a coloured body, something that none of the other [senses] are able to sense. (5) Now is not the right time to point out how those go wrong who attempt to attribute to the sense of smell and hearing the discernment of the position of the body emitting the vapour or striking the air. For all phenomena relating to the two senses have been discussed at length in the fifth book *On demonstration*, just as we said. Someone trained in that treatise will be more prepared to follow the present discourse. 15

(6) For in that treatise I presented all the [evidence] testifying to [the fact] that the observed body is seen in the place where it is. (7) But this is also evidently manifest from perception itself. That is why geometers posit it as something evident by itself, without demonstration, although some people do provide demonstrations at least of the fact that we see in straight lines, or that sight, when it falls on something perfectly smooth and bright, is reflected at an equal angle to which it fell. (C-H) 20

D1, 1–3 proper...flavours] Cf. Arist. *De an.* II.6 and 7, 418a7–16 and 418a26–b2; III.2, 425b18–20. 8 size and shape] Unlike Arist. *De an.* II.6, 418a17–19, Galen regards size and shape (just as motion, position, and distance) as the proper sensibles of sight. See D2, 13–31 and Gal. *UP* XVI.3 (II.383,7–8 Helmreich / IV.273 K). 9 touch accidentally] For accidental perception, cf. Arist. *De an.* II.6, 418a20–24; III.1, 425a14–16; for touch see D3, 14–16, with note. 13–15 who...air] Cf. D2, 15–17. 22 straight lines] Cf. e.g. *UP* X.12 (II.96,12–22 Helmreich / IV.817 K), probably based on Euclid's *Optics*. 22–23 Cf. Hunayn, *Ten treatises on the eye*, ed. Meyerhof, Ar. p. 109 (Engl. pp. 36–37): “When [sight] falls on a fully polished and bright body, it returns reflected to the pupil from which it went forth, with reflection of the images and their return at the same angles as those at which the visual rays proceeded from the eyes. Therefore, when we look into a mirror or at another polished and bright body, we sometimes see ourselves and sometimes others who are at our right or left behind us” (trans. Meyerhof). See also D2, 18–24.

D2. Galenus, *De placitis Hippocratis et Platonis* VII.7.1–9 (470,3–472,2 De Lacy / V.637–639 K)

(1) αὐτίκα γέ τοι τὸ τῆς ὄψεως ὄργανον, ἐπειδὴ χρωμάτων ἐχρῆν αὐτὸ διαγνωστικὸν ὑπάρχειν, αὐγοειδὲς ἐγένετο, μόνων τῶν τοιούτων σωμάτων ἀλλοιοῦσθαι πεφυκότων ὑπὸ χρωμάτων, ὡς δηλοῖ καὶ ὁ περιέχων ἀήρ, ἡνίκα (ἄν) μάλιστα καθαρὸς ὑπάρχη, τηρικαῦθ' ὑπὸ χρωμάτων ἀλλοιούμενος. (2) ἰδεῖν γοῦν ἐστὶν ὅταν ἐν ἀέρι τοιούτῳ τις 5 ὑπὸ δένδρῳ κατακείμενος ἦ, τὸ τοῦ δένδρου χρῶμα περιχεόμενον αὐτῷ. καὶ τὸ τοῦ τοίχου δὲ χρῶμα πολλάκις ἀήρ λαμπρὸς ψάσας ἐδέξατό τε καὶ διεκόμισεν ἐφ' ἕτερον σῶμα, καὶ μάλισθ' ὅταν ἦ τὸ χρῶμα κυανοῦν ἢ ξανθὸν ἢ ὀπωσοῦν ἐτέρως εὐανθές. (3) καὶ μὲν δὴ καὶ ὡσπερ ὑπὸ τῆς ἡλιακῆς αὐγῆς αὐτῷ τῷ ψάσσει μόνον ὁ πᾶς ἀήρ ἀθρόως ὁμοιοῦται, κατὰ τὸν αὐτὸν τρόπον ὑπὸ τοῦ χρώματος αὐτίκα μεταβάλλεται. (4) ταυτὶ 10 μὲν οὖν ὀρθότατα καὶ πρὸς Ἀριστοτέλους εἴρηται περὶ τε τῆς παραχρῆμα μεταβολῆς τῶν οὕτως ἀλλοιουμένων, ὡς κινδυνεύειν ἄχρονον εἶναι, καὶ περὶ ταύτην καὶ διότι πέφυκεν ὑπὸ χρωμάτων ὁ λαμπρὸς ἀήρ ἀλλοιούμενος ἄχρι τοῦ τῆς ὄψεως ὄργανου διαπέμπειν τὴν ἀλλοίωσιν. (5) οὐ μὴν ὅπως γε τὴν θέσιν ἢ τὸ μέγεθος ἢ τὸ διάστημα γνωρίζομεν ἐκάστου τῶν αἰσθητῶν εἶπεν ὁ Ἀριστοτέλης. (6) ἀλλὰ καὶ συλλογιζόμενοι 15 περὶ τὸ δόγμα πολλοὶ τῶν ἀπ' αὐτοῦ κατάφωροι γίνονται ψευδόμενοι μὴτ' ὁσμῶν μῆτε φωνῶν συνενδεικνυμένων τὸν τόπον ὅθεν ἤκουσιν, ὡς ἐν τῷ πέμπτῳ δέδεικται περὶ ἀποδείξεως. (7) καὶ μὲν δὴ καὶ τὸ διὰ τῶν κατόπτρων ὅσα τε ἄλλα στυλπνὰ σώματα ποτὲ μὲν ἡμᾶς αὐτοὺς θεᾶσθαι, ποτὲ δὲ ἄλλους τινὰς ἐκ πλαγίων ἢ ὀπισθεν, ὡσπερ τοῖς ἄλλοις ἅπασι πλὴν Πλάτωνος, οὕτω καὶ Ἀριστοτέλει μάχεται, μόνου τοῦ χρώματος 20 δυναμένου κατ' ἀνάκλασιν ἀπὸ τῶν ὀρωμένων ἐπὶ τὴν ἡμετέραν ὄψιν ἀφικέσθαι, μορφῆς δ' ἢ μεγέθους οὐκέτι. (8) μορφήν μὲν γὰρ τῆς ποικιλίας τῶν περὶ τὰ μόρια σχημάτων ἐργαζομένης οὐτ' ἐπινοῆσαι δυνατόν ἀπ' αὐτῶν τινα γενέσθαι προσβολὴν τοῖς κατόπτροις οὐτ' εἰ καὶ γένοιτο, χωρὶς τοῦ κλασθῆναι τὴν ἀνάκλασιν ἐφ' ἡμᾶς ἀφικέσθαι· πιθανώτερα γὰρ ὅσον ἐπὶ τῷδε τὰ κατ' Ἐπίκουρον εἰδῶλα· τὸ δὲ μέγεθος ἔτ' 25 ἀδυνατώτερον ἐγκαταβαίνειν τῇ κόρῃ. (9) καίτοι τοῦτο γε τὰς περὶ πάντων τῶν ἄλλων

D2, 3 ἄν *add.* von Müller ὑπάρχη Chartier : ὑπάρχει Marc. 284, Aldina 5 αὐτῷ Cornarius : αὐτῶ Ham. 270 7 ξανθὸν Chartier : ξανθοῦν Ham. 270 16 πέμπτῳ *coni.* Laur. 74,12 (*excerpta ex saec.* XV); Mosq. 467 (*corr.*); Cornarius : τόπῳ Ham. 270 25 περὶ πάντων Einarson : ἀπάντων Ham. 270

D2. Galen, *The doctrines of Hippocrates and Plato* VII.7.1–9

(1) Take, for example, the instrument of sight. Since it was supposed to be capable of discerning colours, it came to be luminous, because only such bodies are naturally able to be altered by colours. We can see it also in the surrounding air: whenever it is particularly clear, it is altered by colours. (2) For instance, if someone is lying under a tree in such an air, we can see the colour of the tree enveloping him. Also, the bright air touching the colour of a wall often receives it and transmits it to another body, especially when the colour is blue or yellow or in any other way flowery. (3) Moreover, just as the air, merely by touching the sun's light, is assimilated to it all at once, in the same manner it is changed by colour immediately. (4) Therefore, what Aristotle said in this case was entirely correct concerning both the sudden change of things altered in this way, namely, that it happens in almost no time, and regarding this [particular] change, namely, that because bright air is naturally able to be changed by colours, it transmits the alteration to the organ of sight. (5) Nevertheless, Aristotle did not say precisely how we recognize the position, size, or distance of each of the sensible objects. (6) And even if many of his followers do make deductions about this tenet, they are caught making false claims, since neither scents nor sounds bring with them an indication of their place of origin, as I have shown in the fifth book *On demonstration*. (7) Moreover, the fact that through mirrors and any other shiny objects we sometimes observe ourselves, sometimes other things to our sides or behind us, contradicts Aristotle, just as everyone else except Plato, since the only thing able to reach our sight by reflection from the objects seen is colour, whereas shape or size cannot do so. (8) For the form is produced by the variety of shapes belonging to the parts, and it is inconceivable that any impact on the mirror would arise from these shapes, and even if it did, that the reflection would reach us without distortion. For as far as this is concerned, the images of Epicurus are more persuasive. And it is even more impossible for the size to enter the pupil. (9) Yet, although it tears down their views about all the rest,

D2, 2–3 luminous...colours] Cf. Gal. *Inst. od.* 2.10 and 3.4 (38,24 and 40,25 Kollesch / II.862 and 863–864 K); *UP* VIII.6 (464,14–15 and 464,24–465,4 Helmreich / III.640–641 K). For the luminosity of eyes, see also Plat. *Tim.* 45b2–c2, quoted in Gal. *PHP* VII.6.5–6 (464,1–7 De Lacy / V.629–630 K). 3–7 Cf. Alex. *Aphr. De an.* 42,16–19 Bruns; *Mantissa* 15 (145,27–30 Bruns–Sharples) with Sharples, *Alexander Aphrodisiensis*, p. 201. 8 air...once] Cf. Gal. *PHP* VII.4.2 (448,16–18 De Lacy / V.612 K) = G27; *PHP* VII.5.7 (454,11–12 De Lacy / V.619 K). 9 Aristotle] Cf. Arist. *De sensu* 6, 446b27–447a3; 447a8–11; Alex. *Aphr. De an.* 43,10–11 Bruns; *Mantissa* 15 (143,29–30 Bruns–Sharples). 11 almost no time] Cf. Arist. *De sensu* 6, 446b27–447a11; *De an.* II.7, 418b20–26; Alex. *Aphr. De an.* 43,10–11 Bruns; *Mantissa* 15 (143,29–30 Bruns–Sharples). 12–13 because...sight] Cf. Arist. *De an.* II.7, 418a31–b13. 13–15 Aristotle...objects] For big and distant objects (τὰ μεγάλα καὶ πόρρω) cf. Arist. *Mem.* 2, 452b9–13. For size and distance see Alex. *Aphr. Mantissa* 15 (146,17–147,5 Bruns–Sharples), possibly responding to Galen's critique; cf. De Lacy, *Galenus De placitis*, III, p. 681 *ad* 470,17–18; Sharples, *Alexander Aphrodisiensis*, pp. 197–198. 16–17 neither...origin] The criticized view could be based on Arist. *GA* V.2, 781b6–16 (De Lacy, *Galenus De placitis*, III, p. 681 *ad* 470,18–21). 18 mirrors...objects] Cf. D1, 22–23. 23 mirror] For arguments based on mirror reflections, cf. Alex. *Aphr. Mantissa* 11 (135,24–32 Bruns–Sharples).

καταβάλλον δόξας ὡσπερ τι μικρὸν παρέρχονται, περὶ μὲν τοῦ διαστήματός τε καὶ τῆς θέσεως ἐπιχειροῦντες σοφίζεσθαι, τὴν δὲ τοῦ μεγέθους διάγνωσιν ὅπως γίνεται παρερχόμενοι, καίπερ διαρρήδη αὐτῶν ἀνατρέπουσαν τὰς δόξας. (10) ἀδύνατον γὰρ αἰσθέσθαι τοῦ μεγέθους τῶν ὁρατῶν ἄνευ τοῦ θεωρεῖσθαι τὸ βλεπόμενον ἐν ᾧπερ ἂν
30 ὑπάρχη τόπω.

D3. Galenus, *De placitis Hippocratis et Platonis* VII.6.22–24 (466,14–30 De Lacy / V.633–634 K)

(1) ἐν τε οὖν τούτοις ὁ Πλάτων ὡσπερ οὖν κἀν τοῖς ἐφεξῆς ἐν ἄλλοις τέ τισι διαλόγοις ἐδίδαξεν ἡμᾶς ὑπὲρ τῆς κοινῆς δυνάμεως, ἣτις ἐξ ἐγκεφάλου διὰ τῶν νεύρων εἰς ἕκαστον τῶν αἰσθητηρίων ἀφικνουμένη τῶν ἐν αὐτοῖς ἀλλοιώσεων αἰσθάνεται· (2) ὡς εἴ γε δυνατὸν ἦν τοῖς ἰδίαις παθήμασιν αὐγῆς ἄλλο τι συναλλοιωθῆναι παρὰ τὸ φωτοειδὲς ὄργανον ἢ τοῖς τῶν ἀτμῶν ἕτερόν τι τοῦ ἀτμοειδοῦς ἢ τοῖς τοῦ ἀέρος ἄλλο τι παρὰ
5 τὸ ἀεροειδὲς ἢ τοῖς τῶν ὑγρῶν ἕτερόν τι παρὰ τὸ γευστικόν τε καὶ πλήρες χυμῶν, οὐκ ἂν ἐγεγόνει τὰ τῶν αἰσθητηρίων ὄργανα· (3) νυνὶ δ' οὐχ οὕτως ἔχει· τὰ μὲν γὰρ ἐν τοῖς ἀντιβαίνουσι σώμασιν ὅσαπερ ἦν ἴδια τῆς οἰκείας διαφορᾶς (οὐχ) ἅπαντι μορίῳ νεύρων μεταλαμβάντι δυνατὸν αἰσθάνεσθαι, διότι μὴδὲ παθεῖν ἅπαν ὑπὸ τῆς τοῦ γηίνου
10 σώματος προσβολῆς ἐπιτήδειόν ἐστιν. (4) ἦν δ' αὐτῶν πρώτη μὲν ἡ κατ' ὀξύτητα καὶ ἀμβλύτητα, δευτέρα δ' ἡ κατὰ θερμότητα καὶ ψυχρότητα, κατὰ συμβεβηκὸς δ' αἰλουπαί, μέγεθος τε καὶ σχῆμα καὶ κίνησις καὶ ἀριθμὸς, αἰ καὶ μετὰ συλλογισμοῦ καὶ μνήμης, οὐ μόνως αἰσθήσεως ἐδείχθησαν γιγνόμενα κατὰ γε τὴν ἀφήν καὶ τὴν ὄψιν ἐν τῇ περὶ τῆς

26 τι μικρὸν von Müller : τις μικρὸν Ham. 270 28 αὐτῶν Cornarius : αὐτῶ Ham. 270 **D3, 4** αὐγῆς Cornarius : αὐτῆς Ham. 270 8 οὐχ *add.* Cornarius 13 μόνως Cornarius : μόνον ἦς Ham. 270

they pass over it as if it were something minor, trying to come up with sophisms about distance and position, while passing over how the discernment of size comes about, even though it unambiguously overturns their views. (10) For it is impossible to sense the size of visible objects without seeing the object observed right in that place where it is. (C-H) 30

D3. Galen, *The doctrines of Hippocrates and Plato* VII.6.22–24

(1) And so here, as in the passages that come next and in certain other dialogues, Plato taught us about the common capacity which, arriving from the brain through the nerves to each of the sense organs, perceives the alterations in them. (2) So if it were possible for anything else than the luminous organ to undergo alterations along with the affections peculiar to light; or for anything else than the vaporous organ to undergo those peculiar to vapours; or for anything besides the aeriform organ to undergo those peculiar to air; or for anything other than the organ of taste, full of flavours, to undergo alterations peculiar to moist things; then the instruments of the senses would not have come into being. (3) But in fact it is not like that. For the properties of resistant bodies which are peculiar to their own distinct [character] cannot be sensed with every part connected to the nerves, because not every part is suited to being affected by impact from an earthy body. (4) The first among these [properties] correspond to sharpness and bluntness, the second to hotness and coldness, and the rest are accidental: size, shape, motion, and number. These [accidental properties] also require deduction and memory, not merely sensation, to become [perceived], namely in the case of touch and sight, as I have shown in the treatise *On demonstration*. And if 15

D3, 1 here] I.e. in Plat. *Th.* 184d1–5 and 184e4–185c8, quoted in Gal. *PHP* VII.6.12–21 (464,24–466,13 De Lacy / V.631–633 K). 3–9 Cf. *PHP* VII.5.43 (462,1–3 De Lacy / V.627 K); *UP* VIII.6 (I.464,11–465,4 Helmreich / III.640–641 K). 12 impact...body] I.e., by tactile properties; cf. Plat. *Tim.* 31b4–8. 14 size...number] Cf. Arist. *De an.* II.6, 418a16–19; III.1, 425a14–16; above, D1, 7–12. 15–16 For touch, cf. D1, 9 and G17, 14–15. See also Hunayn, *Ten treatises on the eye*, ed. Meyerhof, Ar. p. 109 (Engl. p. 36), on the perception of size, shape, distance, and motion based on touch: “For it results either from deduction or from comparison with something which the individual has estimated by previous knowledge. The following is an example: If a person is walking in the dark and holds a stick in his hand and stretches it out full length before him, and the stick encounters an object which prevents it from advancing further, he knows immediately by analogy that the object preventing the stick from advancing is a solid body which resists anything that comes up against it. What leads him to this judgement is that he knows from former experience that movement and walking in the air is without any obstacle, whilst movement and walking against a solid body is not possible” (trans. Meyerhof). This passage is probably based on a lost section of Galen’s account, which perhaps followed immediately after *PHP* VII.5.35 (460,13 De Lacy / V.626 K) = D1, 9. For the role of deduction in the perception of motion, see also *Dig. puls.* III.1 (VIII.883,5–885,7 K). For sight, cf. Nemesius, *Nat. hom.* 7 (60,11–61,5 Morani), who distinguishes between cases in which sight needs memory and thought to discern size and number; and those in which it does not.

ἀποδείξεως πραγματεία, καθ' ἣν πρώτην ἀξιῶ γεγυμνάσθαι τὸν ἀκριβῶς ἔπεσθαι τοῖς
15 νῦν λεγομένοις ἐφιέμενον.

anyone wishes to follow the present discourse precisely I ask them to get trained in that first. (C-H)

E1. Themistius, *In Aristotelis Physica paraphrasis* IV.11 (144,21–145,2 Schenkl)

(1) ἐκ δὴ πάντων τῶν εἰρημένων δῆλόν ἐστιν, ὡς τῆ τῆς κινήσεως αἰσθήσει συνυφίσταται καὶ ἡ τοῦ χρόνου καὶ συνέζευκται ἐκείνη καὶ συνήρηται ἀκριβῶς. (2) δῆλον οὖν, ὡς οὐκ ἔστιν ὁ χρόνος ἄνευ κινήσεως, ἄνευ κινήσεως δὲ οὐχ ὄν τρόπον οἶεται Γαληνός, ἐπειδὴ κινούμενοι νοοῦμεν τὸν χρόνον (οὕτω γὰρ ὑπολαμβάνει λέγειν Ἀριστοτέλην),
5 ἀλλ' ἐπειδὴ τῆ τῆς κινήσεως ἐννοία συνήρηται ἢ τοῦ χρόνου. (3) τί οὖν μάτην ἤθλει πρὸς τοῦτο δῆθεν ἀντιλέγειν ἐπιχειρῶν; «καὶ γὰρ τὰ ἀκίνητα», φησί, «νοοῦμεν κινούμενοι, οἷον τοὺς πόλους τοῦ κόσμου καὶ τὸ κέντρον τῆς γῆς, καὶ ὁμως οὐκ ἔστι ταῦτα μετὰ κινήσεως». (4) ἐχρῆν γὰρ καὶ ἀκοῦσαι διαρρήδην λέγοντος Ἀριστοτέλους «ἅμα γὰρ κινήσεως αἰσθανόμεθα καὶ χρόνου»· πλείστον δὲ δήπου διαφέρει ἢ διὰ τοῦτο
10 κινήσεώς τι τὸν χρόνον ὑπολαμβάνειν, διότι τῆ τῆς κινήσεως ἐπινοία συνήρηται, ἢ διὰ τοῦτο, ὅτι κινούμενοι νοοῦμεν τὸν χρόνον. ἀλλ' οὗτος μὲν ἐν πολλοῖς τοιοῦτος.

E1a. Simplicius, *In Aristotelis Physicorum libros commentaria* IV.11 (708,22–34 Diels)

(1) εἰ οὖν ὅταν μὲν μηδεμίαν νομίσωμεν εἶναι μεταβολὴν ἀλλ' ἐν τῷ αὐτῷ νῦν ἐστάναι, τότε συμβαίνει μηδὲ χρόνον οἶεσθαι εἶναι, ὅταν δὲ αἰσθώμεθα κινήσεως καὶ πλείω τὰ νῦν ὀρίσωμεν, τὸ μὲν ὡς ἀρχὴν τὸ δὲ ὡς πέρας τὸ μὲν ὡς πρότερον τὸ δὲ ὡς ὕστερον, τότε καὶ τοῦ μεταξὺ χρόνου συναισθανόμεθα, δῆλον ὅτι «οὐκ ἔστιν ἄνευ κινήσεως καὶ
5 μεταβολῆς χρόνος». (2) ἐκ δὲ τῶν ἐνταῦθα ῥηθέντων ὁ θαυμάσιος Γαληνὸς ἐν τῷ ὀγδόῳ τῆς ἑαυτοῦ ἀποδεικτικῆς ὑπονοεῖ λέγειν τὸν Ἀριστοτέλην διὰ τοῦτο μὴ εἶναι χρόνον ἄνευ κινήσεως, ὅτι κινούμενοι νοοῦμεν αὐτόν, καὶ ἐπάγει τι τῷ λόγῳ ἄτοπον ὅτι καὶ τὰ παντάπασιν ἀκίνητα μετὰ κινήσεως ἀνάγκη εἶναι, εἴπερ καὶ τούτων ἢ νόησις ἡμῖν μετὰ κινήσεώς ἐστιν· οὐδὲν γὰρ ἡμεῖς ἀκινήτῳ νοήσει νοοῦμεν. (3) εἶποι δ' ἂν ὅτι οὐδὲ
10 διαστάσεως χωρὶς ἂν εἶη τὰ ἀδιάστατα, εἰ μετὰ διαστάσεως αὐτὰ νοοῦμεν ἡμεῖς τὰ πολλὰ φανταστικῶς ἐνεργοῦντες.

E1, 9 Arist. *Phys.* IV.11, 219a3–4. **E1a, 4–5** Arist. *Phys.* IV.11, 218b33–219a1.

E1a, 7 κινούμενοι Vettori, Kalbfleisch, von Müller (“Über Galens Werk,” p. 469); cf. Simpl. *In Phys.* IV.11 (708,36 Diels) : κινούμενον mss.

Section E: Books VIII–IXa and Related Testimonia

Time

E1. Themistius, *On Aristotle's Physics* IV.11

(1) From everything that has been said it is clear that the perception of time co-sub-sists with the perception of motion, and that it is coupled and completely interwoven with it. (2) It is clear, therefore, that time cannot exist without motion, although not “without motion” in the way that Galen takes it, because we conceive of time while moving (for he understands Aristotle to speak in this sense), but rather because the notion of time is interwoven with the notion of motion. (3) Why then did he contest this in vain by allegedly arguing against it? “For it is also true of motionless things,” he says, “like the poles of the cosmos and the centre of the earth, that we conceive of them while moving, and yet they do not involve motion.” (4) For he should have also heard Aristotle’s explicit statement that “we perceive time simultaneously with motion”. Surely it makes an enormous difference whether we understand time to be something belonging to motion for one reason: because it is interwoven with the notion of motion, or for another: because we conceive of time while moving. But this man is often like this. (C-H)

E1a. Simplicius, *On Aristotle's Physics* IV.11

(1) Suppose, then, that when we believe there is no motion and we have been standing in the same ‘now’, then it follows that we do not believe there is time; but when we perceive motion and distinguish many ‘nows’ (one as the beginning, another as the end, one as earlier, another as later), then we also simultaneously perceive the intervening time. If so, then it is clear that “time does not exist without motion.” (2) Based on what is said here, the marvellous Galen, in the eighth book of his *Apodeictics*, supposes Aristotle is saying that time does not exist without motion because we conceive of time while moving, and he further supplies his argument with something absurd, namely, that even things that are utterly without motion necessarily involve motion, since our conceiving of them involves motion too. For we do not conceive anything with a thought that does not move. (3) He might as well say that things without extension are not unextended, since we often conceive them as involving extension, using our imagination. (C-H)

E1, 8 poles...earth] Cf. E11*, 7. 10 Arist. *Phys.* IV.11, 219a3–4. E1a, 5 Arist. *Phys.* IV.11, 218b33–219a1.

E1b. Ibn Rušd, *In Aristotelis Physica IV*, comm. 97 (248 Jeck)

Non sicut aestimavit Galenus. Galenus enim credidit, quod Aristoteles intendebat, quod nos non comprehendimus tempus, nisi cum movemur, idest, quoniam per imaginationem comprehendimus motum. Et quod hoc est signum, quod tempus non est extra motum. Et cum Galenus aestimavit hoc, contradixit Aristoteli. Et dixit, quod
 5 multotiens comprehendimus res quiescentes et movemur, cum omnis imaginatio sit motus, ut quando comprehendimus polos mundi et centrum.

E1c (dub.). Albertus Magnus, *Physica IV.3* (264,18–25 Hossfeld / 247 Jeck)

Adhuc autem, est obiectio Galieni, quia si tempus non est nisi in caelo per motum caeli, tunc illi qui nihil percipiunt de motu caeli, nihil percipiunt de tempore. Sunt ergo aliqui incarcerati nati sub terrae claustris, qui nunquam motum caeli viderunt nec perceperunt ; illi ergo nihil perceperunt de tempore, quod falsum est, quia percipiunt
 5 tempus per motus animae ; ergo tempus est in anima per motus animae.

E2. Themistius, *In Aristotelis Physica paraphrasis IV.11* (149,4–19 Schenkl)

(1) Γαληνῷ δὲ οὐ προσεκτέον οιομένῳ τὸν χρόνον ἀφορίζεσθαι δι' αὐτοῦ· πολλὰ γὰρ ἐξαριθμησάμενος σημαινόμενα τοῦ προτέρου τε καὶ ὑστέρου τὰ μὲν ἄλλα οὐκ ἐφαρμόζειν φησὶ τῷ ὀρισμῷ, τὸ κατὰ χρόνον δὲ μόνον, ὥστε εἶναι τὸν χρόνον ἀριθμὸν τῆς κινήσεως κατὰ χρόνον. (2) ἀλλ' ἰστέον, ὅτι τὸ πρότερον καὶ τὸ ὑστερον ἐν κινήσει οὐ διὰ
 5 τὸν χρόνον τὸ μὲν πρότερόν ἐστιν, τὸ δὲ ὑστερον, ἀλλὰ αὐτὸ μᾶλλον ποιεῖ τὸ ἐν χρόνῳ πρότερον καὶ ὑστερον, γίνεται δὲ ἐκ τοῦ κατὰ μέγεθος καὶ τὴν θέσιν, παρ' οὗ καὶ τὸ συνεχὲς ἔχει· καὶ τοῦτο διαρρήδη φησὶν Ἀριστοτέλης· « τὸ δὴ πρότερον τε καὶ ὑστερον ἐν τόπῳ πρῶτόν ἐστιν, ἐνταῦθα μὲν τῇ θέσει· ἐπειδὴ δὲ ἐν τῷ μεγέθει, ἀνάγκη καὶ ἐν κινήσει. » (3) ἀλλὰ καὶ δεδόςθω μηδὲ ἄλλο σημαίνειν τὸ πρότερόν τε καὶ ὑστερον ἐν
 10 κινήσει ἢ τὸ κατὰ χρόνον, ὡς οἶεται· τί δὲ ἄτοπον ἐκ τοῦδε συμβαίνει; οὐδὲ γὰρ ἡμεῖς ἄλλο τι λέγομεν εἶναι τὸν χρόνον ἢ τὸ πρότερόν τε καὶ ὑστερον ἐν κινήσει, πᾶσα δὲ ἀνάγκη ταῦτόν σημαίνειν τοὺς ὀρισμοὺς τοῖς ὀνόμασι, ὥστε λανθάνει τοῦτο μεμφόμενος τοῦ λόγου, δι' ὃ μᾶλλον ἐχρῆν αὐτὸν ἀποδέχεσθαι.

E1b. Ibn Rušd, *Long commentary on the Physics IV*, comm. 97

But Galen thought otherwise. For Galen believed that Aristotle meant that we grasp time only insofar as we move, that is to say, inasmuch as we grasp motion through imagination; and that this is a sign that there is no time without motion. And because Galen thought this, he opposed Aristotle, saying that we often grasp things that are at rest while we are moving, since all imagination is motion, for instance when we grasp the poles and center of the cosmos. (H) 5

E1c (dub.). Albertus Magnus, *Physics IV.3.3*

However, Galen objects, if time does not exist unless it is in heaven through the motion of the heaven, then those who perceive no motion of the heaven perceive no time. Now there are people born imprisoned under the confines of the earth, who have never seen or perceived the motion of the heaven; these therefore would have perceived no time, which is false, because they perceive time in virtue of the motion of the soul; therefore time is in the soul in virtue of the motion of the soul. (H) 5

E2. Themistius, *On Aristotle's Physics IV.11*

(1) We should not pay attention to Galen, who believes that time is defined by means of itself. For, having given a long list of meanings of the 'before and after', he says that none of them are well suited to [Aristotle's] definition except the one with respect to time. Therefore, time is the number of motion with respect to time. (2) But, regarding the before and after in motion, we should realize that it is not because of time that one is before and the other after; rather, the [before and after in motion] itself produces the before and after in time, but comes into being from [the before and after] with respect to magnitude and position, from which it also acquires continuity. And Aristotle says this explicitly: "Indeed, the before and after is first of all in place, and there it is in position; but since [there is before and after] in magnitude, necessarily, [there is] also [before and after] in motion". (3) But let us even concede that, as [Galen] believes, the 'before and after' in motion signifies no other than that with respect to time. What absurdity results from it? For we also say that time is nothing other than the before and after in motion. But it is absolutely necessary that definitions signify the same thing as the names. And so, without noticing, he censures the argument for the very thing on account of which he should have rather accepted it. (C-H) 5 10 15

E2, 9–11 Arist. *Phys.* IV.11, 219a14–17.

E2a. Simplicius, *In Aristotelis Physicorum libros commentaria* IV.11 (718,13–719,18 Diels)

(1) ἐπειδὴ δὲ καὶ πρὸς τινὰ τῶν ἐνταῦθα λεγομένων ὁ πολυμαθέστατος ἐνέστη Γαληνὸς λέγων τὸν χρόνον δι' ἑαυτοῦ δηλοῦσθαι, φέρε καὶ ταύτην τὴν ἐνστασιν προβαλλόμεθα· πολλὰ γὰρ ἐξαριθμησάμενος σημαίνόμενα τοῦ προτέρου καὶ ὑστερου τὰ μὲν ἄλλα οὐκ ἐφαρμόζειν φησὶ τῷ ὀρισμῷ, τὸ κατὰ χρόνον δὲ μόνον· ὥστε εἶναι τὸν χρόνον ἀριθμὸν 5 τῆς κινήσεως κατὰ χρόνον. (2) ταύτην δὲ τὴν ἐνστασιν διὰ δεῦν ἐπιχειρημάτων λύειν προθέμενος ὁ Θεμιστιος· « ἰστέον, » φησὶν, « ὅτι τὸ πρότερον καὶ ὑστερον ἐν κινήσει οὐ διὰ τὸν χρόνον τὸ μὲν πρότερον ἐστὶ τὸ δὲ ὑστερον, ἀλλ' αὐτὸ μᾶλλον ποιεῖ τὸ ἐν χρόνῳ πρότερον τε καὶ ὑστερον. γίνεται δὲ ἐκ τοῦ κατὰ μέγεθος καὶ τὴν θέσιν, παρ' οὗ καὶ τὸ συνεχὲς ἔχει. καὶ διὰ τοῦτο διαρρήδη φησὶν Ἀριστοτέλης· « τὸ δὴ πρότερον τε καὶ 10 ὑστερον ἐν τόπῳ πρῶτόν ἐστιν. ἐνταῦθα μὲν δὴ τῇ θέσει, ἐπειδὴ δὲ ἐν τῷ μεγέθει, ἀνάγκη καὶ ἐν κινήσει. » (3) πρὸς δὴ ταῦτα εἶποι ἂν ὁ Γαληνός, ὅτι τὸ ἐν τῇ κινήσει πρότερον καὶ ὑστερον τὸ ἀκολουθοῦν τῷ ἐν τῷ μεγέθει ἐφ' οὗ ἡ κίνησις προτέρῳ καὶ ὑστερῷ κατὰ τὴν θέσιν μάλιστα ἐστὶ· τοιοῦτον γὰρ ἦν καὶ τὸ ἐν τῷ μεγέθει πρότερον καὶ ὑστερον· ἄλλο δὲ τὸ κατὰ τὸν χρόνον, ὡς εἴρηται, πρότερον (καὶ ὑστερον), 15 συνυπάρχον μὲν τῷ ἐν τῇ κινήσει προτέρῳ καὶ ὑστερῷ, οὐ κατὰ τὴν θέσιν δὲ τὸ πρότερον καὶ ὑστερον ἔχον, ἀλλὰ κατὰ τὴν τοῦ εἶναι παράτασιν, ἄλλο τοῦτο ὄν παρὰ τὸ κατὰ τὴν θέσιν τὴν ἀπὸ τοῦ μεγέθους ἐγγενομένην τῇ κινήσει. (4) δευτέραν δὲ λύσιν ἐπάγων φησὶν· « ἀλλὰ καὶ δεδόσθω μηδὲν ἄλλο σημαίνειν τὸ πρότερον τε καὶ ὑστερον (ἐν κινήσει) ἢ τὸ κατὰ χρόνον, ὡς οἶεται. τί οὖν ἄτοπον ἐκ τοῦδε συμβαίνει; οὐδὲ γὰρ ἡμεῖς 20 ἄλλο τι λέγομεν εἶναι τὸν χρόνον ἢ τὸ πρότερον τε καὶ ὑστερον ἐν κινήσει· πᾶσα δὲ ἀνάγκη ταῦτόν σημαίνειν τοὺς ὀρισμοὺς τοῖς ὀνόμασιν. ὥστε λανθάνει τοῦτο μεμφόμενος τοῦ λόγου, δι' ὃ μᾶλλον ἔχρησεν αὐτόν ἀποδέχεσθαι. » (5) καὶ πρὸς τοῦτο δὲ ἂν ὁ Γαληνός εἶποι, ὅτι εἰ μὲν ἐν ἦν τὸ ἐν τῇ κινήσει πρότερον καὶ ὑστερον τῷ κατὰ τὸν χρόνον, καλῶς ἂν ἐλέγετο τοῦτο εἶναι χρόνος τὸ ἐν τῇ κινήσει πρότερον καὶ ὑστερον, 25 καὶ οὐκ ἂν ἦν δι' ἑαυτοῦ δεικνύμενος ὁ χρόνος· εἰ δὲ ἄλλο μὲν τὸ κατὰ τὴν θέσιν οὐκ ὄν χρονικόν, ἄλλο δὲ τὸ κατὰ τὸν χρόνον, ἀνάγκη λέγειν, ὅτι χρόνος ἐστὶ τὸ ἐν τῇ κινήσει πρότερον καὶ ὑστερον τὸ κατὰ τὸν χρόνον. (6) μήποτε οὖν, εἴ τις τὸ πρότερον καὶ ὑστερον λάβῃ τὸ κατὰ τὴν τοῦ εἶναι παράτασιν, ἀλλ' οὐ τὸ κατὰ τὴν θέσιν, καὶ σημαίνεται ὁ χρόνος καὶ οὐ δι' ἑαυτοῦ σημαίνεται. καὶ τὸ ὄνομα αὐτοῦ (οὐ) τῷ προτέρῳ καὶ 30 ὑστερῷ ἀπλῶς τὸ αὐτὸ ἔσται, ἀλλὰ τῷ τοιῷδε προτέρῳ καὶ ὑστερῷ, ὅπερ ἐστὶν ὁ ὀρισμός.

E2a, 3–5 Cf. 2, 1–4. **6–11** Cf. 2, 4–9. **17** ἐπάγων] Sc. ὁ Θεμιστιος, cf. 2, 9–13. **30** τοιῷδε] Sc. τῷ κατὰ τὴν τοῦ εἶναι παράτασιν.

E2a, 14 καὶ ὑστερον *add.* Havrda **18–19** ἐν κινήσει *add.* Havrda *ex Themistio* (E2, 9–10) **29** οὐ² *add.* Diels (post ὑστερῷ *add.* Aldina)

E2a. *Simplicius, On Aristotle's Physics IV.11*

(1) However, since Galen, a man of exceptional learning, objected also to some of the things said in this passage, arguing that time is elucidated by means of itself, let us put forward this objection as well. For, having given a long list of meanings of the 'before and after', he says that none of them are well suited to [Aristotle's] definition except the one with respect to time. Therefore, time is the number of motion with respect to time. (2) Themistius proposes to solve this objection with two arguments. He says: "But, regarding the before and after in motion, we should realize that it is not because of time that one is before and the other after; rather, the [before and after in motion] itself produces the before and after in time, but comes into being from [the before and after] with respect to magnitude and position, from which it also acquires continuity. And Aristotle says this explicitly: "Indeed, the before and after is first of all in place, and there it is in position; but since [there is before and after] in magnitude, necessarily, [there is] also [before and after] in motion." (3) Galen would respond to this by saying that the before and after in motion, which follows the before and after in the magnitude whose motion it is, is especially the one with respect to position. For such was also the before and after in magnitude. But the before (and after) with respect to time is different, as has been said, co-existing as it does with the before and after in motion, but rather than having the before and after with respect to position, [it has before and after] with respect to the duration of its being. And this is different from the before and after with respect to the position engendered by the magnitude which came to be in motion. (4) Adducing the second solution, he says: "But let us even concede that, as [Galen] believes, the 'before and after' in motion signifies no other than that with respect to time. What absurdity results from it? For we also say that time is nothing other than the before and after in motion. But it is absolutely necessary that definitions signify the same thing as the names. And so, without noticing, he censures the argument for the very thing on account of which he should have rather accepted it." (5) But to this, Galen would also respond that, if the before and after in motion were one and the same as the before and after with respect to time, then it would be rightly said that time is this, namely, the before and after in motion, and time would not be shown by means of itself. But if there is a difference between the before and after with respect to position, which is not temporal, and the one with respect to time, then it is necessary to say that time is the before and after in motion with respect to time. (6) Perhaps, then, if one takes the 'before and after' with respect to the duration of being, but not with respect to position, then time will be signified and not signified by means of itself. And its name will not be the same as the 'before and after' without qualification, but as the 'before and after' qualified in this way, which is its definition. (C-H)

E2a, 2 in this passage] I.e., Arist. *Phys.* IV.11, 219a14–b2. 3–6 Cf. E2, 2–4. 6–13 Cf. E2, 4–11. 11–13 Arist. *Phys.* IV.11, 219a14–17. 15 such] I.e., with respect to position. 21 he] I.e., Themistius. 21–27 Cf. E2, 11–16. 36 in this way] Namely, with respect to the duration of being.

E3. Ibn Abī Saʿīd al-Mawṣilī, in Yaḥyā ibn ʿAdī, *Philosophical treatises* (318,6–319,3 Khalifat)

وَعَرَفَنِي أَيْضاً هَل تَرَى أَنَّ الزَّمَانَ تَابِعَ لِلْحَرَكَةِ ضَرُورَةً حَتَّى أَنَّهُ لَا يُمْكِنُ أَنْ يَكُونَ زَمَانٌ إِلَّا بِحَرَكَةٍ، وَهِيَ سَبَبٌ وَجُودِهِ؟ فَإِنَّ أَرَسُطُوطَالِيَسَ هَكَذَا يَرَى، أَوْ تَرَى أَنَّ الزَّمَانَ لَهُ طَبِيعَةٌ مَوْجُودَةٌ، وَهُوَ جَوْهَرٌ قَائِمٌ بِنَفْسِهِ، وَإِنَّمَا الْحَرَكَةُ تَمْسُحُهُ وَتَقْدِرُهُ، كَمَا يَمْسُحُ الْمَاسِحُ الْأَرْضَ بِالذَّرَاعِ؟ فَإِنَّ جَالِينُوسَ قَدْ حَكَى عَنْهُ الْإِسْكَانْدَرُ - فِي الْمَقَالَةِ الَّتِي نَاقَضَهُ فِيهَا فِي أَمْرِ الْمَكَانِ وَالزَّمَانِ - أَنَّهُ يَرَى هَذَا الرَّأْيَ، وَرَدَّ ذَلِكَ عَلَيْهِ الْإِسْكَانْدَرُ. وَذَلِكَ أَنَّ جَالِينُوسَ يَرَى أَنَّ الزَّمَانَ قَائِمٌ 5 بِنَفْسِهِ لَيْسَ يَحْتَاجُ فِي وَجُودِهِ إِلَى الْحَرَكَةِ، وَيَقُولُ إِنَّ فَلَاطِينَ عَلَى مِثْلِ رَأْيِهِ فِي ذَلِكَ، أَعْنِي أَنَّهُ كَانَ يَرَى أَنَّ الزَّمَانَ جَوْهَرٌ - يَرِيدُ بِذَلِكَ الْمُدَّةَ - وَإِنَّمَا الْحَرَكَةُ تَمْسُحُهَا وَتَقْدِرُهَا، فَقَالَ جَالِينُوسُ: إِنَّهُ لَيْسَ إِنَّمَا تَعْمَلُ لَنَا الْحَرَكَةُ زَمَانًا، بَلْ إِنَّمَا تَعْمَلُ لَنَا يَوْمًا وَشَهْرًا وَسَنَةً، فَأَمَّا الزَّمَانُ فَهُوَ مَوْجُودٌ بِنَفْسِهِ، وَهُوَ <بِال>عَرَضِ تَابِعٌ لَهَا.

E4. Ibn Bāḡḡa, *Commentary on Aristotle's Physics* (694,13–19 Lettinck)

وَمِنَ النَّاسِ مَنْ رَأَى أَنَّ الزَّمَانَ أَمْرٌ إِلهِي كَمَا يَقُولُ جَالِينُوسُ إِنَّهُ يَنْبَغِي أَنْ يُكْتَفَى مِنْ مَعْرِفَتِهِ بِمَا يَعْرِفُهُ النَّاسُ وَأَنَّ جَوْهَرَهُ يَفُوتُ الْعَقْلَ. وَإِذَا تَأَمَّلْتَ مَا قَالَهُ فِي الزَّمَانِ فِي هَذَا الْفَصْلِ ظَهَرَ أَنَّ هَذَا ذَهَبَ عَلَيْهِ أَنَّ يَعْقِلُ هُوَ تَصَوُّرُ شَيْءٍ مِنْ أَنْوَاعِ الْمَوْجُودَاتِ وَالْأَمْرِ فِي نَظَرِ جَالِينُوسَ فِي هَذِهِ الْأُمُورِ عَلَى مَا يَقُولُهُ الْإِسْكَانْدَرُ إِنَّهُ يَتَكَلَّمُ فِي أُمُورٍ وَلَا يَشْعُرُ أَنَّهُ لَا يَتَكَلَّمُ فِيهَا لَا يَتَكَلَّمُ 5 فِيهِ فِي السَّرِّ مِنْ نَفْسِهِ.

Related Testimonia

E3. Ibn Abī Saʿīd al-Mawṣilī, in Yaḥyā ibn ʿAdī, *Philosophical treatises*

Also, let me know whether you hold that time necessarily depends on motion, such that there can be no time except through motion, and the latter is the cause of the former's existence. For Aristotle does hold this. Or, do you rather hold that time has an existent nature [of its own], and is a substance subsisting through itself, which motion merely measures and determines, the way a surveyor measures the earth with a cubit? 5 For according to the testimony of Alexander in his treatise refuting Galen on the subject of place and time, Galen held this opinion, but Alexander refuted him on this point. For Galen held that time is subsistent through itself and has no need for motion in its existence, and he said that Plato was of the same opinion on this topic, that is, that he held that time is a substance, by which he meant duration, and motion merely 10 measures and determines it. So Galen says that motion does not produce time for us, but rather produces only day, month, and year for us. Time, though, is existent in itself, and it is related to [motion] accidentally. (Adamson-Ko)

E4. Ibn Bāḡḡa, *Commentary on the Physics*

Some people hold that time is something divine. For instance Galen says that one must content oneself with what people know about it, and that its substance eludes the mind. If you consider what he says about time in this section, it is obvious that he fails to understand [time], conceiving it as some thing or other among the types of existents. Galen's situation in this case is as Alexander says: that he speaks of things without 5 realizing that he is not saying anything about them. (Adamson)

E3, 6–7 For Alexander's treatise cf. Ibn al-Nadīm, *Kitāb al-Fihrist* 7.1 (253 Flügel); see above, p. 5. For the context of E3, see above, p. 12. 8–9 time...existence] Cf. G6, 6–7 and G7, 5, referring to *Dem.* XIII. For the view that the present testimonium pertains to *Dem.* VIII, however, see above, p. 54. 10–11 Cf. G6, 3–4. 10 he²] I.e., Plato. 13 accidentally] The text in Khalifat's edition would translate: "and it is an accident consequent upon [motion]" (*wa huwa ʿaraḍ ṭābiʿ lahā*). This, however, contradicts what precedes immediately. Therefore, a modification is necessary. Pines, "A Tenth-Century Philosophical Correspondence," p. 112, followed by Sharples, "Alexander of Aphodisias, *On Time*", p. 73, Sorabji, *Time, Creation and the Continuum*, p. 82, and Adamson, "Galen and Rāzī on Time", p. 5, added a negation, so that the text reads: "Time, though, is existent in itself, and is *not* an accident dependent upon [motion]". This makes sense of course, but the construction of the sentence in Arabic is clumsy. Therefore we follow a different reading based on an emendation proposed by M. Rashed, "Alexandre d'Aphrodise et la *Magna Quaestio*", p. 325 (reprinted in Rashed, *L'héritage aristotélicien*, p. 115). According to Rashed, the sentence results in the Newtonian distinction between absolute time (that exists in itself) and relative time, produced by motion. E4, 5 Alexander] Probably in the (lost) *Against Galen about place and time*; see E3, 6–7. For commentary, see above, p. 56.

E5. Abū al-'Alā' ibn Zuhr, *Solution to the Doubts about Galen* 14.3, MS Riḍawī 13997 (fol 13b, ll. 18–23 Koetschet–Rajab)

قال أبو العلاء بن زهر: قد يثبت في تقصي الشكّ الأول من كتاب الشكوك أنّ جالينوس إنما يبيّن كلامه في هذا الكتاب أعني كتاب البرهان على مذهب الفلاسفة المنطقيين، فيما تجد له آلهً يمتحن بها وجه الصواب فيه كما فعل في ازدواج القضايا في التاسعة، إذ بيّن خطأ أرسطاطاليس بياناً لا شكّ فيه، وفي مواضع آخر كثيرة مما بان له فيه وجه الصواب بياناً لا شكّ فيه.

5

E6. Themistius, *In Aristotelis Physica paraphrasis* IV.4 (114,7–115,12 Schenkl)

(1) «Ἄλλ' ὑποθώμεθα ἔξαιρεθέντος τοῦ ὕδατος μηδὲν ἕτερον εἰσρυῆναι σώμα· μένει τοῖνυν μεταξύ τῆς ἐπιφανείας διάστημα κεχωρισμένον.» (2) ἀλλ' ἄλογος ἢ ὑπόθεσις, ὧ σοφώτατε Γαληνέ· αὐτὸ γὰρ ὑποτίθεται ὁ ζητούμεν· ζητούντων γὰρ ἡμῶν εἰ δύναται εἶναι διάστημα κεχωρισμένον, πλάττεις σεαυτῷ καὶ ἀναζωγραφεῖς ὁ βούλει εἶναι 5 διάστημα κεχωρισμένον, οὐχ ὅτι ὑπάρχει δεικνύς. (3) ὅλως δὲ οὐδὲ δυνατὸν ἐννοεῖς· τὸ γὰρ ἀναιρεῖν τὴν ἀντιμετάστασιν τῶν σωμάτων τοῦ παντάπασιν ἀναιρεῖν σώμα οὐδὲν διαφέρει, οὐδὲ δὴ τὸ λέγειν, ὡς εἴ τις ὑποθοῖτο μήτε οὐρανὸν ἔσσεσθαι ποτε μήτε γῆν μήτε ἄλλο τι τῶν νῦν ὑπαρχόντων σωμάτων, ἀλλὰ μηδὲ ἕτερον ἂν τούτων γενέσθαι σώμα· καὶ γὰρ οὕτως μόνον καταλιπεῖν βουλήσεται διάστημα, ἐν ᾧ τὰ σώματα νῦν ἐστι, 10 τῆνικαῦτα δὲ οὐκ ἔσται. (4) ἀλλ' οὔτε τοῦτο δυνατὸν οὔτε ὁ βούλεται ὁ Γαληνός· διάστημα γὰρ ἄνευ σώματος ἀμήχανον ὑποστήναι ποτε, ἀλλὰ θᾶπτον ἂν ὁ χαλκὸς συμπέσοι τῆς κοίλης ἐπιφανείας ἢ δίχα σώματος μείνειεν· τὸ γὰρ κενὸν ὅτι κενὸν ὄντως ἐστίν, εὐθὺς ἐπιδειχθήσεται. (5) τί δὲ δήποτε; ἐπὶ μὲν τοῦ τοίχου οὐκ ἂν ὑπολάβοις, ὅτι οὐ δύναται ποτε αὐτοῦ μηδὲν σώμα ἄπτεσθαι παντελῶς, εἶγε μὴ τὸ κενὸν οὕτως προσεί- 15 σθε, ἐπὶ δὲ τοῦ κρατήρος οὐκέτι; καὶ γὰρ τούτου παραπλησίως ἀεὶ τι ἄπτεται, ἢ διαφορὰ δὲ ἐν τῷ σχήματι μόνον ἐστί. (6) «πῶς οὖν,» φησίν, «ἐπινοοῦμεν τὸ διάστημα ὡς ἄλλο τι τῶν σωμάτων;» (7) πῶς δὲ λευκότητα, πῶς δὲ μελανίαν; ἕκαστον γὰρ τούτων

E6, 1–2 Ἄλλ' ... κεχωρισμένον] Cf. Arist. Phys. IV.4, 211b14–19.

E5, 3 ازدواج] MS Riḍawī

Book IXa

E5. Abū al-‘Alā’ ibn Zuhr, *Solution to the Doubts about Galen*

It has been established, when examining the first doubt of the *Doubts*, that Galen based his discussion in this book – I mean *On demonstration* – solely on the teachings of the logician philosophers concerning that for which there is a clear tool, by which we can examine what is correct. This is how he proceeded with regard to the conjunction of propositions in the ninth [book], since [there] he very clearly, beyond any doubt, 5 showed Aristotle's error, as well as in many other places, where it became very clear to him, beyond any doubt, what is correct. (Ko [C-H])

Further Testimonia on Issues in Aristotle's *Physics*

Place

E6. Themistius, *On Aristotle's Physics* IV.4

(1) “But let us suppose that when water is removed, no other body flows in. There remains, therefore, separate extension in between the surface.” (2) But the supposition is unreasonable, most wise Galen, for it supposes that which we are seeking for. For while we are seeking whether it is possible for a separate extension to exist, you mould and picture to yourself what you want to be separate extension, without showing that it exists. (3) But what you conceive of is not even possible at all. For doing away with the mutual replacement of bodies differs in no way from doing away with body completely, nor even in speech, as if someone were to suppose that neither heaven, nor earth, nor any of the other bodies now existing will exist at some point in the future, but no body other than them will come into existence. For indeed, in this way the only thing he will want to remain will be the extension in which bodies now exist, but will no longer exist at that point. (4) But this is neither possible nor what Galen wants. For there is no way that extension can exist at some point without body; rather, the bronze of the hollow surface would sooner collapse than remain apart from body. For that the void is really void will be shown presently. (5) What then? In the case of a wall, you would not assume that a body is incapable of ever coming into complete contact with it (unless you thus admit the void), but no longer assume it in the case of a jar? For in this case too, something is likewise always in contact with it, and the difference is only in the shape. (6) “How come, then,” he says, “that we conceive of extension as something 5 10 15

E5, 1–4 Cf. C 11,7–14. 3 tool] Cf. Galen, *Opt. doct.* 4.3 (104,9–10 Barigazzi / 1.50 K), on “the tools and criteria” (ὄργανά τε καὶ κριτήρια) for assessing arguments. 4 conjunction] *izdiwāğ* translates the Greek συζυγία, referring to the pairs of premisses in categorical syllogisms. Cf. Galen, *Inst. log.* 11.2. E6, 1–2 Probably an objection against Arist. *Phys.* IV.4, 211b14–19.

ἀφαιροῦντες τοῦ σώματος καθ' αὐτὸ νοοῦμεν, οὐχ ὡς καθ' αὐτὸ ὑφεστῶς καὶ τοῦ
 σώματος κεχωρισμένον, ἀλλὰ τῷ λόγῳ μόνον χωρίζοντες. (8) ἐπεὶ γὰρ μὴ ταῦτο τῷδε τῷ
 20 ὕδατι τοσοῦτόν τι διεστάναι καὶ ὕδατι εἶναι, ὁμοίως καὶ τῷ οἴνῳ, ὁμοίως καὶ τῷ ἀέρι,
 ἀφαιροῦντες τῷ νῶ τὰς ποιότητας, καθ' ἃς τὸ μὲν ὕδωρ, τὸ δὲ οἴνός ἐστιν, τὸ δὲ ἀήρ,
 οὕτω νοοῦμεν τὸ διάστημα μόνον καθ' ἑαυτό. (9) εἴτα ἐπειδὴ συμβαίνει τὰ τρία σώματα
 ἐν τῷ αὐτῷ παρὰ μέρος ἀγγεῖω γίνεσθαι, ἃ ταῖς μὲν ἄλλαις ποιότησι διαφέρει, ἴσα δὲ
 ἐστὶ τῷ διαστήματι αὐτῷ, καὶ μᾶλλον ὑπονοοῦμεν ἄλλο τι εἶναι τὸ διάστημα παρὰ τὰ
 25 σώματα ὁρῶντες ὅτι εἰσρυεῖς ὁ ἀήρ μετὰ τὸν οἴνον τὰς μὲν ἄλλας ποιότητας οὐκ ἔχει
 τοῦ οἴνου, τὸ διάστημα δὲ μόνον ταῦτο φυλάττει τῷ οἴνῳ· καὶ ἐπειδὴ κατὰ μὲν τὰς
 ἄλλας ποιότητας οὐκ ἔστιν ἐν τόπῳ τὰ σώματα οἷον θερμότητα ἢ ψυχρότητα, κατὰ δὲ τὸ
 διάστημα μόνον, οὕτω τὸ διάστημα τὸν τόπον ὑπολαμβάνομεν, οὐ καλῶς· οὐ γὰρ εἰ
 κατὰ διάστημα ἔστιν ἐν τόπῳ, ὁ τόπος ἐστὶ τὸ διάστημα ἢ καὶ ἡ κίνησις ἐστὶν ὁρμή,
 30 ἐπειδὴ κινούμεθα καθ' ὁρμήν. (10) τὰ μὲν οὖν αἴτια τῆς πλάνης τοῖς ἐπὶ ταύτην ἐλθοῦσιν
 τὴν δόξαν ταυτά ἐστιν.

E6a. Simplicius, *In Aristotelis Physicorum libros commentaria* IV.4 (573,19–29 Diels)

(1) « ἀλλ' ὑποθώμεθα, » φησὶν ὁ Γαληνός, « ἔξαιρεθέντος τοῦ ὕδατος ἐκ τοῦ κεράμου
 μηδὲν ἕτερον εἰσρῆναι σῶμα· μένει τοίνυν τὸ μεταξὺ τῆς ἐπιφανείας τοῦ ἀγγεῖου
 διάστημα κεχωρισμένον. » (2) ἀλλὰ ἄλογος ἢ ὑπόθεσις· τὸ γὰρ ζητούμενον ὑποτίθεται·
 5 ζητούντων γὰρ ἡμῶν εἰ δύναται εἶναι διάστημα κεχωρισμένον, ὑποτίθεται εἶναι διάστη-
 μα κεχωρισμένον, οὐχ ὅτι ἔστι δεικνύς, ἀλλ' ἑαυτῷ πλάττων καὶ ἀναζωγραφῶν. (3) ὄλως
 δὲ ἀδύνατα ὑποτίθεται ὁ ταῦτα λέγων· ὡς γὰρ ἀδύνατον σώματος ὄντος μὴ εἶναι
 διάστημα, οὕτως ἀδύνατον διαστήματος ὄντος μὴ εἶναι σῶμα· τὸ γὰρ διάστημα ἐν
 τούτῳ. διὸ καὶ ὁ ὑποτιθέμενος μὴ εἶναι μὲν σῶμα ἐν τῷ ἀγγεῖῳ, εἶναι δὲ ἐν αὐτῷ
 διάστημα ὑποτίθεται καὶ μὴ εἶναι σῶμα ἐν αὐτῷ καὶ εἶναι.

E7. Ḡābir ibn Ḥayyān, *The book of research* (517 Kraus)

وأما القائلون بأن الحركتين يتقابلان لأنّ الفلك الأثير أيضاً يتحرك فإن هذا غلط عظيم. وأول
 من ابتدع هذا الشكّ وحير الناس فيه جالينوس وردّ على أرسطاطاليس في مواضع من كتبه

other than bodies?” (7) How come that we conceive of whiteness or darkness in this way? For, by abstracting each of these from the body, we conceive it in itself, not as existing in itself and separate from the body, but separating it only by reason. (8) For since what it is for water to exist is not the same as what it is for water to be extended a certain amount, and likewise for wine and likewise for air, when we abstract with the mind the qualities according to which one thing is water, another wine, another air, in this way we conceive the extension alone in itself. (9) Then, when it happens that three bodies, which differ in their other qualities but are equal in extension, come to be in the same vessel one after the other, then we suspect even more that extension is something else besides these bodies. For we observe that the air that flowed into the vessel after wine does not have any other qualities of the wine but retains only the same extension as the wine. And since bodies are not in place by any other qualities, like hot and cold, but only by extension, so we assume – incorrectly – that place is extension. For it does not follow that if something is in place by extension, then place is extension, just as it is not the case that motion is impulse, because we move by impulse. (10) The reasons for the error of those who came to this opinion are the same. (C-H)

E6a. Simplicius, *On Aristotle's Physics IV.4*

(1) “But let us suppose,” Galen says, “that when water is removed from the jar, no other body flows in. There remains, therefore, separate extension in between the surface.” (2) But the supposition is unreasonable: it supposes the thing sought. For while we are seeking whether it is possible for a separate extension to exist, he supposes that separate extension exists, without showing that it exists, but moulding and picturing it to himself. (3) But one who says this supposes something entirely impossible. Just as it is impossible for extension not to exist when body exists, so it is impossible for body not to exist when extension exists. For extension is in body. And for this reason, too, by supposing that there is no body in the vessel but that there is extension in it, he supposes both that there is and that there is not a body in the vessel. (C-H)

The First Mover

E7. Ġābir ibn Ḥayyān, *The book of research*

As for those who say that these two movements are opposed to each other and that for this reason the aetherial sphere also moves, there is a large error. The first to introduce this objection and mislead people by it was Galen who refuted Aristotle in many places

E7, 1 these two movements] I.e., the planetary movement from west to east and the diurnal movement from east to west.

وفي كتابه في المحرّك الأول وفي كتابه في البرهان، وذلك أنّي أعتقد في جالينوس أنه ما علم ما قال البتّة في هذه المواضع والشكوك. وأقول: إن ذلك إنما اعترض جالينوس من قبل أنّ المحرّك الأوّل لا بدّ أن يكون متحركاً إذا حرّك ما حرّكه، وقد قلنا مراراً كثيرة أنّ هذا يجزّ 5 ويقود إلى وجود ما لا نهاية له بالفعل، وهذا خلف لا يمكن.

E8. Ḡābir ibn Ḥayyān, *The book of research* (521 Kraus)

وقد ردّ هذه جالينوس في هذا وقال فيه وقدّر أنه أتى بفائدة حيث أخذ يشرح في كتابه في البرهان أنّ الفلك حيّ بأن له حركة النقلة، وأخذ في هذا أن يقول: إنّ الفلك يتحرّك إلى الوجوه الستة من اليمين والشمال والأمام والخلف وسائر الباقيّة وذهب عنه أنه لا يحتاج إلى ذلك في إثبات الحياة للفلك إذ ثبت له أنه منتقل بذاته ومن ذاته وإن لم ينتقل إلا دوراً، وذلك أنه ليس لأن الجسم ينتقل إلى الوجوه الستة وفيها ما كان حيّاً لأن الموات أيضاً قد يمكن أن يتحرّك إلى هذه 5 الوجوه كلها، وإنما الحيّ المنتقل بذاته في الجهات الستّ كان أو في بعضها. ولكن أعاليط هذا الرجل كثيرة في جميع كتبه.

E9*. Alexander of Aphrodisias, *On time* 5 (20,3–11 Badawī)

(1) فأما من زعم أنّ الزمان ليس هو جميع ذلك، ولا عدد حركة الفلك، فإنهم زعموا أنه واحد يلقي الأشياء، فقالوا: لأننا لو توهمنا الفلك واقفاً لكان وقوفه في زمان، وإذا كان وقوفه في زمان فحركته في زمان؛ وإذا كانت حركته في زمان فما تبع حركته من عددها في زمان. (2) وليس ما قالوا حقاً، لأنّ لو توهمنا الفلك واقفاً لبطل الزمان، (3) وإذا الزمان موجود - وهو

E9* 3 Omitted from the Latin. — زمان 3

in his works, [notably] in his book *On the first mover* and in his book *On demonstration*. Now, I have become convinced that Galen did not know what he was talking about at all in these passages [by expressing] such doubts. And I say: this objection was formulated by Galen because according to him the first mover, in moving what it moves, should necessarily be endowed with a movement of its own. Yet we have repeatedly stated that this would drive and lead us to admit the existence of an actual infinity, which would be an inadmissible contradiction. (Ko [C-H])

E8. Ġābir ibn Ḥayyān, *The book of research*

[The theory that the first mover is unmoved] was refuted by Galen. He discussed this and alleged to make a useful contribution [to this problem] when, in the book *On demonstration*, he began to explain that the sphere is alive because it possesses the movement of locomotion. And he began to declare that the sphere moves in all six directions, namely to the right, to the left, forward, backward and in the other [directions]. It escaped him, however, that there is no need for this argument to affirm that the sphere is alive, as long as it is established that it is moved in itself and by itself and that it is only moved in a circular manner. For it is not because it moves in all six directions that the body must be considered alive. For a dead [body] can equally be moved in these six directions. A living [body] is one that moves itself, whether in all six directions or only in some of them. However, the errors of this man [i.e., Galen] are frequent in all his works. (Ko [C-H])

Presumed Testimonia

E9*. Alexander of Aphrodisias, *On time* 5

(1) Some however think that time is not any of these, nor is it the number of the motion of the heavenly sphere; they think it is one [thing] that encounters [other] things. For they say that if we were to think of the sphere standing still, its standing still would be in time; and since its standing still would be in time, its motion would be in time; and if its motion is in time, the number that follows its motion is in time too. (2) What they say is not true; for if we were to think of the sphere standing still, time would be abolished. (3) And if time exists and is the number of the motion of the sphere, what

4 On the first mover] This treatise was translated into Arabic by Ḥunayn under the title *That the first mover is unmoved* (*Kitāb fī anna al-muḥarrrik al-awwal lā yataḥarrak*). See Ḥunayn ibn Ishāq, *Epistle on what was translated* 125 (51 Bergsträsser). It is lost both in Greek and in Arabic but fragments can be found in the Arabic translation of Alexander's polemic against Galen regarding the first mover (see Rescher and Marmura, *The Refutation by Alexander of Aphrodisias*). These fragments do not contain any discussion about the movement of the ninth sphere. **E8, 1** When discussing the Aristotelian doctrine of the first mover, Ġābir refers to Galen's thesis which attributes movement to the first mover, interpreted by Ġābir as the ninth sphere or aether.

- 5 الذي هو عدد حركة الفلك، فما يضرّ من الوهم بخلاف ذلك، فقد تتوهم كرة القمر ماسّة لكرة الأرض، ولا يضرّ ذلك في كونه وجوهه عالياً عليها ومبايناً لها. (4) ويسألون عن ماهية الزمان ولأي شيء صار زماناً، بل ما البرهان على آنيته؟ وهلا توهم ورآه زمان آخر هو غيره؟

E10*. Alexander of Aphrodisias, *On time* 17 (22,4–8 Badawī)

فإن عَرَضَ شكٌّ لبعض الناظرين وقال: كيف يعدّ الزمان الحركة، وليست من جنسه؟ قلنا: إن الزمان قد يعد الحركة وإن لم تكن الحركة من جنسه، كما يعد الذراع الخشبية وإن لم تكن الخشبية من جنسه. ونقول إنّ الزمان قد يعدّ كل حركة من نشوءٍ وبلاءٍ وتغيّرٍ، فإن تلك الحركات كلها تعدّ، لا لأنها نشوء وبلاء وتغيّر.

E11*. Alexander of Aphrodisias, *On time* 23 (23,5–11 Badawī)

- وليس ينبغي أن يتوهم علينا متوهم إذا قلنا إنّ الزمان عدد سكون كما أنه عدد حركة، إذ يجب علينا أن نقول إنّ قطر الكل ساكن، وإنّ المراكز ساكنة فيجب أن تكون في زمان؛ فلسنا نزعم أن كل ما ليس بمتحرك هو في زمان، إذ كان السكون عندنا ليس هو الذي <لم> يتحرك قط ولا يتحرك، بل هو الذي له بطبيعته أن يتحرك. إنما عرض له أن يسكن وهو الذي قلنا ها هنا < > وإذ كانت الأقطاب والمراكز نقول إنها لا تتحرك، فليس نقول إنها ساكنة لأنه ليس في طبعها التحرك؛ فليس يجب إذن أن تكون في زمان.

E11*, 3–4 [إذ – يتحرك، ed. Badawī] We follow the emendation by F. Zimmermann; see Sharples, “Alexander of Aphrodisias, *On Time*”, p. 65. Without this emendation, the sentence would read: “... for rest is not only [the state of] that which might move but does not move.”

إن – **E10***, 2 [وجهه] ed. Badawī وجوهه. Lat. *in esse suo*. ed. Badawī [كونه] **E10***, 6 [لأنها] ed. Badawī إلا [لا] ed. Badawī [بلى] وبلى [وبلاء] **3** [جنسه] Omitted from the Latin. **4** فقط [قط] **E11***, 3 [بلى] وبلى. Our emendation is based on the Latin: *non per hoc quod ipsi sunt*. **E11***, 3 [بلى] وبلاء. The passage is corrupted in Arabic. Lat. *et hoc est illud quod diximus illic expellens hanc ambiguitatem*.

harm does it do to think of it in another way? For if the globe of the Moon was thought of as touching the globe of the Earth, that would not do any harm to its existence and its substance and to the fact that it is above the Earth and that they are separated from one another. (4) And they ask about what time is, and what made it to be time, and even more, what demonstration there is of its essence, and whether it is not to be thought that there is some other time existing after it. (Sharples-Ko) 10

E10*. Alexander of Aphrodisias, *On time* 17

But if some, considering these things, have felt doubt, asking how time numbers motion, since it is not in the same genus as it, we say that time numbers motion even though motion is not in the same genus, just as the cubit measures the wood, even though the wood is not in the same genus. In this way time numbers every motion, of growth and of ageing and of change; for all these motions are numbered, but not in so far as they are growth and ageing and change. (Sharples-Ko) 5

E11*. Alexander of Aphrodisias, *On time* 23

No one should think that, when we say that time is the number of rest just as it is of motion, then it is necessary for us to say that the diameter of the whole is at rest and that the centres are at rest, and so it is necessary for [them] to be in time. For we do not claim that whatever does not move is in time, since rest according to us is not [the state] of what has never moved and never will ; rather, it is [the state of] that which has in its nature to move and it is at rest only accidentally. This is what we said there (to remove this uncertainty). And when we say of the poles and of the centres that they do not move, we do not say that they are at rest; because it is not in their nature to move. So it is not necessary for them to be in time. (Sharples-Ko) 5

E10*, 5–6 not...change] Here the Latin version reads “*non per hoc quod ipsi sunt augmentum et vetustas et mutacio*” (ed. Thery, in *Autour du décret de 1210*, p. 95). Sharples translates by “but not *qua* growth or ageing and change”. This version is close to Aristotle’s argument in *Phys.* IV.14, 223a29–224a2. **E11***, 5–6 rather...accidentally] Arist. *Phys.* IV.12, 221b12.

F1. Ibn al-Ṣalāḥ, *On the fourth figure of the categorical syllogism* (76 Rescher)

وكذلك وجدنا جالينوس فعل في المقالة التاسعة من كتاب البرهان فإنه قسم الأشكال الحملية إلى ثلاثة فقط وجزم القول بأنه لا رابع لها وكذلك فعل في كتابه في إحصاء القياسات.

F2. Galen, *Institutio logica* 12.1 (26,13–20 Kalbfleisch)

οὔτοι μὲν οἱ συλλογισμοὶ κατηγορικοὶ καλοῦνται, καθάπερ ἔφην, οὔτε κατὰ πλείω σχήματα δυνάμενοι συστήναι τῶν εἰρημένων τριῶν οὔτε κατ' ἄλλον ἀριθμὸν (ἐν) ἐκάστῳ· δέδεικται γὰρ τοῦτο ἐν τοῖς περὶ ἀποδείξεως ὑπομνήμασι· χρώμεθα δ' αὐτοῖς ἐν ταῖς ἀποδείξεσιν ἐν αἷς ὑπὲρ ἐνὸς τῶν ὄντων ἐστὶ ζήτησις ὀπηλικὸν ἐστὶν ἢ ὁποῖον ἢ 5 ποῦ κείμενόν ἐστὶν ἢ τι τοιοῦτον τῶν κατὰ τὰς ἄλλας κατηγορίας.

F3. Ibn Buḥtīšū', *On healing the diseases of the soul and the body* (48,11–21 Klein-Franke)

وقد ذكر هذا جالينوس في المقالة الحادية عشرة من كتاب البرهان بعد ذكره ما استعمله أرسطاطاليس في قياسات الشكل الثالث، قال: وليس نجد <...> فلاطن في الغرض الذي قصد إليه لأنه إنما أراد أن يمنع العُشَاق من استعمال الهليجة والقطم وكل ما أشبه ذلك ولهذا فإنه وإن كان قد يُطَلَّقُ لبعض الناس استعمال الجماع الذي يجري المجري الطبيعي وإنما يُطَلَّقُ لهم استعمال المعتدل منه لأنَّ الخارج عن الطبع هو المستعمل عند العشق وإنما يستعمل المعتدل 5 من الجماع الجاري مجرى الطبع من كان عفيفاً فقط لطلب النسل ولبعض اللذات، فهذا قول جالينوس شاهد بأن اسم العشق عند اليونانيين واقع على اللذة المفرطة واستعمال الجماع بالشره والشبق.

F2, 1 οὔτοι Kalbfleisch : οὔτοι Paris. suppl. gr. 635 οὔτε Kalbfleisch : οἱ δὲ ms 2 ἐν add. Kalbfleisch : lect. ms. def. Barnes–Morison 4 αἷς Mynas : ταῖς ms 5 ἐστὶν ἢ suppl. Mynas : situ deleta ms τοιοῦτον Kalbfleisch : τοσοῦτον ms. **F3, 3** وقطم [و القطم

Section F: Books IXb, XI–XII, and Related Testimonia

Book IXb

F1. Ibn al-Ṣalāḥ, *On the fourth figure of the categorical syllogism*

And we have found Galen [himself] doing likewise in the ninth book of *On demonstration*, for he divided the categorical figures into three only and concluded with the statement that they have no fourth; and he does likewise in his book *On the number of syllogisms*. (Rescher, modified)

F2. Galen, *Introduction to logic* 12.1

These syllogisms are called categorical, as I said, and they cannot be composed in more than the three figures mentioned or in any other number within each [figure]. For this has been shown in the books *On demonstration*. We use these in demonstrations in which it is inquired about one of the existing things of what quantity or quality it is or where it is located or something of this sort belonging to the other categories. (C-H) 5

Book XI

F3. Ibn Buḥtīšū', *On healing the diseases of the soul and the body*

Galen, in the eleventh book of the treatise *On demonstration*, having explained [the propositions] used by Aristotle in syllogisms of the third figure, says: “We do not think (that) Plato (was wrong) regarding the aim he set himself, because he only wanted to forbid love-sick people from indulging in carnal lust and anything like that. Indeed, while he imposes no constraints on most people as to the use of sex which follows its natural course, in their case he only allows them a moderate use [of sex]. This is because a love-sick person uses it in a way that exceeds what is natural. The continent person makes moderate use of sex that follows its natural course only for procreation and to obtain some pleasure.” This is what Galen says, and it shows that the word “love-sickness” indicates among the Greeks a state of excessive pleasure and the use of sex in a vicious and licentious manner. (Ko [C-H]) 5 10

F1, 3–4 On the number of syllogisms] Not extant. The treatise was translated into Arabic in Ḥunayn ibn Ishāq's circle. See Ḥunayn ibn Ishāq, *Epistle on what was translated* 127 (51 Bergsträsser). F3, 3 was wrong] We follow the construction of Felix Klein-Franke in his German translation of the treatise: “Wir glauben nicht, daß Platon bei dem Ziel, das er verfolgte, Unrecht hatte”. See Klein-Franke, *Abū Sa'īd 'Ubaydallah ibn Buḥtīšū'*, p. 81. 5–6 It is unclear which passage in Plato is being referred to. For the distinction between natural and unnatural sex, see e.g. Plat. *Leg.* I, 636c3–5. 6 in their case] I.e., of the love-sick people. moderate use of sex] Cf. e.g. Plat. *Leg.* V, 733e6–734a8.

F4. Anonymus, *De omnibus generibus syllogismorum* (ix,23–30 Wallies)

τρία εἶδη ἐστὶ τοῦ ἀπλῶς συλλογισμοῦ· τὸ κατηγορικόν, τὸ ὑποθετικόν, τὸ κατὰ πρόσληψιν. τοῦ δὲ κατηγορικοῦ δύο ἐστὶν εἶδη· ἀπλοῦν, σύνθετον. καὶ τοῦ μὲν ἀπλοῦ τρία ἐστὶν εἶδη· πρῶτων σχῆμα, δεῦτερον σχῆμα, τρίτον σχῆμα· τοῦ δὲ συνθέτου τέσσαρα ἐστὶν εἶδη· πρῶτων σχῆμα, δεῦτερον σχῆμα, τρίτον (σχῆμα), τέταρτον σχῆμα. Ἀριστοτέλης
 5 μὲν γὰρ τρία τὰ σχήματά φησιν πρὸς τοὺς ἀπλοῦς συλλογισμοὺς ἀποβλέπων τοὺς ἐκ τριῶν ὄρων συγκειμένους· Γαληνὸς δ' ἐν τῇ οἰκείᾳ Ἀποδεικτικῇ τέσσαρα τὰ σχήματα λέγει πρὸς τοὺς συνθέτους συλλογισμοὺς ἀποβλέπων τοὺς ἐκ τεσσάρων ὄρων συγκειμένους, πολλοὺς τοιοῦτους εὐρῶν ἐν τοῖς Πλάτωνος διαλόγοις.

F5. Galenus, *Institutio logica* 19.1 (47,18–22 Kalbfleisch)

ἐπεὶ δὲ καὶ (περὶ) τῶν κατὰ πρόσληψιν ὀνομαζομένων συλλογισμῶν οἱ ἐκ τοῦ Περιπάτου γεγράφασιν ὡς χρησίμων, ἐμοὶ δὲ περιττοὶ δοκοῦσιν εἶναι καθότι δέδεικται μοι κἀν τῇ περὶ τῆς ἀποδείξεως πραγματεία, προσῆκον εἶη ἂν τι καὶ περὶ τούτων εἰπεῖν.

F6. Galenus, *Institutio logica* 17.1–2 (42,7–14 Kalbfleisch)

καὶ σχεδὸν ἅπαντες οἱ συλλογισμοὶ διὰ τὴν τῶν ἐπιτεταγμένων αὐτοῖς καθολικῶν ἀξιωματῶν πίστιν ἔχουσι τὴν σύστασιν, (ὁ) ὑστερόν ποτέ μοι νοηθὲν οὔτε ἐν τοῖς περὶ ἀποδείξεως ὑπομνήμασιν οὔτε (ἐν τῷ) περὶ τοῦ τῶν συλλογισμῶν ἀριθμοῦ γέγραπται· καίτοι τοῦτ' εἰς τοὺς πρὸς τι συλλογισμοὺς ἤδη μὲν οὐν¹ καὶ κατ' ἐκείνας τὰς πραγμα-
 5 τείας εὐρηκότες τὸν τῆς συστάσεως τρόπον αὐτῶν καὶ τῆς πίστεως.

F5, 1 κατὰ πρόσληψιν] Cf. Theophrastus, fr. 110A–D Fortenbaugh *et al.*

F4, 1 ἀπλῶς Barnes–Morison : ἀπλοῦ Paris. gr. 2064 **4** σχῆμα³ *add.* Barnes–Morison **F5, 1** περὶ *add.* Prantl **3** εἶη ἂν Kalbfleisch : εἶναί Paris. Suppl. gr. 635 **F6, 1** καθολικῶν *add. supra lineam* Paris. Suppl. gr. 635; cf. *Inst. log.* 16.12 (41,14–15 Kalbfleisch): γενικῶ ἀξιώματι, 17.7 (44,8 Kalbfleisch): ἀξιώματι καθόλου **2** ποτέ *add.* Kalbfleisch οὔτε] οὔτε δ' Paris. Suppl. gr. 635 : δ' *del.* Kalbfleisch **3** τῷ περὶ τοῦ *add.* Mynas **4** τοῦτ' Paris. Suppl. gr. 635 (*ut vid.* Barnes–Morison) : τοὺς Mynas τοὺς Barnes–Morison : τ] *add. supra lineam* Paris. Suppl. gr. 635 (*ut vid.* Barnes–Morison) : τὸ Mynas ἤδη – οὐν] ἤδειμεν οὐν Kalbfleisch : ἤδη [μὲν οὐν] Barnes–Morison : ἤδη ἤμεν [οὐν] *coniecit* (cf. Gal. *UP* VIII.1, 442,19 Helmreich / III.610 K; *Morb. diff.* I.2, VI.838,4–5 K: εὐρηκότες ἂν εἶμεν) *et verbum deesse* (ἀναφέροντες *vel sim.*) *susp.* Havrda

Related Testimonia

F4. Anonymus, *All the kinds of syllogism*

Of syllogisms as such there are three kinds: the predicative, the hypothetical, the proslleptic. Of the predicative there are two kinds: simple, compound. And of the simple there are three kinds: first figure, second figure, third figure, whereas of the compound there are four kinds: first figure, second figure, third figure, fourth figure. For Aristotle says that the figures are three – he is looking to simple syllogisms, those composed of three terms, whereas Galen, in his own *Apodeictic*, says that the figures are four – he is looking to compound syllogism, those composed of four terms, of which he found many in Plato’s dialogues. (Barnes–Morison, slightly modified) 5

F5. Galen, *Introduction to logic* 19.1

Since the followers of Peripatos have further described the syllogisms called ‘proslleptic’ as useful (even though to me they seem superfluous, as I have also shown in the treatise *On demonstration*), it is fitting to say something about them too. (C-H)

F6. Galen, *Introduction to logic* 17.1–2

And pretty much all syllogisms owe their confirmation to the credence of the general axioms under which they fall. This had been written neither in the books *On demonstration* nor in *The number of syllogisms*, since I did not realize it until sometime later. Nonetheless, we had already (applied?) this to relational syllogisms, having discovered the manner of their confirmation and credence in those works. (H) 5

F4, 8 Plato’s dialogues] Five examples of compound syllogisms are rehearsed in *All the kinds of syllogism*, some of which are taken from Plato’s dialogues, namely, *Alcibiades* and *Republic* (*Omn. syllog.* x,10–22 Wallies); see further above, pp. 61–62, for the possibility that some of these examples go back to *Dem.* F5, 2 proslleptic] According to Alex. Aphr. *In An. pr.* I.41 (378,14–20 Wallies), proslleptic syllogisms were discussed by Theophrastus in his treatise *On affirmation* (περὶ καταφάσεως); this is probably identical with Theophrastus’ *On affirmation and denial*, to which Galen wrote a commentary; see *Lib. prop.* 14.14 (166,19–21 Boudon-Millot / 11, XIX.42 K). F6, 4 The text is corrupt and the translation uncertain. 5 confirmation and credence] Propositions are confirmed by the transference of credence (πίστις); see above, B6*, 77–79. “Axioms” are defined as propositions “credible by virtue of themselves” (ἐξ αὐτοῦ πιστὸς λόγος); *Inst. log.* 17.7 (44,13 Kalbfleisch); cf. above, B6*, 62–69. For the translation of σύστασις as “confirmation” (or perhaps “guarantee”), cf. Alex. Aphr. *In Met.* Γ.3, 271,17–20 Hayduck; LSJ, s.v. συνίστημι, IV.2 and V.

F7. Abū Bakr al-Rāzī, *Doubts about Galen* 2.8 (16,12–16 Koetschet)

وقال جالينوس في الثانية عشرة من هذا الكتاب حيث ذكر التوالي الضرورية اللازمة للمقدّم هذا القول: «أما في أوقات السنّة فالاتصال على الوجهين جميعاً واجبٌ ضرورةً. وذلك أنه متى كان الوقت شتاءً فإنه كان لا محالة يعقب خريف قد تقدّمه وكان الخريف يعقب الصيف وأنّ هذا الصيف إذا كان في وقت من الأوقات تبعه لا محالة خريفٌ وتبع الخريف شتاءً.» هذا نصّ قوله.

5

F8. Ps.-Gābir ibn Ḥayyān, *The book of morphology* (420,7–15 Kraus)

فإنّ جالينوس مع تمكنه من العلم وتدريبه في النظر قد أخذ مقدّمات من هذا الباب على أنها أوائل وتمثّل بها حتى أنه قال في كتابه البرهان: إنّ من المقدّمات الأولى في العقل أنه إذا كان الصيف يتبعه الخريف لا محالة فإنه لم يكن إلا بعد خروج الربيع. وأنا أحسب أنّ هذه المقدّمات ليست بصحيحة دون أن يصحّ أنّ الأزمان لم تنزل ولا تزال على مثل ما هي عليه. فإذا لم يصحّ ذلك فإنه لا يؤمن أن يكون صيف لا يعقبه خريف ولم يتقدّمه ربيع. فقد استقصيت هذا المعنى في كتابي المسمّى كيفية الاستدلال بغاية البيان على مذهب المنطق والنطق.

5

F9. Galenus, *De simplicium medicamentorum facultatibus* III.25 (XI.612–613 K)

βούλομαι δὲ, ἐπεὶ κατὰ τοῦτου τοῦ λόγου γέγονα, καὶ τιнос θεωρήματος ἀναμνήσαι λογικοῦ, δεδειγμένου καὶ τοῖς περὶ ἀποδείξεων ὑπομνήμασιν, εἰς τὰ παρόντα χρησίμου. ἔστι δὲ τὸ θεωρήμα τοιόνδε: τῶν ἀποδείξεων αἱ μὲν ὡς ἐξ ἀνάγκης ὑπάρχει τόδε τῶδε περαίνουσιν, αἱ δὲ ὡς ὑπάρχειν ἐνδέχεται· τούτων δὲ αὐτῶν μεταπίπτουσί τινες εἰς τὸ ἐξ ἀνάγκης ὑπάρχειν, ὅταν ἀναγκαίαις ἀρχαῖς ἔπωνται, καθάπερ καὶ ἐν αὐτῷ τούτῳ τῶ νῦν ἡμῖν ἀποδεδειγμένῳ· ἐν γὰρ τῷ κόκκῳ καὶ τῷ κνίκῳ τὸν φλεγματώδη περιεχόμε-

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Book XII

F7. Abū Bakr al-Rāzī, *Doubts about Galen*

In the twelfth book of this treatise, while speaking of the consequents that necessarily follow the antecedent, he states: “As far as the seasons are concerned, continuity in both directions together is necessarily implied. Indeed, winter necessarily follows autumn, which preceded it, and autumn necessarily follows summer. Similarly, if it is summer, then fall necessarily follows, and after fall winter.” That is literally what he 5 says. (Ko [C])

F8. Ps.-Ġābir ibn Ḥayyān, *The book of morphology*

This is why, despite his capacity for science and his experience in theoretical matters, Galen adopted such premisses as if they were [first] principles and he used them to illustrate [his thesis], so much so that he says in his book *On demonstration*: “One of the first premisses in the mind is the following: if it is true that summer must undoubtedly be followed by autumn, this can only take place after spring has passed.” For my part, I 5 am of the opinion that this premiss is not correct, unless it has been [previously] established that [the alternation] of the seasons has always taken place and will always take place in the same way as it is taking place [now]. If this is not established, the possibility is not excluded that [in the future] there may be a summer that is not followed by an autumn and not preceded by a spring. I have studied this example well 10 in my book *On sign inference*, thoroughly and according to the doctrines of the logicians. (Ko [C])

Related Testimonia

F9. Galen, *The power of simple drugs* III.25

Since we have reached this point of the argument, I also want to recall a certain logical theorem pointed out in the books *On demonstration* that is useful for the present discussion. The theorem is this: of demonstrations, some conclude that this holds of that of necessity, whereas others that it is possible [for this] to hold [of that]. Some of these latter change into [this] holding [of that] of necessity, whenever they follow 5 necessary principles, just as also in the very case that we have demonstrated now. For it cannot be shown evidently that phlegm-like humour is contained in the Cnidian

F8, 11 On sign inference] A treatise with this title was attributed to Abū Bakr al-Rāzī. See Bīrūnī, *Epistle on Abū Bakr al-Rāzī's Writings*, p. 14 Kraus.

10 νον χυμὸν ἐναργῶς μὲν οὐκ ἔστι δεῖξαι, τὸ δυνατὸν δὲ καὶ εἰκὸς καὶ ἐνδεχόμενον
 ὑπάρχει τῷ λόγῳ. ἀλλ' ἐπειδὴ καὶ τὰς ὀλκὰς ταῖς τῶν οὐσιῶν ὁμοιότησιν ἐδείξαμεν
 γίγνεσθαι (...) ἀναγκαῖον ὁμοιότητά τινα ταῖς οὐσίαις ὑπάρχειν ἀμφοτέραις, τῇ τε τοῦ
 10 καθαίροντος καὶ τῇ τοῦ καθαιρούμενου. ἐπεὶ τοίνυν τὸ καθαιρούμενον ἔστι φλέγμα,
 πάντως δὴ πού καὶ τὸ ἔλκον ἀνάγκη φλεγματοῦδες ὑπάρχειν.

F10. Al-Fārābī, *Short commentary on Aristotle's De interpretatione* 13 (192,16–193,7
 Kutsch–Marrow)

(1) إذ كانت الموجودات تنقسم ثلاثة أقسام: ضرورية فقط، وممكنة فقط، وممكنة حيناً
 وضرورية حيناً. فالتى هي ممكنة حيناً وضرورية حيناً هي التى من طبيعة الممكن، إلا أنها قد
 حصلت بالفعل. وهي التى يسميها الوجودية. (2) وقصد بقسمته الموجودات إلى هذه الأقسام
 الثلاثة ليعرف أنّ المقدمات، والنتائج والمطلوبات تنقسم هذه القسمة. فإذا كان كذلك، كانت
 5 المطلوبات والنتائج الكائنة في الأشياء الأزلية الضرورية عن مقدمات ضرورية وأزلية،
 والمطلوبات والنتائج الكائنة في الأمور الممكنة عن مقدمات ممكنة. وكذلك النتائج والمطلوبات
 الوجودية إنما هي عن قياسات مقدماتها الوجودية. ويبين بها أنّ الصنائع القياسية تنقسم هذه
 الثلاثة الأقسام. وأنّ جميع الأشياء المنظور فيها المفحوص عنها هي هذه الثلاثة. (3) فلذلك
 يزول ما قاله جالينوس الطيب في كتابه في البرهان، إن أرسطوطاليس كثر في كتابه في
 10 القياس في الممكنات والوجودية فيما لا ينتفع به.

F11. Al-Fārābī, *Short treatise on Aristotle's De interpretatione* (I.111,21–112,9
 Daneshpajuh)

والإمكان في الاضطرارية إنما يرتفع بعلمنا بها، من غير أن تتغير هي في أنفسها عمّا كانت
 عليه. والإمكان في التي هي بالطبع ممكنة إنما يرتفع عنها بتغيرها في أنفسها بأن تصير
 موجودة بعد أن كانت غير موجودة، وبأن تتغير من العدم إلى الوجود، وعند ذلك تصير
 معرضة للعلم، ولأن يتحصل عندنا الصادق منها، وتدخل في حدّ الأشياء المجهولة من
 5 الاضطرارية. فإذا علمناه، ارتفع الإمكان عنها من الجهتين: من جهتها هي بتغيرها من العدم

berry and safflower; rather, the possible, likely, or contingent holds of the argument. But since we have also shown that attractions arise in consequence of the similarities of substances (...) it is necessary that some similarity holds of both substances, the purging one and the purged. Now since the purged substance is phlegm, by all means, then, that which attracts it is necessarily phlegm-like. (C-H) 10

F10. Al-Fārābī, *Short commentary on Aristotle's De interpretatione* 13

(1) There are three classes of entities: those that are never anything but necessary, those are never anything but possible, and those that are sometimes possible and sometimes necessary. Those that are sometimes possible and sometimes necessary are of the nature of the possible, even though they have become actual. They are the ones he calls 'hyparctic'. (2) By dividing entities into these three classes, Aristotle wants to make us realize that premisses, conclusions, and things under inquiry are subject to the same division. If so, things under inquiry and conclusions about eternal necessities arise from necessary and eternal premisses, things under inquiry and conclusions about possibilities from possible premisses and, similarly, hyparctic conclusions and things under inquiry from syllogisms from hyparctic premisses. Thus he makes it clear both that the syllogistic disciplines are subject to this threefold division and that all objects of speculation and investigation are in these three classes. (3) This defeats the criticism made by the doctor Galen in his book *On demonstration*: that Aristotle, in talking at length about possible and hyparctic entities in his book on the syllogism, has wasted his time on useless things. (Zimmermann, modified) 5 10 15

F11. Al-Fārābī, *Short treatise on Aristotle's De interpretatione*

(1) It is not unless we gain knowledge of them that possibility is eliminated from matters of necessity, though they themselves have remained, without change, as they used to be. But with matters that are possibilities by nature, it is by an intrinsic change that possibility is eliminated from them, namely, if they become existent after having been non-existent. In this case, they change from non-existence to existence, thereby becoming knowable and enabling us to determine which of the alternatives is true. Thus they become like unknown necessities. For as soon as we know, the element of possibilities is eliminated from both sides : on their own side, by their having changed 5

F10, 5 hyparctic] Lit. 'existential', *wuḡūdiyya*. As F. Zimmermann explains, a *muqqadima wuḡūdiyya* (πρότασις ὑπάρχουσα in Greek) is not an existential premiss but one expressing mere *wuḡūd*, existence, without specifying possibility or necessity. See Zimmermann, "Introduction," p. lx. **6** things under inquiry] Arabic *maṭlūb*. See also C12, 3. F. Zimmermann translates "*quaesita*" and points to the dialectal context of this term, which indicates a thesis to be chosen from a pair of contradictory alternatives (Zimmermann, "Introduction," p. lii).

إلى الوجود، ومن جهتنا نحن بتغيرنا من الجهل بها إلى العلم بها. وأما في الاضطرارية فإنّ الإمكان فيها إنما يرتفع بتغيرنا نحن من الجهل إلى العلم. فلذلك ليس ينبغي، لأجل اشتراك الاسم في الممكن، أن يظنّ بما هو ممكن في طبيعته أنّ هو الممكن عندنا، بمعنى أنّه مجهول عندنا، كما ظنّ ذلك جالينوس الطبيب، على ما قاله في كتابه الذي سماه البرهان.

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F12. Maimonides, *Medical aphorisms, Treatise 25* (172 Bos)

(1) كلّ ذلك بيّنه أبو نصر الفارابي وذلك أنّه حذف المقاييس الممكنة و المقاييس المختلطة واقتصر على المقاييس المطلقة وهي الوجودية ولم يأبه إلى أنّ المقاييس البرهانية هي ضرورية لا وجودية وأنّ الشيء النافع في الطبّ وفي أكثر الصنائع هي المقاييس الممكنة والمختلطة واسمّع نصوص أبي نصر في ذلك. (2) قال في شرحه للقياس الكبير لما أخذ أن يشرح تلك التوطئة وطأها للممكن وللمقاييس الممكنة. قال أبو نصر: "وليس الأمر في ذلك 5 على ما ظنّه جالينوس المتطبّب لأنّه ذكر في كتابه الذي سماه كتاب البرهان أنّ النظر في الممكن وفي القياسات الكائنة عنه فضل. وأولى الناس بالنظر في القياسات الممكنة جالينوس المتطبّب بل يلزمه أن يكون قد صرف أكثر عنايته في كتابه الذي قد سماه كتاب البرهان إلى المقاييس الممكنة فإنه زعم أنّه صنف كتابه في البرهان لينتفع به في الطبّ. (3) والقياسات التي يستعملها الطبيب في استنباط أجزاء صناعة الطبّ والقياسات التي يستعملها في تعرّف 10 الأمراض الباطنة وأسبابها في واحد واحد من الذين يقصدون علاجهم فكّلها قياسات ممكنة وليس في شيء منها ضروري إلا أن يكون الشادّ الذي يكاد أن يكون خارجاً عن صناعة الطبّ. فلذلك يلزمه ألا يكون يتكلّم في كتابه الذي سماه كتاب البرهان إلا في أشكال المقاييس الممكنة فقط دون الوجودية وعلى أنّه إن كان إنّما اقتصر في كتابه على الأشكال الوجودية ليكون قد اقتصر من المقاييس على ما ينتفع به في البراهين فإنّ الأشكال الوجودية ليست هي معدّة نحو 15 البراهين لأنّ البراهين ليست تُعمل من هذه المادّة بل إنّما تعمل من الأشكال الاضطرارية فقط."

from non-existence to existence ; on our side, by our having changed from ignorance to knowledge. In connexion with necessities, on the other hand, one can only speak of an elimination of possibility in the sense that we change from ignorance to knowledge. 10

(2) One therefore must not be misled by the homonymy of the word ‘possible’ into thinking that what is possible by nature is the same as what is possible to our minds, i.e. unknown to us, as has happened to the doctor Galen, judging by what he says in the book he has called *On demonstration*. (Zimmermann) 15

F12. Maimonides, *Medical aphorisms, Treatise 25*

(1) All this has been explained by Abū Nasr al-Fārābī, namely that he [Galen] rejected possible syllogisms and mixed syllogisms and limited himself to non-modal syllogisms, which are called hyparctic [syllogisms], and did not pay attention to the fact that demonstrative syllogisms are necessary and not hyparctic and [he did not pay attention to the fact] that what is useful in medicine and in the majority of the arts are possible syllogisms and mixed [syllogisms]. Listen, then, to the words of Abū Nasr on the subject. (2) In his long commentary on the *Book of syllogisms*, at the beginning of his commentary to [Aristotle’s] introduction to the possible and possible syllogisms, Abū Nasr says: “Matters do not stand here as Galen the doctor thought. In the book which he entitled *On demonstration* he remarks that the study of the possible and of the syllogisms generated from it is superfluous. But if there is anyone who ought to have studied possible syllogisms, it is Galen, the doctor: in the book entitled *On demonstration*, he ought to have concentrated all his attention on possible syllogisms, inasmuch as he claims that he composed his book *On demonstration* to be of use in medicine. (3) The syllogisms that a doctor uses in his account of the parts of the art of medicine and the syllogisms that he uses to grasp the hidden diseases and their causes in each case in which he seeks a cure – all these are possible syllogisms, and there is no necessity at all them (same in some cases which are pretty well extraneous to the art of medicine). For that reason, in his book which he entitled *On demonstration* he ought to have spoken above all else about possible syllogisms alone, and not about hyparctic syllogisms. (4) For if in the book he restricted himself to hyparctic syllogisms on the grounds that they would be useful for proofs, in fact the hyparctic forms are not appropriate to proofs ; for proofs do not come about it in matter of that sort but only in necessary forms.” (Ko and Rashed [Barnes]) 5
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F12, 2 non-modal] Lit. ‘absolute’, *muṭlaq*. 3 hyparctic] Lit. ‘existential’, *wuḡūdiyya*. Cf. F10, 5.

G1. Galenus, *De curandi ratione per venae sectionem* 3 (XI.257 K)

διὰ τοῦτο οὐδὲ Ἀσκληπιάδου μνημονεύσομεν ἔτι κατὰ τόνδε τὸν λόγον ἀποδεδεικότες αὐτοῦ τὰ στοιχεῖα ψευδῆ, κατὰ γε τὸ τρισκαιδέκατον ὑπόμνημα τῶν περὶ τῆς ἀποδείξεως καὶ κατὰ τὴν τῶν Ἀσκληπιάδου δογμάτων πραγματείαν, ἐν ἧ τὸ πέμπτον τε καὶ ἕκτον ἔλεγχον ἔχει τῶν στοιχείων αὐτοῦ.

G2. Galenus, *De ordine librorum suorum* 2.8 (93,9–15 Boudon-Millot / XIX.55 K)

καὶ αὐτὰ δὲ τὰ περὶ τῆς ἀποδείξεως τῶν στοιχείων οὐ πάντ' εἴρηται κατὰ τὸ βιβλίον ἀλλ' ὅσοις αὐτὸς ὁ Ἱπποκράτης ἐχρήσατο· πρὸς δὲ τὸ τελεώτατον τῆς ἐπιστήμης τῶν τοῦ σώματος στοιχείων ἀναλέξασθαι προσήκει τὰ τ' ἐν τῷ τρισκαιδέκατῳ περὶ ἀποδείξεως εἰρημένα καὶ κατὰ τὸ πέμπτον καὶ ἕκτον περὶ τῶν Ἀσκληπιάδου δογμάτων.

G3. Abū Bakr al-Rāzī, *Doubts about Galen* 3.1 (18,9–16 Koetschet)

وقد قال في الثالثة عشرة إنَّ الجوهر هو الجسم الأول الموضوع لكلِّ كون وفساد الذي هو بذاته غير مكَيَّف. فأطلق أنّ الهيولى جسم من غير أن يبيِّن ذلك في هذا الكتاب ولا دلَّ على موضع قد بيَّن ذلك فيه كأنَّ ذلك من العلوم الأوائل. وكيف يكون كذلك وقد كُتِرَ اختلاف الفلاسفة في الموضوع للكون والفساد أجسمٌ هو أم غير جسمٍ؟ وناقض أيضاً في قوله ”جسم غير مكَيَّف“،

Section G: Books XIII–XIV

Book XIII

The Elements

G1. Galen, *Treatment by venesection* 3

For this reason we will no longer mention Asclepiades in this account, having demonstrated that his elements are false, namely in the thirteenth book of *On demonstration* and in the treatise on *The doctrines of Asclepiades*, in which the fifth and sixth book contain refutations of his elements. (C-H)

G2. Galen, *The order of his own books* 2.8

And not all of these things concerning the demonstration of the elements are discussed in the book [*The elements according to Hippocrates*]; rather, those which Hippocrates himself used. For the most complete scientific knowledge about the elements of the body, one should read the discussion in the thirteenth book *On demonstration* and in the fifth and sixth book of *The doctrines of Asclepiades*. (C-H)

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G3. Abū Bakr al-Rāzī, *Doubts about Galen* 3.1

[Galen] says in the thirteenth book [of *On demonstration*] that substance is the primary body and substratum of all generation and all corruption, which is in itself devoid of quality. He therefore states that matter is a body without making [the statement] clear in this work or referring to a passage where he had already made it clear, as if it were a part of primary knowledge. How could this be the case when there was already so much disagreement among philosophers on the subject of whether the substratum of generation and corruption is a body or not? Moreover, he contradicts himself when he says “a body devoid of quality”: a body necessarily has a shape and shape is a quality.

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G3, 1–2 the primary body] Cf. Gal. *HNH* 1.7 (21,13–15 Mewaldt / XV.37 K), trans. Hankinson: “Thus the primary body (τὸ πρῶτον σῶμα) is called ungenerated and indestructible, since everything derives its generation by way of composition out of it”. 2 substratum...corruption] Cf. *HNH* 1.10 (25,6–8 Mewaldt / XV.44–45 K), trans. Hankinson: “But if indeed there is generation of something which did not previously exist, necessarily it will come to be from some underlying substance (ἐκ τινος ὑποκειμένης οὐσίας γενέσθαι).” *Hipp. elem.* 4.12 (90,6–8 De Lacy / I.445–446 K), trans. De Lacy: “Therefore the substrate of all of them is one thing, a single substance that is common to the first bodies and underlies them (ἐν ἄρα τὸ ὑποκείμενον ἅπασι καὶ οὐσία μία, ἥτις ὑποβέβληται κοινῇ τοῖς πρώτοις σώμασιν).” 2–3 devoid of quality] Cf. Gal. *Hipp. elem.* 2.11 (60,5–8 De Lacy / I.417 K), reflecting the atomist view of the first element. 8 shape is a quality] Contrast Gal. *CAM* 7.4 (74,3–8 Fortuna / I.246–247 K): according to the atomists, “there is no quality in the atom at all”, although atoms do possess shape. Cf. Leith, “The Qualitative Status of the Onkoi.”

- 5 والجسم لا محالة ذو شكل والشكل كيفية فكيف يكون غير مكيف؟ ثم قال بعد قليل: ”الجسم الأول هو عارٍ من كيفية الشكل“، وليس يمكن أن يخلو ما له طولٌ وعرضٌ وعمقٌ من الشكل.

G4. Abū al-'Alā' ibn Zuhr, *Solution to the Doubts about Galen* 3.2, MS Riḍawī 13997, fol. 5a, ll. 13–18 (Koetschet–Rajab)

وأما قول السوفسطائي: ”ويناقض في قوله جسم غير مكيف، والجسم لا محالة ذو شكل والشكل كيفية فكيف يكون غير مكيف؟“ فلو فهم إرادة جالينوس بقوله – ”لكن الجسم الغير مكيف الأول هو المسمى بنفسه جسماً كما أنه معرّى من سائر الكيفيات كذلك هو أيضاً معرّى من كيفية الشكل فإذا أزيد عليه هذه الكيفية صار الجسم التعليمي“ –، لما أنكر الحقّ فاعترض فيه.

G5. Abū al-'Alā' ibn Zuhr, *Solution to the Doubts about Galen* 3.3–4, MS Riḍawī 13997, fol. 5a, ll. 18–29 (Koetschet–Rajab)

- وأنا أقول إنّ الجوهر من حيث هو جوهر هو معرّى من الأعراض ومن حيث هو مادة لتكوّن الأجسام هو جسم ذو ثلاثة أبعاد وقد نبّه جالينوس على أنّه لا يريد في هذا الكتاب بالجوهر الأول <الجوهر> من حيث هو معرّى عن المحسوسات بل من حيث هو أول المحسوسات بقول هذا نصّه. قال: وكذلك أيضاً كلّ ما تغيّر فهو جسم فإنّ الجسم هو الذي تغيّر بدءاً – ومن البين أنّي إنّما أعني بالتغيّر في هذا الموضع التّغير الذي يرى عياناً مُمتدّاً في كلّ جزءٍ من 5 أجزائه عند الحسّ فإنّ التّغير عند الطبيعة قد وقعت فيه مطالبات –، وأيضاً فإنّ أول الأشياء

So how could it be devoid of quality? Shortly afterwards, he says: “The primary body is free of the quality of shape.” But it is not possible for that which is endowed with length, width and depth to be devoid of shape. (Ko [C-H]) 10

G4. Abū al-‘Alā’ ibn Zuhr, *Solution to the Doubts about Galen 3.2*

When the Sophist says: “He contradicts himself when he speaks of a ‘body without quality’, for in any case a body has a shape, and shape is a quality. How then could it be without quality?”, if he [i.e. the Sophist] had understood Galen’s intention in what he says – “but the primary body without quality is what is called body in-itself: as it is devoid of all qualities, so it is also devoid of the quality of shape. When this quality is added to it, it becomes the mathematical body” –, then he would not have fought the truth and would not have opposed it. (Ko [C-H]) 5

G5. Abū al-‘Alā’ ibn Zuhr, *Solution to the Doubts about Galen 3.3–4*

(1) And I [i.e. Abū al-‘Alā’ ibn Zuhr] say that substance, insofar as it is substance, is devoid of accident, and insofar as it is matter for the generation of bodies, it is a body endowed with three dimensions. Galen has already drawn attention to the fact that in this book by ‘primary substance’ he does not mean the substance as being devoid of the sensibles, but as the first sensible [thing]. This is what he says literally. (2) He says: “Likewise, in so far as it [i.e. the substance] is capable of change, it is a body. This is because a body is that which changes from the start – it is evident that by ‘change’ here I only mean the change which is clearly seen to extend to all the parts of the body when we perceive it, for natural change has raised questions. Also, [it is evident that the substance is a body] because the first sensible thing is a body. For this reason, it is 10

9–10 The...shape] Galen’s own view: although the elements are not without qualities, they do not possess their own shape; see *Hipp. elem.* 9.12–17 (130,11–132,13 De Lacy / I.484–485 K). Cf. also *Loc. aff.* I.2.11 (256,11–12 Gärtner / VIII.26 K), on the homoeomerous parts: σχῆμα σύμφυτον ἔχει μηδέν. **G4**, 5 devoid²...shape] Cf. G3, 9–10. **5–6** When...body] A dialectical argument: if the primary body were without qualities, as the atomists believe, it would be abstract matter; if shape were added to it, it would become a mathematical body. For abstract matter “without qualities” (ὕλη ἄποιος), see *Hipp. elem.* 6.38 (114,16–17 De Lacy / I.469 K); *PHP* IX.9.44 (608,19–21 De Lacy / V.804 K); *QAM* 3 (36,23–37,2 von Müller / IV.773 K). **G5**, 4 this book] I.e., *On demonstration*. **5** the first sensible thing] Galen sometimes describes the common substrate of elementary bodies as “the first substance” (πρώτη οὐσία); see *Hipp. elem.* 9.7 (128,16–19 De Lacy / I.482 K); however, this substrate, when abstracted from the elementary bodies, is conceived of without qualities; see *Hipp. elem.* 6.38 (114,16–17 De Lacy / I.469); thus, when speaking of the first substance as “the first sensible [thing]” or as the first body, Galen has in mind something else: either the elementary bodies themselves – referred to as the common substrate (κοινὸν ὑποκείμενον) of every generated thing, cf. *CAM* 8.7 (80,19–23 Fortuna / I.253 K) – or the homoeomerous parts, described as “the first perceptible elements” of animal bodies, cf. *Hipp. elem.* 8.10–13 (124,19–126,12 De Lacy / I.479–480 K). **6** capable of change] Cf. e.g. *Hipp. elem.* 9.6 and 9.16 (128,12 and 132,6 De Lacy / I.482 and 485 K).

المحسوسة الجسم، فلذلك لَزِمَ أن يكون غير ذي شكلٍ، لأنَّ كلَّ ذي شكل له هيئة ما بئنة وهذا الجسم لَمَّا كان مادَّةً على ما ذكرناه وجب أن يكون كثير التقسّم إلى أصغر الأجزاء وأكثرها غير لازم بحالة واحدة إذ الكون والفساد لا يكفّان.

G6. Abū Bakr al-Rāzī, *Doubts about Galen* 4.1 (20,1–6 Koetschet)

وقال إنّ الخلاء ليس بمحسوس ولم يُبَيَّن هل هو موجود أم لا، وأمّا الزمان فهو موجود لا محالة، والكمّ غير مفارق له إلا أنه ليس بجسم. وصرّح أنّ الزمان عنده جوهر إذ كان قد حَمَلَ الكمّ. ومعلوم أنّه قد أخرج قوله ههنا الخلاء مخرج المكان، وما يسبق إلى النفس في وجود الزمان يسبق إليها في وجود المكان. وكذلك إذا لم يكن الزمان كمّاً بل حاملاً للكمّ فالمكان أيضاً كذلك.

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G7. Abū al-'Alā' ibn Zuhr, *Solution to the Doubts about Galen* 4.3–4, MS Riḍawī 13997, fol. 5b, ll. 7–16 (Koetschet–Rajab)

(1) في هذا الفصل الذي حكيناه عن السوفسطائي شنغ لا يأتي بها الصبيان والرعاغ، منها: أن يظنّ أنّ الكميّة لا تقال إلا على الجوهر، لأنّه بقول جالينوس أنّ الكمّ غير مفارق للزمان، لزمه القول بأنّه جوهر، ولو قرأ شيئاً من علم المنطق، لرأى فيه أنّ الكميّة تقال على أشياء كثيرة منها الزمان والقول والعدد وليس واحد منها جوهرًا! ولمّا قال جالينوس "وفي هذا الجوهر شيء لا يفارقه ويخصّه بدءاً من بين الأشياء المحسوسة وهو الكمّ"، أعلمنا لا شيء استثنى 5 المحسوسة. (2) فقال: إنّما فعلت ذلك بسبب الخلاء والزمان. وإن كان جالينوس لا يعتقد الخلاء لكن لَمَّا كان جماعة يثبتون الخلاء ويقولون إنّ المكان المستعدّ لحركة الأجسام التي تمرّ فيه ولم يكن يتبيّن من أمره هل هو موجود أم لا كما تبيّن أنّ الزمان موجود بالفعل من أوّل وهلة، سامحهم جالينوس فيه ليصادر على أشياء يبطل بها وجوده، كما نجده فعل.

necessary that it [i.e. the substance] does not possess a shape, for everything that possesses a shape has an aspect that is clear. Now, this body, insofar as it is matter according to what we have said, must be divided into small parts or into large ones, and it cannot remain in one and the same state, since generation and corruption never cease [to change it].” (Ko [C-H])

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G6. Abū Bakr al-Rāzī, *Doubts about Galen* 4.1

[Galen] says: "Void is not sensible and it is not clear whether it exists or not, whereas time exists without any doubt and quantity is inseparable from it even if it [i.e., time] is not corporeal." He [i.e., Galen] has made it clear therefore that according to him time is a substance because it is the subject of quantity. Now, it is known that by the word "void" here he means place. Now what comes to mind concerning time also comes to mind concerning place. Therefore, if time is not a quantity, but is the subject of a quantity, then the same is true of place. (Ko [C-H])

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G7. Abū al-ʿAlāʾ ibn Zuhr, *Solution to the Doubts about Galen* 4.3–4

(1) In this passage where we have transcribed [what] the Sophist [writes], we find slanders that even children and the plebeians dare not commit. These include: the assumption that quantity is predicated uniquely of a substance, since [according to him] the fact that Galen says that quantity is inseparable from time necessarily implies that he says that [time] is a substance. But, if he [i.e. the Sophist] had read a little bit of logic, he would have seen that quantity is predicated of many things, including time, speech, number, and that none of these things is a substance! Moreover, when Galen says about this substance [i.e. time] that there is something inseparable from it that characterizes it and that differentiates it from the start from other sensible things, and that this is quantity, he tells us nothing except that it is sensible. (2) He [i.e., Galen] also says: "I only did this for void and time." In spite of the fact that Galen does not believe [in the existence of] void, because a number of people admit the existence of the void and say that [void] is equivalent to place suitable for the movement of the bodies in it, although it is not obvious whether or not it exists in the same way that it is obvious that time exists, he has behaved indulgently with them and produced arguments that make the existence [of the void] moot, as we have seen. (Ko [C-H])

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¹¹ does...shape] Cf. G3, 9–10. **G6, 1** whether it exists or not] For this traditional controversy cf. Arist. *Phys.* IV.9, 217b28; *Aët.* I.18 with Mansfeld–Runia, *Aëtiana* V.1, pp. 571–590. For Galen, cf. *ibid.*, pp. 584–585. **3–4** time...quantity] The quantity in question is presumably duration; cf. E3, 10–11. **5** place] Cf. E6, 1–2. **G7, 5** time is a substance] Cf. E3, 8; G6, 3–4. **6–7** time...number] Cf. Arist. *Cat.* 6, 4b22–25.

G8. Abū Bakr al-Rāzī, *Doubts about Galen* 4.2 (20,7–9 Koetschet)

وقد ذهب حيث تكلم في هذا إلى أنّ الهواء جسمٌ يدفع وجود الخلاء، فكيف حكم قَبْلُ أنّه لا يمكن أن يعلمَ أموجود هو أم لا ؟ ولما بيّن أنّ الهواء جسم، اعتمد في أنّه ليس في خلاله خلاءً البتّة بامتناع دخول عمود الزرّاقة فيها ما لم يفتح الثقب الذي في فيها.

G9. Abū al-'Alā' ibn Zuhr, *Solution to the Doubts about Galen* 5.7, MS Āstān Quds Riḍawī 13997, fol. 6a, ll. 24–29 (Koetschet–Rajab)

وأما الاستدلال الذي استدله السوفسطائي على أنّ في خلال الهواء خلاءً بالقارورة المنفوخ فيها وبالقارورة الممصوصة، فهذا اعتراض الصبيان الذين يبتدون بالبحث والنظر لأنّ معنا دليلاً برهانياً يبطل الخلاء على كلّ الوجوه لا اعتراض فيه، وهو ما وصفناه من خلل الزرّاقة وغير ذلك ممّا برهن جالينوس به ولولا خوف التطويل لذكرته وهو موجود في كتاب البرهان.

G10. Galenus, *Compendium Timaei Platonis* 7 (12 Kraus–Walzer)

فيقول إنّ ذلك يكون لجوهر نيرٍ مضيء يخرج من الحدقة ويتصل بالهواء المحيط بنا ويخالطه بمشاكلته ويتغيّر مثل تغيّره فنحسّ بالأشياء التي من خارج. وقد بيّنتُ هذا القول في المقالة السابعة من كتابي في آراء بقراط وفلاطون وأكثر من ذلك أيضاً، وأحتجّ ببراهين حقيقية في المقالة الثالثة عشرة من كتابي في البرهان.

G11. Abū Bakr al-Rāzī, *Doubts about Galen* 5.1 (22,16–17 Koetschet)

ثم قال أيضاً في هذه المقالة إنّّه من البيّن عند جميع الناس أنّه ليس يكون البصر بأنّ تماثيل تجري إليه من كلّ واحد من الأشياء المبصرة.

G8. Abū Bakr al-Rāzī, *Doubts about Galen* 4.2

Further on, he [Galen] comes to say that air is a body, which refutes the existence of void. So how could he judge in what precedes, that he cannot have knowledge of whether it exists or not? Furthermore, when he explains that air is a body, to show that there is absolutely no void between the interstices of air, he has relied on the fact that the plunger of a syringe cannot go up into [the syringe] until the orifice at the end is open. (Ko [C]) 5

G9. Abū al-‘Alā’ ibn Zuhr, *Solution to the Doubts about Galen* 5.7

The sign which the Sophist uses to show that there is a void between the interstices of air, i.e., the bottle into which [air] is blown and the bottle from which [air] has been sucked, is an argument made by youngsters who are just starting out in research and theory, because we have demonstrative signs that reject the existence of the void as a whole, and which are not [simple] objections. These are the ones we have described with the example of the syringe. There are also others used by Galen in his demonstrations, which I would mention if I were not afraid of lengthening [this book] too much, and which are found in the treatise *On demonstration*. (Ko [C]) 5

Vision**G10.** Galen, *Compendium of Plato’s Timaeus* 7

[Plato] says: [seeing] arises by means of a fiery, luminous substance issuing from the pupils and reaching the air that surrounds us. It fuses with [the air] because it is similar to it and is altered to share the changes [of the air]. Thus we perceive the things that lie outside us. I [i.e., Galen] explained this account in the seventh book of my treatise *The doctrines of Hippocrates and Plato*, [where there is] more than this as well. I sought true demonstrations [of it] in the thirteenth book of my treatise *On demonstration*. (Das-Koetschet) 5

G11. Abū Bakr al-Rāzī, *Doubts about Galen* 5.1

He also says in this book: It is clear to all people that vision does not occur by images that come to it from every visible thing. (Ko [C])

G8, 1 air is a body] Cf. Arist. *Phys.* IV.4, 211b18–19; above, E6[1]. Cf. also Gal. *Inst. log.* 2.1 (5,4–5 Kalbfleisch); *Diff. puls.* IV.6 (VIII.671,12–17 K). **G10**, 1–2 Cf. Plat. *Tim.* 45c–46c, 67d–68d. 4–5 Cf. esp. Gal. *PHP* VII.6.2–10 (462,25–464,19 De Lacy / V.629–631 K).

G12. Abū al-'Alā' ibn Zuhr, *Solution to the Doubts about Galen* 6.4, MS Riḍawī 13997, fol. 6b, ll. 21–22 (Koetschet–Rajab)

أما قول جالينوس إنّه من البيّن عند جميع الناس، فليس يجهل أحد أنّه إنّما أراد بذلك جميع أهل النظر لأنّهم هم يخاطب، ومثل هذه المقالة مستعملة تعظيماً لبيان الشيء وظهوره.

G13. Abū Bakr al-Rāzī, *Doubts about Galen* 5.2–3 (24,9–25,5 Koetschet)

(1) ثم قال جالينوس : ”وقول من زعم أنّه يخرج من العين شعاعٌ حتى يأتي المَبَصَرَ محالٌ لأنّه لا يمكن للشعاع أن يمتدّ إلى الكواكب، بل أفضل من هذا أن يقال إنّ صورة الكواكب والمبصرات تتصلّ بالبصر بتوسّط المضيء“. (2) قال جالينوس: ”فإنّ هذا الرأي همزٌ وهذيانٌ إذ كان يُوجبُ أنّ تماثيل الجبال العظام تقع في الناظر. قال: وأعجب من ذلك أن تكون تجري في وقت واحد تماثيل كثيرة بحسب عدد الأعين التي تبصر إليها“. (3) فأقول إنّ طول 5 الاعتياد للشيء يدعو إلى الإلف له والأنس به والاستنكار لما خالفه ولولا ذلك، لم يكن ليذهب مثل هذا الشيء القريب على جالينوس. ولكن من أجل أنّه منذ صباه كان منغمساً في آراء أصحاب التعاليم وكان والده منهم، مال به الهوى إلى هذه الناحية (4) فاستنكر ما ليس بمستنكر بل محسوسٍ مشاهدٍ وهو تأديُّ أشباح الأشياء المَبَصَرة. ونحن إذا أقمنا بحذاء المَبَصَرَ مرآةً، رأينا شبحه فيها، حتى أنّه لو كان المَبَصَرَ ورائنا والمرآة أمامنا، لأبصرناه بجميع أحواله حتى 10 نخبر عنه كإخبارنا عنه لو كان محاذياً للبصر نفسه. ولو أقمنا حواليه وفوقه وتحتة مرآيا كثيرةً، لرأينا شبحه في كلّ واحدة. (5) فكيف يكون الظاهر للحسنّ مستنكراً والقائل به هاذيا وهامزاً، ولا تكون الأبدّة التي تجب عن قول جالينوس - وهو أنّه يخرج من ثقب حدقة عين

G12. Abū al-‘Alā’ ibn Zuhr, *Solution to the Doubts about Galen* 6.4

As for Galen's statement that 'it is clear to all people', no one is unaware that by this [sentence] he is only aiming at all the rationalists, because he addresses himself to them, and a book such as this one uses emphasis to explain the thing in question and make it evident. (Ko [C])

G13. Abū Bakr al-Rāzī, *Doubts about Galen* 5.2–3

(1) Then, Galen says: “What is asserted by those who claim that rays emanate from the eye until they reach the thing seen is absurd, because it is impossible for rays to extend to the stars. It is better to say that the form of the stars and of the things seen is made continuous with sight by means of luminous [air].” (2) Galen continues: “This opinion is laughable and foolish chatter, for it implies that images of the highest mountains enter the pupil.” And he continues: “Even more astonishing, it implies that at the same time many images rush out, as many as the number of eyes looking at them.” (3) I say that the time spent getting used to something leads us to become familiar and accustomed to it, to accept it and to reject what is opposed to it. If this were not the case, such an obvious idea [as the one we are about to discuss] would not have escaped Galen. But, because he has been immersed in the opinions of mathematicians since childhood and his father was one of them, passion inclined him (i.e. Galen) in that direction. (4) As a result, he disputed what was not debatable but, on the contrary, is perceivable and observable: that images of things seen are transmitted to sight. If we place a mirror in front of the visible thing, we will see its image in [the mirror], so that, even if the visible thing was behind us and the mirror in front of us, we would see it in all its aspects, and we could be able of communicating the same information about it that we would, were the thing in front of our sight itself. And if we were to place several mirrors all around it, above and below it, we would see its image in each of them. (5) How, then, can that which is manifest to the senses be disputed – and he who asserts it [called] a laughable and a foolish – but not the wonder implied by what

G13, 1–3 Cf. Arist. *De an.* II.7, 418b20–25, *De sensu* 2, 438a26. 1–2 rays...eye] Cf. *PHP* VII.5.4 (454,4–6 De Lacy / V.619 K). 2–3 extend to the stars] Cf. Arist. *De sensu* 2, 438a25–27. 4 luminous air] Cf. *PHP* VII.5.8 (454,19 De Lacy / V.619 K). 5–7 images...them] Cf. *PHP* VII.5.3 (454,1–4 De Lacy / V.618 K). See also Ḥunayn ibn Iṣḥāq, *Ten treatises on the eye* 3, ed. Meyerhof, Ar. p. 104 (Engl. p. 32). 14 images] Rāzī uses the word *ṣabḥ*, “simulacrum”, “image”. It is the word commonly used in the context of the atomistic theory of vision, where it translates the Greek εἰδωλον. Rāzī considers the simulacra as non-material. In *Ten treatises on the eye*, Ḥunayn already uses *ṣabḥ* in a context where it seems to refer to the atomistic theory (see Ḥunayn ibn Iṣḥāq, *Ten treatises on the eye* 3, ed. Meyerhof, Ar. p. 104/Engl. p. 32). However, the simulacra in Rāzī's theory of vision are non-material. Ibn Sīnā, in the *Book on healing*, also uses *ṣabḥ* in the sense of what is emitted from the visible object and reaches the eye, and compares it to a reflection in a mirror (*Avicenna's De Anima*, ed. Rahman, p. 118). He speaks of *aṣḥāb al-aṣbāḥ*, the proponents of a theory of intromission dematerialized, stemming from Aristotle (*Avicenna's De Anima*, p. 119).

عصفور من الضوء ما يحيل ما بينه وبين فلك الكواكب الثابتة من الهواء إلى جوهره حتى يدركها؟

15

G14. Abū al-'Alā' ibn Zuhr, *Solution to the Doubts about Galen* 7.2–4, MS Riḍawī 13997, fol. 7a, ll. 1–10 (Koetschet–Rajab)

- (1) قال أبو العلاء بن زهر إن جالينوس يقول: "فأما أن الضياء الذي يخرج من العين يبلغ إلى الأشياء المُبَصَّرَة، فقبحة شبيهة بقبح قول أفيقورس لأنه قد طلب أنواع الحركات فلم نجد فيها نوعاً يبلغ هذا المقدار من السرعة. وأيضاً فامتداد ذلك الضياء بنفسه إلى تلك المسافة بعيد".
- (2) ويريد جالينوس بالمُضِيءِ الهواء النير، فالروح الباصر يصير له هذا الهواء كالعصب لقوة الحس، فكما أن حسّ الروح النفسانيّ الكائن من الدماغ بالألم العارض في إصبع القدم مثلاً 5 يكون بتوسط العصب بينهما، كذلك أيضاً يكون حسّ البصر بالمرئيات التي من خارج تكون بتوسط الهواء. وكما أن العصب إن لم يكن على اعتداله المخصوص به لم يتمّ الحسّ بتوسطه، كذلك الهواء إن لم يكن نيراً والمسافة التي بينه وبين المرئيّ معتدلةً واعترض جسم يحجب المرئيّ، لم يتمّ البصر. فهذا غرض جالينوس في هذا الفصل.

G15. Abū al-'Alā' ibn Zuhr, *Solution to the Doubts about Galen* 8.5–10, MS Riḍawī 13997, fol. 7a, l. 27–fol. 7b, l. 9 (Koetschet–Rajab)

- (1) قصد جالينوس في <هذا> الموضوع من كتابه، إبطال مذهب القائلين بأنّ البصر يكون بجري تماثيل المرئيات إلى العين، أو بأنّ أجساماً صغاراً تقع في الناظر من العين. (2) فقال إنّ ما يراد أقاويل هذا الفريق ما بيّنه أنّ حركة النبو لا تبلغ هذا المبلغ من القوة والسرعة، وأنّها لا تبقى حافظة لصورتها التي كانت عليها أولاً، إذ هذا الفريق يلجأ إلى هذه الحركة في جميع الأشياء التي يعتقدونها، ثمّ ردّ عليهم ردّاً يقبله العقل من أوّل وهلة فقال إنّ القول بأنّ تماثيل 5 الجبال العظام تقع في الناظر همز وهذيان. (3) ثمّ قال بعد قليل: والقول أيضاً بأنّ التمثال وحده

Galen says, namely that enough light emanates from the piercing in the uvea of a bird to transform the air between it and the fixed celestial stars into its own substance, in order to perceive them? (Ko [C-H])

G14. Abū al-‘Alā’ ibn Zuhr, *Solution to the Doubts about Galen 7.2–4*

(1) Abū al-‘Alā’ ibn Zuhr says that Galen says: “As for maintaining that the light that comes out of the eye reaches visible things, the pernicious character [of this thesis] resembles [the pernicious character] of what Epicurus says,” because he (i.e. Galen) had asked: “What are the different types of movements? Yet, no movement reaches this speed. Moreover, the fact that this light travels this distance by itself is difficult.” 5

(2) Galen understands by “luminous [medium]” the luminous air. “Thus, this air is to the visual pneuma what the nerve is to the capacity for sensation. Therefore, just as the sensation of pain in the toe that the psychic pneuma in the brain feels is caused by the intermediary of the nerves between the two [i.e. the brain and the toe], so the sensation corresponding to the sight of visible objects outside is caused by the air. And 10 just as, if the nerve is not in its proper well-proportioned state, sensation cannot be accomplished by means of it, so too, if the air is not luminous even if the distance that separates it from the visible object is moderate, or if a body interposes itself and conceals the visible object, vision is not accomplished.” This is what Galen says in this part. (Ko [C-H]) 15

G15. Abū al-‘Alā’ ibn Zuhr, *Solution to the Doubts about Galen 8.5–10*

(1) Galen's purpose in this part of his book is to do away with the belief of those who say that vision occurs through images of visible things streaming towards the eye or that small bodies enter the pupil of the eye. (2) He said that what refutes the claims of this group is what he made clear, i.e., that the movement of rebound does not reach this amount of strength and speed; also, that they [i.e., the small bodies] do not retain 5 the configuration that they had at the beginning, since this group relies on this movement [sc. rebound] for everything they believe. Then he responded to them in a way that the mind immediately accepted from the start, saying: “To maintain that the images of high mountains penetrate the pupil is foolish and delirious.” (3) Shortly afterwards he [i.e. Galen] continued: “As for saying that only the image itself is emitted 10 in the manner of a trace, so that atoms would be emitted from every part of the visible

G14, 6–7 this...sensation] Cf. *PHP* VII.5.5–10 (454,8–27 De Lacy / V.619–620 K); VII.5.32 (460,2–3 De Lacy / V.625 K). **G15, 4** rebound] Gr. ἀποπαλμός, ἀποπάλλω; cf. DL X.44 (761,544 Dorandi); Gal. *Hipp. elem.* 2.16 (62,1 De Lacy / I.418 K). **6** configuration] Cf. DL X.42 and X.62 (760,526 and 770,741–743 Dorandi), on “compounds” (συγκρίσεις) and “aggregations” (ἀθροίσματα) of atoms. **8–9** To...delirious] Cf. *PHP* VII.5.3 (454,1–3 De Lacy / V.618 K). **11** trace] Probably a translation of τύπος, “imprint” or “outline”; cf. e.g. DL X.46 (761,562 Dorandi): “τύποι of the same shape as the solid bodies”.

نفسه يخرج على مواطأة حتى تخرج من كل جزء من أجزاء الجسم المُبَصَّرَ معاً أجساماً صغاراً فتلقى البصر معاً، وتتساوى في سرعة الحركة، حتى أنّها تحفظ في أبعاد ما بينها الوضع والشكل اللذين كانت عليهما: ولا أقول تجري مجرى الهديان؟ (4) وأنا أقول: ذلك همزٌ وهذيانٌ على ما ذكر، لأنّ تلك الأجسام الصِّغار التي تخرج عن المرئي لا تخلوا من أن يكون التمثال 10 الواقع منها في العين على قدر المرئي أو أكبر منه أو أصغر. فإن كان على قدر المرئي – تخيلاً – فغايةُ الشناعة أن يقع في العين قدر ذلك. وإن كان التمثال أكبر من المرئي فالشناعة هاهنا مضاعفة. وإن يكن أصغر منه فلم يكن لتصحّ لنا رؤية شيءٍ على حقيقة قدره. ونحن ندرك الأشياء على حقيقة أقدارها فليس ما توهمه من هذا الرأي حقاً. (5) وأيضاً فلا يخلو الشيء المرئي من أن يكون الخارج منه تمثالاً واحداً، أو تماثيل كثيرة، فإن يكون واحداً ووقع 15 بصر الناظر إليه وبحضرته عشرة آلاف ناظرٍ وما فوقه، فواجبٌ ألا يراه واحداً منهم إلا ذلك الواحد الذي اتفق له أن يأتي إلى بصره بأي حالٍ كان ذلك الاتفاق، <و> ما دام ذلك الواحد يراه فكان يجب ألا يراه بكلتي عينيهِ بل بإحدهما ونحن نجده يرى بكلتي عينيهِ، ونراه مع رؤيته عشرة آلاف فصاعداً، فليس الخارج عنه تمثالاً واحداً. (6) وإن تكون تماثيل كثيرة فكان يجب 20 على حاله أن يرى الإنسان الواحد شيئاً شبيهاً شبيهاً، لأنّ له عيين، فكان يقع في كل عين واحدٌ من تلك التماثيل الكثيرة ونحن نجده يدرك الشيء الواحد واحداً، فهذا الظنّ خُلف لا يمكن. (7) وأيضاً فلو أخذنا هذا المذهب على قبحه وشناعته، لما وجب لنا أن نعلم وضع المرئي ولا بعده ولا شكله. وأعجب من ذلك على ما أرشد إليه جالينوس أن يكون المرئي مثلاً عصفوراً 25 وبحضرته عشرة آلاف ناظرٍ إليه، وقد خرج من ذلك العصفور على مذهبهم من التماثيل عدد الأعين الناظرة إليه. أليس كان ينقص من ذلك العصفور؟ أما فمبلغ ظنيّ أنّه لو كان فيلاً لفنيّ فكيف عصفوراً؟

G16. Abū Bakr al-Rāzī, *Doubts about Galen* 5.4 (26,9–10 Koetschet)

قال جالينوس: لو كان اللون وحده يأتي البصر بتوسط الهواء المحيط، لم تحتج العين أن تتحرك ولا كنّا نعلم مقدار عظم الشيء وبعده وشكله.

فليس MS Rīḍawī [فليس 19 عليه MS Rīḍawī] عليهما 9 جسم MS Rīḍawī [جزء موطأ MS Rīḍawī] مواطأة 7 كثير MS Rīḍawī [كثيرة الخارج MS Rīḍawī] [الخارج فليس

body together and reach the sight together, and that they would have the same speed, so that they would maintain through the distances between them their [relative] position and the shape that they had: I am expected not to say this is completely delirious?“ (4) For my part, I (i.e. Abū al-‘Alā) say that this is foolish and laughable, according to what he (i.e. Galen) has said, because the atoms emitted from the visible object produce an image that enters the eye, and (this image) is necessarily either the size of the visible object, or larger, or smaller. If it is the size of the visible object – let’s imagine – then it would be quite infamous [to say] that it would enter the eye with that size. If the image were larger than the visible object, that would be twice as infamous. And if it were smaller [than the object], then it would not be validated that we see things according to their actual size. But we apprehend things according to their actual size. So what this doctrine leads us to suppose is not correct. (5) Similarly, what comes from the visible object is necessarily a single image, or several images. If it is a single image, and the sight of one spectator sets on it in the presence of ten thousand spectators, or even more, then none of them would see it, except the one whose sight the image would come to, in any way whatsoever. And as long as this [spectator] was seeing it, it would be necessary for him not to see it with his two eyes, but with only one of them. Now, we know that he (i.e. the spectator) sees it with his two eyes, and we know that ten thousand people and even more can see it at the same time. So what come from [the visible object] is not a single image. (6) If it is several images, then it is necessary for a man in his original state to see the thing in duplicate, for he has two eyes, and therefore, one of these several images enters each of these two eyes. But we know that he sees the thing as a single item. Therefore, this supposition (i.e. that several images are emitted by objects) is contrary [to what is], and is not possible. (7) In the same way, if we followed the infamous and pernicious arguments of this group, we would not necessarily know the location of the visible thing, and neither its distance or shape. More astonishing than that, according to what Galen indicates, if the visible object were a bird, for example, and ten thousand spectators looked at it at the same time, there would be as many images coming from this bird, according to this group, as there are eyes looking at it. Wouldn’t the bird shrink as a result? I’ve come to think that if it were an elephant, it would disappear, even more so a bird! (Ko [C-H])

G16. Abū Bakr al-Rāzī, *Doubts about Galen* 5.4

Galen says: If colour alone reached the sight through the mediation of the surrounding air, the eye would not need to move, and we would not know the size of the thing, its distance and its shape. (Ko [C])

12 the same speed] Cf. DL X.61 (770,731 Dorandi): “atoms must be of the same speed (ἰσοταχείς)”.
 13–14 relative position] Cf. DL X.48 (763,588–589 Dorandi): “preserving the position and arrangement of the atoms (τήν ... θέσιν καὶ τάξιν τῶν ἀτόμων)”.
 25–26 ten thousand spectators] Cf. *PHP* VII.5.3 (454,4 De Lacy / V.618 K). **G16, 1–3** Cf. G17, 23–26.

G17. Abū al-'Alā' ibn Zuh̄r, *Solution to the Doubts about Galen* 9.4–6, MS Riḍawī 13997, fol. 9a, ll. 3–26 (Koetschet–Rajab)

(1) قال أبو العلاء بن زهر إن جالينوس لما أبطل القولين اللذين يعمهما أن البصر لا يكون بتوسط الهواء أصلاً، الذي أحدهما إن البصر إنما يكون بنفوذ شيء من المرئي إلى البصر والثاني إنه إنما يكون بنفوذ شيء من المُبصر إلى المرئي. قصد هاهنا إلى النظر في الأقوال التي يعمها أن البصر يكون بتوسط معونة الهواء، (2) فقال إن معونته على ذلك إما بأن يتغير وإما بأن لا يتغير، وهو باقٍ على الحال التي كان عليها. (3) لكنّه إن كان يتغير فإنّ تغيّره إما 5 من البصر وإما من المبصر وإما منهما جميعاً. (4) وإن كان يبقى على حالته التي كان عليها، لكنّه يعرض له شبيه بما يعرض للعكازة التي يميّز بها الصلب من اللين. فأبطل أن يكون إدراك المبصر على نحو ما يدرك الصلب من اللين بالعكازة، بما نجده من أن البصر ليس يقع بعد قياس بل بأول وهلة. والعكاز إنما يعلم بها ما تلقاه بعد استعمالنا الذهن في الحالة التي نجدها تلقاه؛ فإن لقينا بها جسماً ينضغط أمامها علمنا أن ذلك الانضغاط لرطوبته أو لتخلخل 10 أجزاءه، وإن لم ينضغط علمنا أنه لصلابته أو لتمدده. والبصر ليس على هذه الصفة. وأيضاً إنما نجده من رؤيتنا الأكوان والوضع والبعد والمقدار والشكل. (5) وأبطل أيضاً القول بأن البصر يكون باستحالة الهواء من المرئيات، فينفذ ذلك على الاتصال حتى يبلغ إلى آلة البصر، فإنّه لو كان ذلك، لما علمنا مقدار المبصرات ولا وضعها ولا بعدها ولا شكلها، ولم تكن تحتاج العين إلى <أن> تتحرّك في وقت من الأوقات، إذ كانت إنما يصير إليها اللون وحده بتوسط 15

G17. Abū al-‘Alā’ ibn Zuhr, *Solution to the Doubts about Galen* 9.4–6

(1) Abū al-‘Alā’ ibn Zuhr says: Galen, once he has done away with the two theses which have in common [the claim] that sight is not mediated by air at all – the first thesis, that sight occurs only because something travels from the visible object to the sight, and the second, that it occurs only because something travels from the viewer to the visible object –, then begins to examine the theses which have in common the claim 5 that the sight is mediated with the assistance of the air. (2) He says that the air provides this assistance either by undergoing a change or without undergoing a change and remaining in the same state as before. (3) But if it undergoes a change, then its change is caused either by sight, or by the visible object, or by both. (4) Supposing the air remains in the same state as before but that sight occurs because of something similar 10 to what happens with a stick by which one distinguishes the soft from the hard, [Galen] then does away with [the claim] that apprehending the visible object takes place in the same way as distinguishing the soft from the hard, for we find that sight does not occur as a result of reasoning but immediately. For by means of the stick, we know what has come into contact with it only when we have used our reason each time we find that 15 the stick has come into contact with the object: if we encounter through it [i.e. the stick] a body that compresses in front of it, we know that this compression is due to its moisture or the fact that its parts are loosely combined. And if it does not compress, we know that it is because of its hardness or its extension. However, sight does not fit this description. Moreover, we find the existence, location, distance, size and shape through 20 vision. (5) It equally does away with the doctrine that vision proceeds by the transformation of the air under the effect of visible things, [transformation] which is transmitted continuously until it reaches the organ of sight. In fact, if it were so, we would not know the size of the things seen, nor their location, nor their distance, nor their shape, and the eye would not need to move at any time, if colour alone reached it 25

G17, 3 sight¹...sight²] Epicurean view; cf. DL X.49 (763,597–601 Dorandi); LS 15A(7): “For external objects would not imprint their own nature, of both colour and shape, by means of the air between us and them...” 4–5 something...object] Cf. DL X.49 (763,601–2 Dorandi); LS 15A(7): “...or by means of rays or of any effluences passing from us to them”; cf. Arist. *De sensu* 2, 438a25–27. See Aët. IV.13.5–6 and 10, on Hipparchus, Pythagoras, and “some Academics”; Alex. Aphr. *Mantissa* 9 (127,31–130,12 Bruns–Sharples). Galen’s actual target, however, could be Euclid; cf. Mansfeld–Runia, *Aëtiana* V.3, p. 1635; Sharples, *Alexander Aphrodisiensis*, p. 185. 7 without...change²] Stoic view; see *PHP* VII.7.20 (474,8–12 De Lacy / V.642 K). 11 with a stick] See *PHP* VII.5.41 (460,29–30 De Lacy / V.627 K); VII.7.20 (474,8–12 De Lacy / V.642 K); Ḥunayn, *Ten treatises of the eye* 3, ed. Meyerhof, Ar. p. 109 (Engl. p. 37). The theory goes back to Chrysippus; cf. DL VII.157 (568,1361–1366 Dorandi / LS 53N, SVF II.867). See further Alex. Aphr. *Mantissa* 10 (130,14–17 Bruns–Sharples). 15 reason] See *PHP* VII.6.24 (466,27 De Lacy / V.634 K) = above, D3, 15. 17–18 compression...combined] See *PHP* VII.6.25 (466,30–32 De Lacy / V.634 K), on touch and taste. 20–21 existence...vision¹] Cf. D1, 7–12. 21–22 vision²...things] Aristotelian doctrine; see *PHP* VII.7.22 (474,15–17 De Lacy / V.643 K); and the criticism in *PHP* VII.5.33–40 (460,4–28 De Lacy / V.625–627 K = D1 above) and *PHP* VII.7.4–15 (470,13–472,24 De Lacy / V.638–641 K), partly quoted above, D2, 9–31). See also Aët. IV.13.3–4, on Strato and Aristarchus. 23–26 Cf. G16, 1–3.

الهواء المحيط، وذلك أنه : لم يكن ليعلم وضع الأشياء في أيّ موضع هي، لو لم يكن تعرّفنا لها إنّما يقع في الموضع الذي هي فيه. ولم يكن يمكن أن يحسّ بالبعد فيما بيننا وبين الشيء المُبصر، لو لم يكن بعد الروح الباصرة ذلك البعد كلّهُ بتوسط الهواء المنير إلى المرئي. و[لو] لم تكن تعرف مقادير الأشياء المبصرة من غير <أن> تغشاها حتى تحتوي عليها بكآبتها.

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G18. Abū Bakr al-Rāzī, *Doubts about Galen* 5.5 (28,6–7 Koetschet)

ثم أتى جالينوس بأشياء يروم أن ينتج منها أنّه يخرج من العين ويبرز عنها جوهرٌ منيرٌ. منها قوله إنّ ما كان من الحيوان كثير ضياء العين فإنّه إذا نظر نحو أنفه.

G19. Abū Bakr al-Rāzī, *Doubts about Galen* 5.5 (28,10–11 Koetschet)

منها ما قال إنّّه يعرض له ولكثير من الناس بعقب النوم الطويل، إذا فتحوا أعينهم، أن يبصروا ما قرب منهم هنيهةً ثم يفقدون ذلك.

G20. Abū Bakr al-Rāzī, *Doubts about Galen* 5.5 (30,3–4 Koetschet)

ومنها قوله إنّ البصر إذا كلّ، كان دواؤه تغميض العين.

G21. Abū Bakr al-Rāzī, *Doubts about Galen* 5.5 (30,7–8 Koetschet)

ومنها قوله إنّما إذا غمضنا إحدى العينين، اتّسع ثقب الناظر من الأخرى، فيُعلم يقيناً أنّه يملؤه جوهرٌ جسميٌّ.

through the surrounding air. In fact, we would not know the location where the thing is, if we did not come to know this thing only at the place where it is. And it would be impossible to perceive the distance that separates us from the thing seen, if the distance of the visual pneuma was not this entire distance through the intermediary of the luminous air until it reaches the visible object. And one would not know the sizes 30 of the visible things, without surrounding them to the point of containing them in their entirety. (Ko [C-H])

G18. Abū Bakr al-Rāzī, *Doubts about Galen* 5.5

Then he comes to the [signs] from which he hopes to conclude that a luminous substance leaves the eye and emanates from it. Among these is the claim that when animals with very bright eyes look at their nose, you see a circle of light on it. (Ko [C])

G19. Abū Bakr al-Rāzī, *Doubts about Galen* 5.5

Another [sign]: he [i.e. Galen] says that it happens to him and many other people that when they open their eyes after a long sleep, sometimes they see what is near them for a while and then lose [the sensation]. (Ko [C])

G20. Abū Bakr al-Rāzī, *Doubts about Galen* 5.5

Another argument: When vision becomes fatigued, the medication consists of applying a patch to one eye. (Ko [C])

G21. Abū Bakr al-Rāzī, *Doubts about Galen* 5.5

Another argument: If you apply a mask to one eye, the pupil of the other eye will dilate. One thus learns with certainty that a bodily substance fills it. (Ko [C])

29 distance¹ ...pneuma] Cf. *PHP* VII.5.7 (454,11–16 / V.619 K), where Galen describes *the alteration of the air* caused by the impact of the pneuma as being transmitted “to the furthest distance (ἄχρι πλείστου)”. This is different from saying that the pneuma itself travels the entire distance. Perhaps Galen changed his view or his view is slightly misrepresented by Abū al-‘Alā’. **G18**, 2–3 Cf. *PHP* VII.4.18–19 (450,36–452,7 De Lacy / V.616 K). **G19**, 2–3 Cf. *PHP* VII.4.17 (450,31–36 De Lacy / V.615–616 K). **G21**, 1–2 Cf. *PHP* VII.4.11–13 (450,10–22 De Lacy / V.614 K).

G22. Abū Bakr al-Rāzī, *Doubts about Galen* 5.7 (32,14–15 Koetschet)

وأما قوله إنّ هاتين العصبتين لما كان فيهما منفذ محسوس ولما كانتا تنبتان من بطني الدماغ نفسه، يجب أن يجري فيهما جوهرٌ جسمي، فإنّ ذلك غير واجب.

G23. Abū al-'Alā' ibn Zuhr, *Solution to the Doubts about Galen* 9.7–11, MS Riḍawī 13997, fol. 9a, l. 26–fol. 9b, l. 6 (Koetschet–Rajab)

(1) فلما أبطل هذا وجب ضرورةً أن يكون تعرّف الأشياء إمّا لأنّ الهواء كلّه طبيعته القوة [وإن لم يكن للهواء] الباصرة التي فينا، وإما لأنه يستعيد هذه القوة بقاء القوة الباصرة حتى تكون <طبيعته> هذه القوة. وإن لم يكن للهواء كلّه فهو لا محالة للمضيء منه فقط. (2) ثمّ بيّن أنّ الهواء يتغير بخروج ضياء البصر إليه <...> (3) <فإنّ> كثيراً من الناس يرون أمام العينين في الظلمة ضوءاً متى غمضوا أعينهم مدة طويلة. (4) والرابع أنّ هذا العصب الباصر بين 5 العصب كلّه الذي يخرج من الدماغ فيه منفذٌ محسوس. (5) والخامس أنّ هذا العصب وحده ينبت من بطون الدماغ. فلما صحّ له نفوذ شيء من العين إلى الهواء، صحّ أنّ الهواء ليس طبيعته القوة الباصرة، لكنّه مستعدّ متهيء لقبول قوتها والتشبه بها.

G24. Abū al-'Alā' ibn Zuhr, *Solution to the Doubts about Galen* 10.5, MS Riḍawī 13997, fol. 10b, ll. 10–16 (Koetschet–Rajab)

ومما يجب أن ننبه عليه ما قلناه من أنّ جالينوس قد بيّن في كتاب البرهان أنّ العين يخرج عنها ويبرز منها روح نيرٍ بخمسة أشياء. وهذا الذي ذكرناه آنفاً يخيل لمن يحدّ النظر أنّه ليس من الخمسة، فنكون نحن قد تناقضنا، والجواب عنه أنّ هذا الذي ذكرناه آنفاً داخل تحت الدليل الثالث من الخمسة وهو قوله إنّ كثيراً من الناس يرون أمام العين في الظلمة ضوءاً متى 5 غمضوا أعينهم مدةً طويلة ثمّ فتحوها بعد لأنه من الاستدلال على وجود الروح النير بحاسة البصر.

G24, 4–5 مدة — من — Cf. PHP VII.4.18–19 (450,36–452,7 De Lacy / V.616 K).

G23, 6 مبعود [منفذ] MS Riḍawī

G22. Abū Bakr al-Rāzī, *Doubts about Galen* 5.7

As for what he says, namely, that since there is a perceptible perforation through the two optic nerves, and since [these nerves] are implanted in the brain itself, then a bodily substance must necessarily flow through them, this is not necessarily implied. (Ko [C])

G23. Abū al-‘Alā’ ibn Zuhr, *Solution to the Doubts about Galen* 9.7–11

(1) When he (i.e. Galen) did away with [these theses], it became necessary that [we came to] recognize things occurs either because the air in its entirety is of the same nature as the [visual] power within us, or because [the air] retrieves this power when it comes in contact with the visual power; it becomes of the same nature as this power. And if this is not the case for air in its entirety, in any event it is the case for luminous air. (2) Next, he explains that the air changes when the light of sight is emitted in its direction. <...> [lacuna] (3) Many people see a light in front of their eyes in the dark when they close them for a long time. (4) The fourth [sign] is that this optic nerve, of all the nerves that leave the brain, is the only one that contains a perceptible perforation. (5) The fifth is that this nerve alone comes from the ventricles of the brain. So, once he established that something flows from the eye to the air, he established that the air is not of the same nature as the visual power; but that the air is ready to receive the power of the eye and become like it. (Ko [C-H])

G24. Abū al-‘Alā’ ibn Zuhr, *Solution to the Doubts about Galen* 10.5

Among the things we must draw attention to is what we have said: that Galen has already shown by means of five [signs] in the treatise *On demonstration* that a luminous *pneuma* leaves the eye and emanates from it. Now, if someone were not thinking correctly, he might imagine that what we reported above is not one of the five [signs], and therefore that we likely contradict ourselves. But the answer is that what we reported above belongs to the third of the five signs: namely, that many people see a light in front of their eyes when they are in the dark, when their eyes are closed for a long time and then they open them. Indeed, it is an indication of the existence of *pneuma* based on the sense of vision. (Ko [C-H])

G22, 1–2 Cf. *PHP* VII.4.4–10 (448,26–450,9 De Lacy / V.612–614 K). 1 perceptible perforation] cf. G23, 9. **G23, 5–6** it...air¹] Galen’s view; cf. *PHP* VII.5.5–10; 5.31–32; and 5.41 (454,8–27; 460,1–4; and 460,28–33 De Lacy / V.619–620, 625, and 627 K); below, G26, 5–7. 7–8 Cf. *PHP* VII.4.17 (450,31–36 De Lacy / V.615–616 K). 9 perceptible perforation] Cf. G22, 1; *PHP* VII.4.4–10 (448,26–450,9 De Lacy / V.612–614 K), partly cited below, G27. 13 become like it] Cf. *PHP* VII.5.41 (460,33 De Lacy / V.627 K): συνεξομοιώσει. Cf. G26, 1–2. **G24, 4** above] G23, 7–8.

G25. Galenus, *De usu partium* XVI.3 (II.384,13–21 Helmreich / IV.275 K)

ὥστ', εἰ βουληθείης ἐπὶ σχολῆς πολλῆς βασανίσει τὰς ἀποδείξεις, ἅς εἶπομεν ἐν ἄλλοις
 τέ τισι καὶ τῷ τρισκαιδεκάτῳ περὶ ἀποδείξεως ὑπὲρ τοῦ τὸ τῆς ὄψεως ὄργανον αὐγοει-
 δὲς ἔχειν πνεῦμα διὰ παντὸς ἐπιρρέον ἐξ ἐγκεφάλου, θαυμάσεις τῶν ὀπτικῶν νεύρων
 τὴν κατασκευὴν κοίλων μὲν τάνδον γενομένων ὑπὲρ τοῦ δέχεσθαι τὸ πνεῦμα, μέχρι δ'
 5 αὐτῆς ἀνατεινομένων τῆς κοιλίας τοῦ ἐγκεφάλου διὰ τὴν αὐτὴν αἰτίαν.

G26. Galenus, *In Hippocratis Prognosticum commentaria* I.23 (236,10–20 Mewaldt / XVIIIb.72–73 K)

δέδεικται γὰρ ὅτι τὸ πνεῦμα τὸ ὀπτικὸν αὐγοειδὲς ὄν ἑαυτῷ συνομοιοῖ τὸ μεταξὺ τοῦ τε
 κρυσταλλοειδοῦς καὶ τῆς κόρης ὑγρόν, λεπτὸν καὶ καθαρὸν ὑπάρχον, ὁμοίωτατον τῷ
 περιεχομένῳ κατὰ τὰ ὠά, ᾧ καὶ κατὰ τὰς ὀφθαλμίας χρώμεθα. δέδεικται δ' ὅτι καὶ διὰ
 5 τούτου τοῦ ὑγροῦ φέρεται τὸ πνεῦμα κατὰ τὸ τῆς κόρης τρῆμα πρὸς τὸν ἐκτὸς ἀέρα
 συμπαγὲς αὐτῷ γινόμενον, ἀλλὰ καὶ ὅτι τούτῳ τῷ ἀέρι συμφωτισθέντι χρῆται καθάπερ
 ὄργάνῳ συμφύτῳ τοιούτῳ τὴν δύναμιν ὄντι, ὅποιον ἐν τῷ σώματι τὸ νεῦρόν ἐστιν.
 ἐπιδέδεικται δὲ καὶ τοῦτο κατὰ τοὺς ἰδίους τῆς ὄψεως λόγους, ὡς ἐν τῷ τρισκαιδεκάτῳ
 περὶ ἀποδείξεως καὶ τῷ ἑβδόμῳ περὶ τῶν Ἱπποκράτους καὶ Πλάτωνος δογμάτων
 ἔγραψα.

G27. Galenus, *De placitis Hippocratis et Platonis* VII.4.2–4 (448,14–29 De Lacy / V.612–613 K)

(1) αἱ γὰρ κατ' ἀλλοιώσιν εἰς τὰ συνεχῆ σώματα διαδόσεις τῶν ποιοτήτων ἐπιρροαὶ
 δυνάμει ὑπ' αὐτῶν λέγονται, καθάπερ ὅταν ἐπὶ τοῦ περιέχοντος ἀέρος ἐκ τῆς ἡλιακῆς
 αὐγῆς ὀρμηθεῖσά τις ποιότη(το)ς εἰς ἅπαν αὐτοῦ μέρος ἀφικνῆται διάδοσις, αὐτῆς τῆς
 5 οὐσίας τοῦ ἡλίου μενούσης κατὰ χώραν· ἐπιδέδεικται γὰρ ἡμῖν τοῦτο κατὰ τὴν περὶ τῆς
 ἀποδείξεως πραγματείαν. (2) οὐκ οἶόν τε προχείρως ἀποφύνασθαι πότερον οὕτως ἐξ
 ἐγκεφάλου δύναμις ἐπιρρεῖ τοῖς μέλεσι διὰ νεύρων, ἢ τῆς τοῦ πνεύματος οὐσίας
 παραγινόμενης ἄχρι τῶν αἰσθανομένων καὶ κινουμένων μορίων, ἢ μέχρι τινὸς
 ἐμπιπτούσης τοῖς νεύροις ὡς ἀλλοιώσαι σφοδρῶς αὐτά, κάπειθ' οὕτως τῆς ἀλλοιώσεως
 ἄχρι τῶν κινουμένων μελῶν διαδιδόμενης. (3) τοιοῦτον γοῦν τι καὶ κατὰ τὴν ὀπτικὴν
 10 αἰσθησιν ἐν τοῖς περὶ τῆς ἀποδείξεως ἐδείχθη γινόμενον. ὅτι γὰρ ἐπ' ἐκείνων τῶν
 νεύρων αὐγοειδὲς φέρεται πνεῦμα τρήματα ἐχόντων σαφῆ κατὰ τε τὴν ἄνωθεν ἀρχὴν

G25. Galen, *The use of parts* XVI.3

Thus, if you wish to use a great deal of leisure time to test the demonstrations which we gave, among other places, in the thirteenth book *On demonstration*, about the fact that the instrument of sight has luminous pneuma continually flowing in from the brain, you will wonder at the structure of the optic nerves, having come to be hollow inside in order for the pneuma to be received, while extending up as far as the 5 ventricle of the brain itself for the same reason. (C)

G26. Galen, *Commentary on Hippocrates' Prognostics* I.23

For it has been shown that the optical pneuma, being luminous, assimilates to itself the fluid between the crystalline lens and the pupil, which is fine and clear, very similar to what is contained in eggs, which we also employ against ophthalmia. It has also been shown that pneuma travels through this fluid along the opening of the pupil towards the external air to which it becomes joined; but also that it uses air that is illuminated 5 with it as if it were a connate organ having the kind of capacity that the nerve has in the body. This has also been pointed out in the arguments dealing specifically with sight, which I wrote in the thirteenth [book] *On demonstration* and the seventh [book] of *The doctrines of Hippocrates and Plato*. (C-H)

G27. Galen, *The doctrines of Hippocrates and Plato* VII.4.2–4

(1) They describe the transmission of qualities to continuous bodies by alteration as 'effluences of power', like in the case of the surrounding air, when the transmission of a particular quality, initiated by the light of the sun, reaches to every part of [the air], while the substance of the sun itself remains in place. For we have shown this in the treatise *On demonstration*. (2) It is certainly not possible to make an assertion offhand 5 whether the power flows in this way from the brain to the limbs through the nerves, or the substance of the pneuma comes all the way to the sensing and moving parts or falls upon the nerves up to a certain point so as to vehemently alter them, and then in this way the alteration is transmitted as far as the moving limbs. (3) In any event, it has been shown in the [books] *On demonstration* that something like this comes to be in 10 the case of visual sensation. For that a luminous *pneuma* travels in the case of those nerves, as they clearly have perforations both at the upper starting point and their

G25, 4 the structure of the optic nerves] Cf. G22, 1; G23, 9. **G26, 1–2** assimilates...pupil] Cf. G23, 13. **6–7** having...body] Cf. G23, 12–13. **G27, 1** They] Galen ascribes this view to "those who say that the flow is by virtue of some power without substance", see *PHP* VII.4.1 (448,13–14 De Lacy / V.611–612 K, trans. De Lacy). They are probably some Platonists; De Lacy (*ad* 448,15) mentions Plat. *Resp.* VI, 508b6–7. See further *PHP* VII.5.6–8 (454,10–21 De Lacy / V.619–620 K). **12** perforations] Cf. G22, 1.

καὶ τὴν εἰς τοὺς ὀφθαλμοὺς ἔμφουσιν, ἐν ταῖς τῶν μεγάλων ζώων ἀνατομαῖς ἐστὶ θεάσασθαι.

G28. Abū Bakr al-Rāzī, *Doubts about Galen* 6.1 (36,2–5 Koetschet)

وقال جالينوس في آخر هذه المقالة إنّ هاتين القضيتين أوّليتين بيّنتين عند جميع الناس وهما أنّه لا يحدث شيء من الأشياء ممّا ليس بموجود أصلاً وأنّه لا يفسد شيء من الأشياء فيصير إلى ما ليس بموجود، فلذلك القول عندهم أوّل إن الجسم الأوّل غير مكوّن وأنّه غير قابل للفساد.

G29. Abū Bakr al-Rāzī, *Doubts about Galen* 15.17 (130,4–6 Koetschet)

وقال في كتاب طبيعة الإنسان وفي كتاب البرهان وفي غير كتاب إنّ الجوهر الموضوع واحدٌ لا يقبل الكون والفساد.

G30. Abū Bakr al-Rāzī, *The comprehensive book of medicine* (5.45 Hyderabad)

من الرابعة عشر من البرهان قال: الطعام يبقى في المعدة مدّة طويلة ويُعرف ذلك من الجشاء ومن انتفاخ المعدة ومن القيء قال: وقد تقيأت مراراً طعاماً بعد أربع ساعات وسبع فكان بحاله وسألت المصارعين متى يحسّون بنزول الطعام عن معدّهم فقال بعضهم: بعد خمسة عشر ساعة وأقلّ وأكثر لكنّ غذاء هؤلاء لحم الخنازير ويختلف الأمر في ذلك بحسب الأطعمة وبحسب حال المعدة وبحسب ما فيها من الأخلاط إلّا أنّه بالجملة قد يببّط فيها زماناً طويلاً. 5

G31. Abū Bakr al-Rāzī, *The comprehensive book of medicine* (5.95 Hyderabad)

البرهان، الرابعة عشر: الحركة العنيفة بعد الطعام تدعو إلى القيء وتوجب ذلك وقد ذكرناه في غير ما كتاب ولذلك يجب لمن يلزم من يعتاده ذلك السكون بعد الطعام.

attachment into the eyes, it is possible to observe in the anatomical dissections of large animals. (C-H)

Concluding Remarks

G28. Abū Bakr al-Rāzī, *Doubts about Galen* 6.1

At the end of this book, he says: “These two propositions are two first principles evident to all people, namely that nothing is created out of that which does not exist at all, and that nothing is corrupted in such a way that it becomes that which does not exist. For this reason, the proposition that the first body is not generated and is not corruptible is a first principle for them.” (Ko [C])

5

G29. Abū Bakr al-Rāzī, *Doubts about Galen* 15.17

In the treatise *On the nature of man*, in the treatise *On demonstration* and in other treatises, he says that the substance [that is] the substratum is one and is not subject to generation and corruption. (Ko [C-H])

Book XIV

G30. Abū Bakr al-Rāzī, *The comprehensive book of medicine*

In the fourteenth book of the treatise *On demonstration*, he says: “Food remains in the stomach for a long time. This is clear from belching, from the swelling of the stomach, and from vomiting.” He says: “I vomited food several times after four or seven hours and it was still intact. I asked wrestlers at which moment did they feel the food left their stomachs, and one of them said: after fifteen hours, more or less. Now these people eat pork meat, and this [lapse of time] is different depending on the type of food, on the stomach and on the humors in it. But in general, [food] remains in [the stomach] for a long time.” (Ko [C])

5

G31. Abū Bakr al-Rāzī, *The comprehensive book of medicine*

On demonstration, in the fourteenth book: “Making a violent movement after [having taken] food leads to vomiting. We have already explained in another work that this is necessary. That is why whoever is used to this must remain calm after having taken food.” (Ko [C])

G28, 2–4 nothing...exist] Cf. A15, 8–9. G29, 1 Cf. Gal. *HNH* I.7 (21,13–15 Mewaldt / XV.37 K). 2–3 Cf. G3, 1–2. G31, 3 this] I.e., vomiting.

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