

# Ancient Greek Medicine in Questions and Answers

*Diagnostics, Didactics, Dialectics*

*Edited by*

Michiel Meeusen



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# Digitizing Medical Papyri in Question-and-Answer Format

*Nicola Reggiani*

## Abstract

This chapter presents a general overview of the Greek medical papyri in question-and-answer format, focusing in particular on their layout and on the graphical strategies deployed by the ancient scribes in highlighting the main articulations of the texts. Discussion will then move from the ancient sources to their modern digital representation, where the current strategies to encode such ancient layout and graphical devices will be presented and analysed, pinpointing their fundamental relevance in our comprehension of this peculiar textual typology.

## 1 Introduction: Medical Catechisms on Papyrus as a Technical Genre\*

The term ‘catechism’ usually defines a technical genre of writing that, by its typical question-and-answer format (ἑρωταπόκρισις, with a Middle Byzantine word),<sup>1</sup> was particularly useful for teaching, learning, and referencing purposes. The papyrological evidence of such catechisms is not limited to the field of ancient medicine alone,<sup>2</sup> but the relatively large amount of medical papyri that

\* This contribution stems from the project DIGMEDTEXT (“Online Humanities Scholarship: A Digital Medical Library Based on Ancient Texts”, Principal Investigator Prof. Isabella Andorlini) funded by the European Research Council (Advanced Grant no. 339828) at the University of Parma. See <http://www.papirologia.unipr.it/ERC> for further details.

1 In general, on erotapocritic literature in Antiquity, see Ieraci Bio (1995).

2 The fields of poetry, philosophy, rhetoric, mythology, law, and religion are represented as well. Poetry: P.Lond.Lit. 160 (on Homer’s *Odyssey*); philosophy: P.Heid. inv. G 1716 = LDAB 4699 (on ethics; cf. Bilabel [1925: 339–340]; Körte [1927: 266]; Ingenkamp [1969]); rhetoric: PSI 1 85 (definitions of *chreia*; cf. Bastianini [2004]; Hock-O’Neil [2002: 11, 94–98]) and P.Vindob. inv. G 754 = LDAB 6396 (cf. Oellacher [1937]); mythology: P.Oxy. xxxiv 2688v (cf. Fernandez-Delgado [2013: 133 n. 3]) and 2689; law: P.Berol. inv. 11866a/b = LDAB 6078 (commentary on Roman law; cf. Schönbauer [1933a and 1933b]; McNamee [2007: 503–504]); religion: BKT IX

came down to us in this format (22 published fragments, and one unpublished) seems to underline the importance of this type of discourse for knowledge transmission specifically in the ancient medical sector.<sup>3</sup> Such questionnaires provide key medical notions in a dialogue format, where a question about theoretical definitions or practical procedures is typically followed by a more or less detailed answer.<sup>4</sup> All the interpretations that have been advanced to explain this peculiar textual typology focus on its Q&A structure.<sup>5</sup> This in itself pinpoints the central role played by the erotapocritic format, which arguably stems from the very origins of medicine as an orally transmitted type of knowledge<sup>6</sup> as well as from its scientific nature as an enquiring, empirical discipline (cf., e.g., Hipp., *Ant. Med.* 13.1–2 [1.598.3–4 Littré; 133.7–8 Jouanna]: “those who pursue their researches in the art”).<sup>7</sup> Medical questionnaires as technical reference manuals are indeed flanked by a proper ‘literary’ genre of ‘definitions’, i.e., broader and more detailed treatises connected with the research and teaching practice of Graeco-Roman medicine as attested, for instance, in Ps.-Galen’s *Definitiones medicae* and in Ps.-Soranus’ *Quaestiones medicinales*,<sup>8</sup> but also in papyrus fragments. Both textual typologies, catechisms and definitions, testify to a well-rooted medical tradition in the practical and theoretical use of questions and answers as schemes of cognition, the difference being between more schematic and practical texts and more articulated and theoretical discourses respectively (see also below).

It speaks for itself that ancient doctors required the necessary technical skills to exercise their profession properly; but there were also situations where they could undergo some sort of ‘examination’, either by private clients<sup>9</sup> or by

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100 (Mithraic liturgy; cf. Brashear [1992]; Turcan [1992 and 1993: 152–156]; possibly not Mithraic, possibly not a catechism).

3 Cf. Ieraci Bio (1995). It was recently brought to my attention that students of medicine take advantage of a very similar learning methodology still today, making use of ‘flash cards’ with questions on one side and answers on the other: see, e.g., Drake—Vogl—Mitchell (2015), in the *Preface* of which we read: “The question-and-answer format stimulates learning, and pertinent clinical information on most cards provides relevance”.

4 For a detailed overview, see Bonati’s chapter in this volume.

5 Teaching manuals for students of medicine: Andorlini (1999); Hanson (2003). An Aristotelian way of systematizing medical knowledge: Leith (2009a). Zalateo (1964) gave a very peculiar interpretation by relating these texts to the official examination of the *δημόσιοι ἰατροί* (public physicians) of Roman Egypt, but his hypothesis is now outdated. See Ricciardetto in this volume.

6 Cf., e.g., Andorlini (2006), *passim*, with further bibliography.

7 τῶν [...] τὴν τέχνην [...] ζητούντων. Translation from Schiefsky (2005: 89).

8 On which, cf. Kollesch (1963) and Fischer (1998) respectively.

9 Galen gives instructions to the patients that they should choose the best doctor after an

public authorities,<sup>10</sup> in which they had to demonstrate their acquired knowledge in practice. The transmission of this knowledge was carefully carried out through a specialised education, initially based on oral teachings and subsequently entrusted to written supports. The relevance of written texts for medical education is stressed already in the Hippocratic corpus,<sup>11</sup> while Galen explains how written records of his oral lectures passed from hand to hand (these are the notes, or ὑπομνήματα, of which he says that they were not actually destined for wide publication).<sup>12</sup> These writings, compiled within a didactic framework, aimed at preserving, condensing and disseminating the medical knowledge and practice taught: they were the ‘study textbooks’ on which medical education—in terms of both learning and training—was built, and of which brief excerpts survive in the fragmentary papyri that came down to us—including the medical catechisms. Extremely significant is the introductory section of one of such writings, preserved as an *adespota* in PSI XII 1275v (II century AD): “For those among the young people who approach medicine with a theoretical attitude, Demosthenes, since it is a primary and essential requirement for an introductory learning to master the names of internal and external body parts, we believe that it is best to first write each of such names in the form of a definition, and once a certain experience relating to these things has been acquired [...]”.<sup>13</sup> The text is unfortunately incomplete, but either its writer or its

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enquiry: cf. Nutton (1990), describing Galen's lost treatise *On Examining the Physician*, preserved thanks to an Arabic version. At 5.4 (70.13–15 Iskandar) it is said that “[a] man who is well trained in demonstrative logic can find out the truth simply by questioning the would-be healer on his learning” (tr. Nutton [1990: 245]).

10 Even though the official request for scientific proofs of a physician's actual medical capacity as recorded in P.Oxy. I 40 + BL I 312, V 74, VI 95 (copy of court proceedings from Oxyrhynchus, II cent. AD, in which a public doctor claims for immunity from some public obligations, and the judge asks for proofs) can be interpreted in different ways due to the fragmentary state of the papyrus, the practice of the δοκιμασία, i.e., the official examination by which a physician became a ‘public doctor’, is well attested (cf. Reggiani [2018c]).

11 “I consider the ability to evaluate correctly what has been written as an important part of the art”, says the author of the *Epidemics* adding that: “He who has knowledge of it and knows how to use it will not commit, in my opinion, serious errors in the professional practice” (*Epid.* 3.3.16.1–4 [3.100.7–102.2 Littré; 113.5–8 Jouanna—Guardasole—Anastassiou]: μέγα δὲ μέρος ἡγεῦμαι τῆς τέχνης εἶναι τὸ δύνασθαι κατασκοπέεσθαι περὶ τῶν γεγραμμένων ὀρθῶς. ὁ γὰρ γνοὺς καὶ χρεόμενος τούτοισιν, οὐκ ἂν μοι δοκῆι μέγα σφάλεσθαι ἐν τῇ τέχνῃ).

12 *Libr. Propr., Pref.* (19.8–11 Kühn; 1.131–135 Boudon-Millot); cf. Nutton (1972); Nieddu (1992: 555–567); Andorlini (2003: 14). On the topic of ancient medical education (and literacy) cf. also Hanson (2010).

13 τῶν νέων τοῖς κατὰ λόγους εἰς | τὸ ἰατρεύειν προσάγουσιν, ὧ Δημόσθενης, πρῶτ[ο]υ καὶ ἀναγκαιοτάτο[υ] | πρὸς [εἰ]σαγωγὴν ὑπάρχοντος τοῦ δι|ακατασχεῖν τῶν ἐπὶ τοῖς ἐντός τε | καὶ ἐκτός

user seems to have put such a recommendation into practice by transcribing a definition of the parts of the head on the other side of the papyrus. Similarly, the anonymous introduction to surgery preserved in BKT 111, pp. 22–26 (1 century AD) claims that beginners should learn an adequate basic terminology, of which the author provides some examples, structured, not inappropriately, in a sequence of questions.<sup>14</sup>

## 2 Digitizing the Medical Questionnaires on Papyrus

In the questionnaires on papyrus, utilised as handbooks and as reference tools for the doctors' preparation and practice, the importance of the erotapocritic structure is stressed by a complex set of graphic and paratextual devices deployed to highlight the articulation of the text.<sup>15</sup> As we already saw, this Q&A format is probably inspired by some sort of oral teaching, later entrusted to writing, at which point the articulation becomes a distinct discursive technique. This explains why the scribes took specific care to highlight the articulation of the text by means of a wide range of devices affecting the overall layout.<sup>16</sup> The questions are very often indented in *eisthesis* and further marked with diacritical and lectional marks (see below), which introduce the answers as well. This *mise en page* reflects the central role played by the Q&A structure of the didactical tool, and is therefore a constitutive part of the text, of its composition and transmission. For this reason it ought to be preserved carefully when the texts are moved to a modern medium. This is not only a matter of formal reproduction, but also of detailed analysis and interpretation. Due to the often-fragmentary state of the scattered sources on papyrus and the related difficulty in recognizing their textual genre,<sup>17</sup> scholars have to rely on any possible textual

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τόποις τοῦ σώματος κε[ι]μένων ὀνομάτων, βέλτιον οἰόμεθα εἶναι τ[ο]ύτων πρότερον ἕκαστ[ο]ν ὁρ[ι]κῶς ὑπογράψαι καὶ πε[ρ] ἀγα[μα]τευμένοις περὶ τοῦτω[ν] [...].

14 Cf. Andorlini (1992: 375–378).

15 In such technical and practical writings as medical textbooks, traces of different stages of transmission and use are preserved on the written support (cf. Andorlini [2003]; Reggiani [2019a and 2019d]), so that the very textual data interweave with a broad range of paratextual devices (see details below). These contribute to the articulation of an expressive discursive network that is essential to the formulation of the medical writing itself, to its transmission, to its learning, and to its practical use. According to Gérard Genette's textual theory, paratextuality is the relation between one text and what surrounds the main body of the text itself, e.g., titles, headings, and—so one may add—any graphical devices. Cf. Genette (1992: 83–84), as later developed in Genette (1997: 1–7).

16 Cf. Andorlini (1999: 8).

17 Cf. Andorlini (1997b: 159).

feature to ensure a proper understanding of the kind of text they are dealing with. As a matter of fact, some very fragmentary texts have been identified as questionnaires on the basis of the presence of blank spaces exclusively, as is the case with P.Oxford Sackler s.n., a small papyrus scrap from the II century BC dealing with apoplexy,<sup>18</sup> and more recently with GMP I 6 and P.Strasb. inv. 489, to which we will turn further on.<sup>19</sup> It is fundamental, therefore, to consider such texts with the necessary attention to their paratextual garment.

The following observations contextualise what precedes in the framework of the ERC-funded DIGMEDTEXT project, conducted by Isabella Andorlini at the University of Parma between 2014 and 2016, which was aimed at the creation of a digital textual database of the Greek papyri dealing with medicine. Encoding Greek medical papyri raises a very peculiar set of editorial issues, due to their special status as technical (para)literary texts,<sup>20</sup> for which reason they have been excluded from the extant databases so far. They express a specialised type of knowledge (namely, medicine) that mirrors itself in a particular “graphic and expressive jargon”,<sup>21</sup> which ought to be properly represented in the digital editions, since it is an essential part of the texts themselves and of their interpretation. The Q&A catechisms are particularly challenging from this point of view, because of their structural complexity, and deserve further consideration, in view of which I will first provide a very short overview of how texts are digitally encoded in the current papyrological databases.

Papyrologists use a particular markup language called Leiden+ after the ‘Leiden conventions’ established for the critical editions of ancient texts;<sup>22</sup> this language represents papyrological features in a way that can be easily managed by any scholar, enabling him/her to encode texts according to the collaborative method deployed by the ‘Son of Suda online’ (SoSOL) platform on the Papyri.info website (<http://papyri.info>). In the so-called *Papyrological Editor* (the editing environment of SoSOL), this markup is converted into both an HTML display output resembling a print edition and an XML layer, where each papyrological feature of the text is represented by a specific label or “tag” according to the TEI EpiDoc standards.<sup>23</sup> This type of annotation is not

18 Cf. Barns (1949: 4–5).

19 Cf. Hanson—Mattern (2001: 72) and Magdelaine (2004: 63).

20 For the peculiar category of paraliterary texts and their difficult digital treatment, see Reggiani (2017: 78).

21 Andorlini (2006).

22 Cf. Reggiani (2017: 234 ff.).

23 On the TEI/EpiDoc markup, see Bodard (2010). In general, on digital editions of papyri, see Sosin (2010); Andorlini—Reggiani (2012); Reggiani (2017: 232 ff.); Reggiani (2018a); Reggiani (2018b).

descriptive but semantic: this means that when we, for instance, underdot an *alpha* in the Leiden+ editor ( $\alpha$ ), which renders the XML string `<unclear> $\alpha$ </unclear>`, we do not just want to *draw* an *alpha* with a dot below, but to *represent* an unclear character that may be read as *alpha*. The final user will see an underdotted *alpha* as usual, and s/he will understand it as an unclear letter as usual, but the system stores the semantic information rather than its visual rendering. Due to historical and technical reasons, the currently available set of Leiden+ marks was designed to encode documentary papyri only and did not take into consideration many features of literary and paraliterary papyri: critical, diacritical, lectional signs but also layout features that are deeply interconnected with the text itself. For this reason, the Parma DIGMEDTEXT project acted as a partner of the ongoing *Digital Corpus of Literary Papyrology* (DCLP), which is aimed at creating a complete online database of papyrus texts of literary and paraliterary content. Digitizing medical papyri raised several methodological and technical issues that proved useful to enhance both digital and traditional scholarship.<sup>24</sup>

The case of *eisthesis* (line indentation) is the most meaningful in the present context. This layout device is perhaps the most evident way of highlighting a section in a text—in our case the question headings.<sup>25</sup> P.Ross.Georg. 1 20 (Fig. 8.1)—an ophthalmological catechism on papyrus roll dated to the 11 century AD<sup>26</sup>—illustrates the use of *eisthesis* best, but we do find the same feature in several other papyri, among which, for instance, P.Aberd. 125v, dealing with trichological questions (111 cent. AD, second half<sup>27</sup>) (Fig. 8.2).<sup>28</sup>

24 More detailed discussion of this can be found in Reggiani (2019b). On the digitisation of medical papyri and the Parma project, see also Reggiani (2015, 2016, and 2017: *passim*). On the DCLP, see now Ast—Essler (2018).

25 Its use is not, however, limited to medical questionnaires only: e.g., in poetry, *eisthesis* marks a change in metre. On the mechanics of *eisthesis* in ancient texts more generally, cf. Savignago (2008) and Agosti (2010).

26 Isabella Bonati deals with this text (ll. 94–115, regarding pterygium) in her contribution to the present volume.

27 Cf. Andorlini (1999: 9–10).

28 Other instances are: P.Strasb. inv. 489 (ophthalmological questionnaire, IV AD: cf. Magdelaine [2004]); P.Gen. inv. 111v (surgical definitions, 11–111 AD: cf. Nicole [1903]; Marganne [1998: 85–95]); GMP 11 15; PSI xv 1510; P.Oxy. LXXIV 4972v (see below for these three papyri); possibly also P.Oxy. LXXX 5241v (ophthalmological definitions, 11–111 AD), although its left-hand side is lost and the answers cannot be supplemented entirely (see *ed.pr.*). Transcriptions of the papyri studied here can be found online via the links provided in the Appendix below. When pictures were not available, but the description of the papyrus layout required an image to be appended here for the sake of clarity, the transcription of the main edition was provided instead, if the treatment of graphical devices was sufficiently clear.



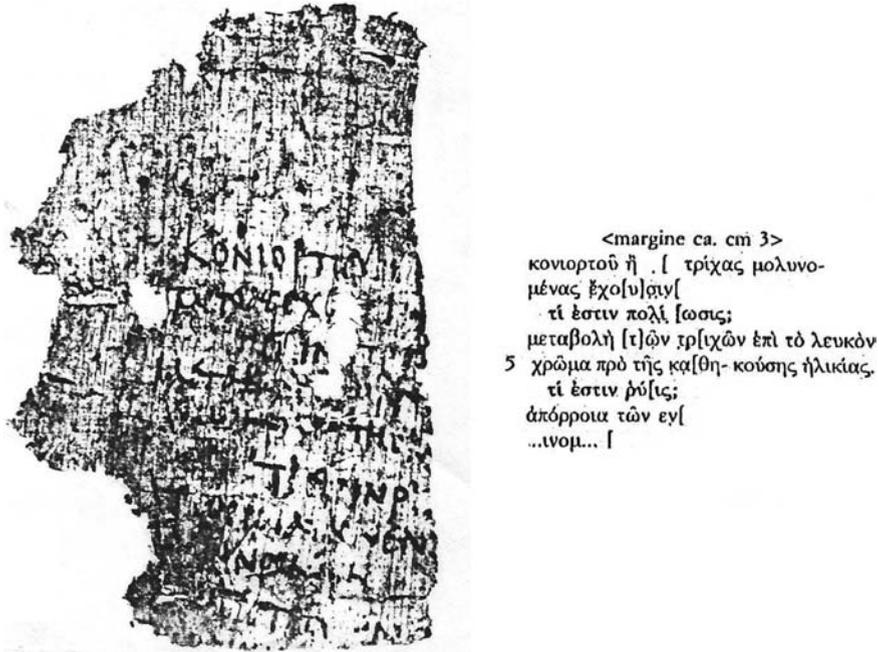


FIGURE 8.2 P.Aberd. 125v

Since a specific way of encoding *eisthesis* was lacking, we were tempted, at first, to equate it to a *vacat* (a space intentionally left blank by the ancient scribe) and therefore to encode it as such according to the well-established Leiden+ custom (i.e., *vac.?* = XML `<space extent="unknown" unit="character"/>`).<sup>29</sup> However, as noted above, when we encode a text digitally we aim not only at creating a pleasant display output, but above all at annotating the text with the necessary semantic information. In this case, we are not dealing with a mere space that was left blank by the scribe, but with a graphical displacement of the line beginning that flags the start of a new question and thus puts particular emphasis on it. The use of *ekthesis* in the papyri (i.e., an extension of the line out of the left-hand margin)<sup>30</sup> makes the point more clear: surely, it would be inappropriate to indicate this layout device with a virtual *vacat* at the beginning of each of the surrounding lines. This is the case, for instance, with P.Oxy. LI 3654 (Fig. 8.3), a fragmentary catechistic section of a wider roll

29 Cf. the EpiDoc guidelines at <http://www.stoa.org/epidoc/gl/latest/trans-vacatchar.html>. A more compact description and discussion of Leiden+ and XML strategies for the encoding of the Greek papyri can now be found in Reggiani (2019c: Appendix after p. 400).

30 Cf. again Savignago (2008).

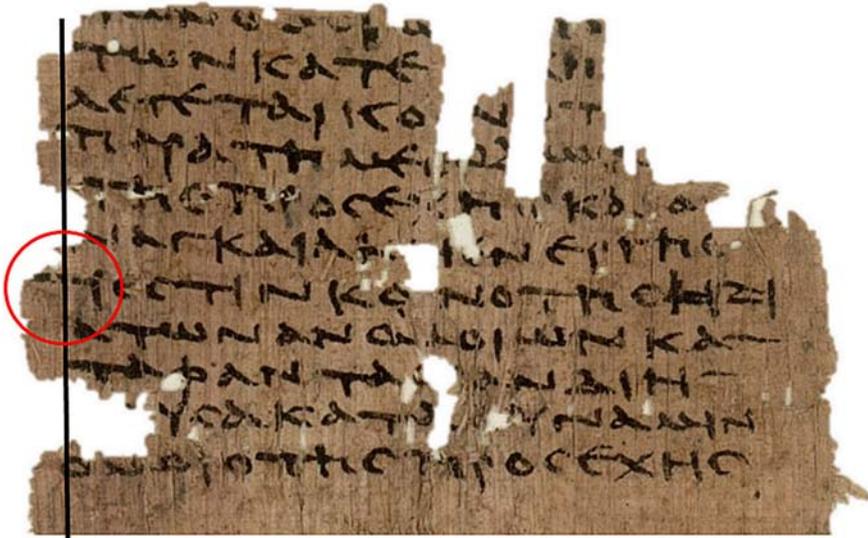


FIGURE 8.3 P.Oxy. LII 3654

COURTESY OF THE EGYPT EXPLORATION SOCIETY AND IMAGING PAPYRI PROJECT, OXFORD

containing a therapeutic work of Methodist provenance,<sup>31</sup> dated between the last quarter of the II century AD and the first quarter of the III. The *ekthesis* is slightly perceivable only in fr. 8, line 7 (τί ἐστὶν κο[ι]νότης; “what is pathologic generality?”) but was likely employed throughout.<sup>32</sup>

A peculiar case is GMP II 15 (Fig. 8.4) (III cent. AD, questionnaire of gynecology/pathology), where (at least in the extant fragments and according to Albert Bäckström’s drawings) questions in *eisthesis* seem to be followed by answers with the first line in *ekthesis* (col. ii, ll. 25–27), which makes it evident that the *vacat*-system is not refined enough to be applicable to such circumstances.<sup>33</sup>

We therefore suggested that *eisthesis* should be encoded, according to the EpiDoc guidelines, as an attribute describing a special rendering of the line:

31 Andorlini (1992). The fragments belong to the same roll as P.Oxy. II 234.

32 See probably fr. 1+5+2, l. 12, and the supplements to fr. 7, ll. 3–5, according to Andorlini (1992).

33 From Bäckström’s transcription in the Russian *editio princeps* of the text (Bäckström [1904a]) it seems that the second line of the question in *eisthesis* is more indented than the first one, but his drawing does not support this rendering, which indeed disappears from his German edition (Bäckström [1904b]). The *ekthesis* is not noted in either of the editions but is quite evident in the drawing. I am very grateful to David Leith, latest editor of the papyrus (Leith [2009b]), who kindly provided me with his scans of Bäckström’s material.

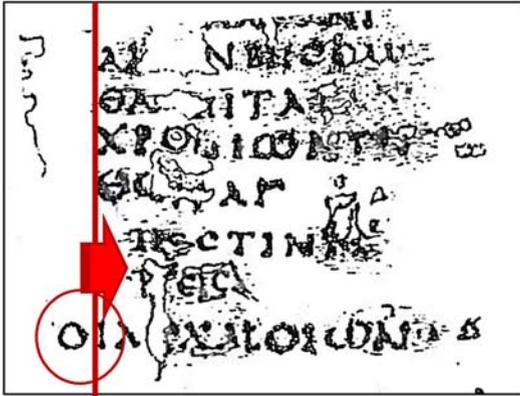


FIGURE 8.4 GMP II 15

`<lb n="1" rend="indent"/>`,<sup>34</sup> which in Leiden+ appears as (1, indent)—the same way marginal annotations are tagged.<sup>35</sup> This seems to work fine: it is recognised by the system and is now fully supported also by the HTML display output, which displaces the line accordingly. Thus, each indented line can be marked as *eisthesis*, and this feature may be searched for in the database. When the last question line does not fit the line entirely, the scribe leaves it blank: this is a proper *vacat* and can be encoded accordingly (see above for the markup of blank spaces) within the “*eisthesis*” tag, because it is part of the *eisthesis* scheme. Note that in the Oxyrhynchus fragments, on the contrary, the answers seem to follow the questions without any break.<sup>36</sup>

A further problem arises when, in some catechisms, the question does not start on a new line, but on the same line as the end of the previous answer, following a blank space. This feature occurs, e.g., in P.Oxy. LXXX 5239 (II–III century AD), a catechism dealing with pathology (tumour-like diseases, as far as the surviving fragment goes), the text of which is partly overlapped by P.Oslo inv. 1576v (III AD),<sup>37</sup> which deploys the very same device to highlight the questions (Fig. 8.5A/B). Such blank spaces cannot be considered as true *vacat*'s for the

34 On line tagging and its attributes, see the online documentation at <http://www.stoa.org/epidoc/gl/latest/trans-linebreak.html> and <http://www.stoa.org/epidoc/gl/latest/trans-linebreakdirection.html>.

35 See documentation at [http://papyri.info/docs/leiden\\_plus](http://papyri.info/docs/leiden_plus). For *ekthesis*, one should of course just replace the “rend” attribute with the appropriate indication (i.e., “outdent” instead of “indent”).

36 Papyrus catechisms show a wide variety of graphical and layout indications for questions and answers and it is almost always hard to find any rationale, if any. Likely it depended on the scribe's own sensibility.

37 Maravela—Leith (2007). The papyrus will be republished with substantial updates

same reasons as explained above. Moreover, if we were to tag the entire line as “*eisthesis*” we would not represent the situation correctly. A possible solution would be to tag the question phrase with the XML <hi> label, which is used to mark “highlighted characters or words”, “with a *rend* attribute specifying the kind of highlighting”.<sup>38</sup> In our case, the attribute would be “*eisthesis*”, and would account for this special ‘inline indentation’. At the moment, this code is not supported by SoSOL, but it seems meaningful to implement a proper way of displaying this peculiar type of layout.

P.PisaLit. 6 (an ophthalmological catechism, II–III AD)<sup>39</sup> (Fig. 8.6) shows a different, yet comparable situation: questions start in *eisthesis* on new lines (the indentation is visible at l. 15, cf. also ll. 8 and 12, in the transcription by Isabella Andorlini), but answers start on the very same line as the preceding questions. This is clearly a case in which it may prove more helpful to tag the question-phrase, rather than the entire line. A somewhat opposite case is found in P.Oxy. LXXX 5238 (II–III AD) (Fig. 8.7), where therapeutical questions are highlighted by means of ‘inline’ *eisthesis* (ll. 4, 12),<sup>40</sup> but are indented if they run over more than one line (ll. 6–7, 13), staying aligned with the starting point of the question phrase itself. This rather peculiar case proves difficult to be treated and may well lead to further distinctions in *eisthesis* types in the encoding markup (‘inline’, ‘indented’, ‘mixed’ *eisthesis*?).

In P.Aberd. 11 (another questionnaire on ophthalmology, dating back to the II century AD)<sup>41</sup> (Fig. 8.8) the two kinds of *eisthesis* (the proper and the inline type) seem to occur together, though it is not unlikely that the rationale followed here is actually that of the proper *eisthesis* (ll. 2 and 6), while the apparent inline type at l. 9 is likely due to the practical need of placing the last letters of the preceding section, which did not fit line 8, on the same line as the new section heading (which is not, however, phrased in question form but concerns “surgery of pterygium”, χείρ[ουργεία τοῦ πτερυγίου]).<sup>42</sup> It is indeed clear that

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and enhancements in the forthcoming fourth volume of the *Papyri Osloenses*. I am most grateful to Anastasia Maravela for sharing her drafts of the new edition and for discussing with me some textual and linguistic details.

38 <http://www.stoa.org/epidoc/gl/latest/trans-charactershighlighted.html>.

39 Cf. P.Alex. 614 *descr.*; Manetti (1973); Andorlini (1999: 13–15).

40 At some points these resemble an indentation, viz. when they occur at line beginnings (ll. 2, 17), as noted by the editor, David Leith, and paralleled in P.Oxy. LXXX 5235 (see below); l. 36 is uncertain because no text survives to the left.

41 Cf. Winstedt (1907: 266); Körte (1941: 145); Marganne (1978); Marganne (1994: 104–111). Isabella Bonati discusses ll. 2–20 of this papyrus (about pterygium) in her chapter in the present volume.

42 Nevertheless, this is still implicitly interrogative: “surgery of the *pterygion*”, i.e., “which is the ...?”.

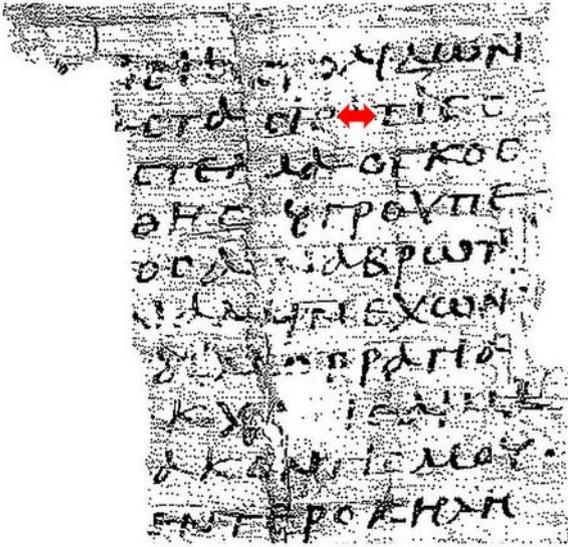
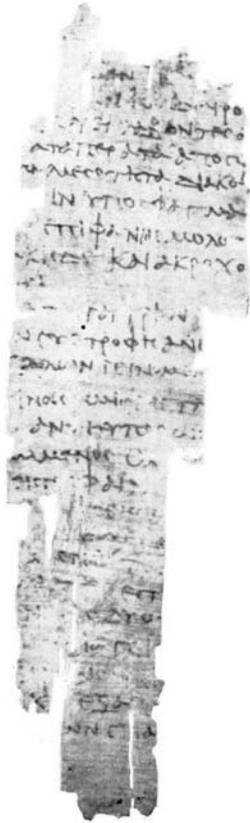


FIGURE 8.5A P.Oxy. LXXX 5239  
 COURTESY OF THE EGYPT EXPLORATION  
 SOCIETY AND IMAGING PAPYRI PROJECT,  
 OXFORD



FIGURE 8.5B  
 P.Oslo inv. 1576v  
 COURTESY OF THE PAPYRUS COLLECTION, UNIVERSITY OF  
 OSLO LIBRARY



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 ] μεν . [ ] . [ ]  
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 5 ] και εκλαβόντες ἀ[γκίστρῳ ἀμ-  
 φότερ]α τὰ πέρατα ἀποσφ[ίγγομεν και  
 διά τ]ήν μεσότητα διακόπ[τομεν.  
 τί ἐσ]τιν ὑπόσφαγμα; [γίνεται ἐξω-  
 θεν τῆς] ἐπιφαν<ε>ιας μόλωπ[ι παραπλήσιον:  
 10 πολλ]άκις δὲ και ἀκροχο[ρδων-  
 ] αν.  
 τί ἐ]στ[ιν] γαγγρίον; [ἐστὶ νεύρου παρὰ  
 φύσι]ν συστροφῆ ἀνα[λγῆς ἐπὶ τῶν  
 ὀρθοκ]ύλλων γεινομέν[ων μορίων  
 15 ] τίνα σημ<ε>ία γαγγλ[ίου;  
 ὄγκο]ς ἀντίτυπος ὡς [ἐπὶ τὸ πολὺ συν-  
 εστρ]αμμένος ὁμ[ό]χ[ρους]

FIGURE 8.6 P.PisaLit. 6

the section heading on line 9 is aligned to the previous ones. This looks like another plausible reason to prefer the second way of encoding the *eisthesis* as described above (rather than simply using *vacat* or line attribute). A third reason is that when the question is spread over multiple lines, the *eisthesis* is sometimes repeated (as is the case in the diplomatic transcription of the P.Ross.Georg., above); by using the proper encoding we can avoid that the “eisthesis” phenomenon is connected to specific lines, and thus allows for tagging an appropriate semantic unity in the interrogative phrase as a whole.

Aberdeen papyrus 11 further deploys horizontal rules (*paragraphoi*)<sup>43</sup> to clearly distinguish separate definition sections (consisting of question and

43 On the typology of *paragraphos*, see Barbis Lupi (1994) and Schironi (2010: 16 and *passim*).

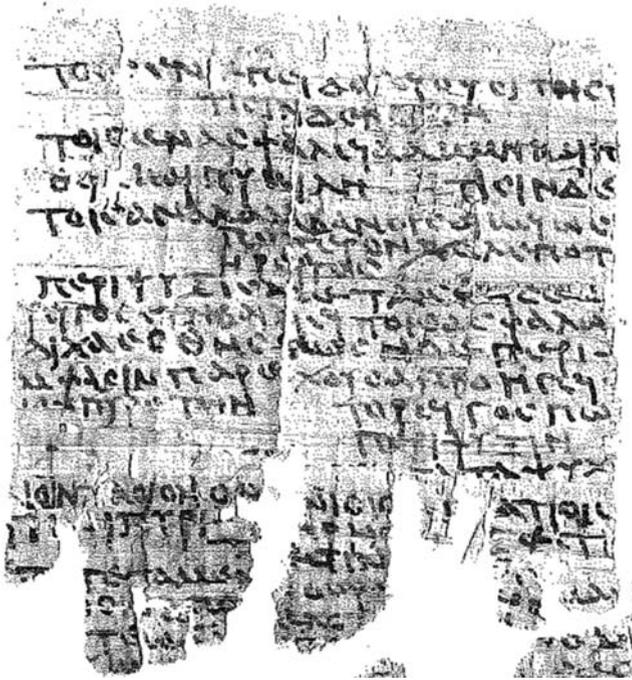


FIGURE 8.7 P.Oxy. LXXX 5238

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AND IMAGING PAPYRI PROJECT, OXFORD

answer). This does not cause any problem with the digital encoding, since *paragraphoi* are widespread in documentary papyri too, and are already supported by the SoSOL editing platform: they are encoded as “milestones”, i.e., markers of non-structural text parts (XML: `<milestone rend="paragraphos" unit="undefined"/>`; Leiden+: ---).<sup>44</sup> A similar mark, very recently introduced into the platform, is the *diple obelismene* or forked *paragraphos*, i.e., a horizontal rule preceded by a closing angle bracket (*diple*).<sup>45</sup> It is used, e.g., in GMP II 14, a surgical (?) catechism dealing with anatomy dated to II–III century AD,<sup>46</sup> to mark the end of an answer section and the beginning of a new question section (col. ii, ll. 7–8) (Fig. 8.9). The new proposed “milestone” tag (not yet working) for the forked *paragraphos* is `<milestone rend="diple-obelismene" unit="undefined"/>` (Leiden+: >->->->-). This distinction is not superfluous:

44 Cf. <http://www.stoa.org/epidoc/gl/latest/trans-nonstructural.html>.

45 On the typology of *diple obelismene*, see Barbis Lupi (1988); cf. Schironi (2010: 19).

46 Formerly PSI III 252r; cf. Fausti (1980); Mavroudis (1986).

	[ . . . . ] . ρτο και τ.οεῖ[ ]
	· τί ἐστι ὄγ [τὸ πτερύγειον ; ]
	ἔκφυσις ὑμενώδης ἀ[ὑξανομένη ἀπὸ τοῦ ]
	κἀνοῦ ἢ σωματοποι[ομένη ]
5	ἀπὸ τοῦ κερατοειδοῦς [χιτῶνος. ]
	τίνες [εἰσὶ διαφορὰ πτερυγίων ; ]
	διαφέρετε αὐτῶν τό[πων, μεγέθει, ]
	σχήματι, χρώματι, φύσει ἢ ἀνα- ]
	σκευῇ. χειρ[ουργία τοῦ πτερυγίου. ]
10	μετὰ τὸν καθέδρειον ὄντα τὸν πάσχοντα, ἐκ ]
	τοῦ ὀφθαλμοῦ διφ[υτῆ βλέφαρα διαστελλαντες ]
	τὸ πτερύγειον δι[εκφανοῦμεν ἀγκί- ]
	στρεῖοι, βελόνην [δὲ λίνον καὶ τρίχα ἱππείαν ]
	ἔχουσα[ν ]
15	σεωσ[ . [ ]
	ματι . [ ]
	μεν κα[ ]
	λειων . [ ]
	. γ ρει δ[έ ]
20	[ . . ] . . ι [ ]

FIGURE 8.8 P.Aberd. 11

compared to a ‘simple’ *paragraphos*, the *diple obelismene*, in its more elegant look, seems to show a certain ‘bookish’ or ‘literary’ flavour that might attest to a greater concern for accuracy towards the copying of the medical text. As Leith distinguishes two types of medical Q&A texts, namely, on the one hand, the proper catechisms, or questionnaires, which are introductory manuals for the student of medicine, and, on the other, more general treatises on remedies (see below), we may ask whether careful attention to the paratextual architecture of the text could help us in distinguishing different levels of this textual typology.<sup>47</sup> At any rate, a careful digital annotation of these peculiarities proves very helpful for research. Other stylistic trends are found in GMP II 14, for example, in the underlines and overlines that highlight the first and last letters of the question sentences, which is a feature usually to be found in association with book titles.<sup>48</sup> Encoding such marks is not a problem, since the current Leiden+syntax supports both underlined and overlined characters—with few insignificant display issues. The real problem is to overcome any possible shortcom-

47 Leith (2007).

48 Cf., e.g., Caroli (2007: 55).

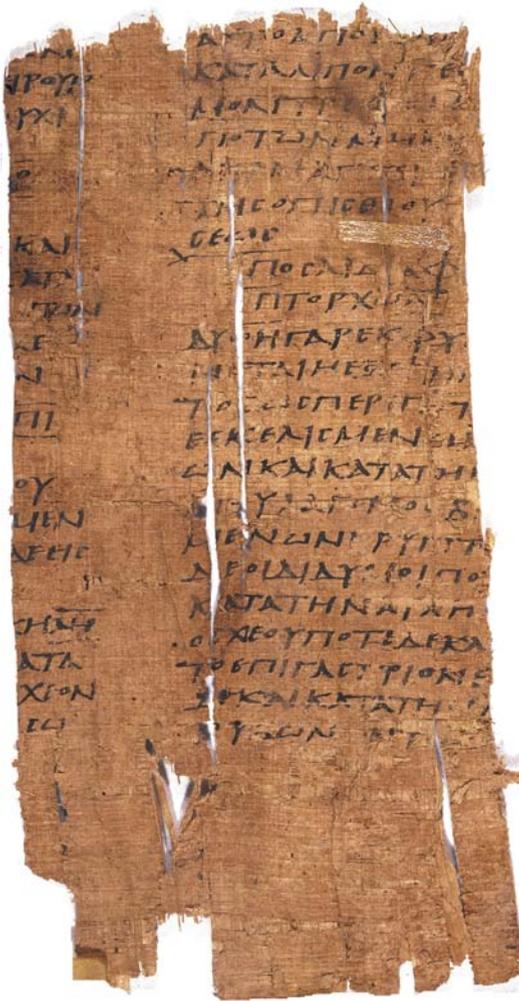


FIGURE 8.9 GMP II 14  
 COURTESY OF THE ISTITUTO PAPIRO-  
 LOGICO “G. VITELLI”, UNIVERSITY OF  
 FLORENCE

ings of previous printed editions in order to represent correctly and accurately the ancient texts. The case of GMP II 14 is relevant here. While the picture patently exhibits a forked *paragraphos* as the marker of the new Q&A section, both the *editio princeps* (PSI III 252) and the *editio altera* print a simple *paragraphos*.<sup>49</sup> This is a clear example of how digital encoding becomes a critical

49 Fausti (1980). The partial re-edition in the second volume of *Greek Medical Papyri* (Leith—Maravela [2009]) does not take this section into consideration.

edition not only of the text itself, but also of the previous printed editions, if we want to represent the ancient document in its entirety.<sup>50</sup> PSI XV 1510 (catechism on anatomy, III AD)<sup>51</sup> likely shows a case comparable to GMP II 14: questions are in *eisthesis*, while a slight enlargement of the initial letters of the answer (ll. 4 ἐξ, 11 εἴνα with *trema* for ἴνα) seems intended to have the same use as *paragraphoi* or over/underlines (Fig. 8.10).<sup>52</sup>

Line fillers represent another paratextual typology that raises some interesting theoretical and technical issues. They are not absent from documentary papyri, where they are commonly used to fill the final blank in the event that the text is not long enough to complete the entire line, thus allowing to keep the alignment on the right (justification).<sup>53</sup> The SoSOL platform developed a way to encode them as non-alphabetical “glyphs” (e.g., \*filler\* = XML <g type=“filler”/>),<sup>54</sup> and indeed they usually do not bear any other meaning than being filling symbols. In medical catechisms they can be used when questions and answers are articulated as separated sections, and therefore final blanks may occur if the text does not fill out the last line of a section (see the cases above, where the remaining blank space is left empty). Yet sometimes they can become a further mark to highlight the Q&A structure. This is the case in MPER XIII 19, a fragment of a questionnaire of likely medical content in codex format (II cent. AD) (Fig. 8.11), where questions seem to be introduced by short *paragraphoi* (side A, ll. 5–6). On side B, a sentence (likely belonging to an answer section) ends much before the right-hand margin, and a small hyphen is added (l. 5). This is not enough to cover the entire blank space, and therefore is clearly not acting as a line filler.<sup>55</sup> This kind of situation is even more evident in PSI inv. 3783, a questionnaire about surgery (phlebotomy, in the surviving fragments; I–II AD)<sup>56</sup> (Fig. 8.12) where the questions are pinpointed by blanks (‘inline’ *eistheseis*) before and after the sentence, and further highlighted by groups of elaborate S-shaped ‘fillers’ at the line ends (fr. A, col. I, l. 43; col. II, *passim*; a *paragraphos* is used at ll. 44–45 of the second column of fr. A, but it looks isolated), which according to Isabella Andorlini’s interpretation act as

50 For digital criticism, cf. the observations in Reggiani (2017: 264 ff.).

51 Cf. Manfredi (1997); Andorlini (2007: 414).

52 For the lack of uniformity in such phenomena, see above.

53 On the typology of filling marks in literary papyri, see Barbis Lupi (1992). See also Di Matteo (2007), with a particular focus on the Herculaneum papyri.

54 See <http://147.142.225.252/paptrac/wiki/gtypes> and [http://papyri.info/docs/leiden\\_plus](http://papyri.info/docs/leiden_plus).

55 It must be noted that while the *editio princeps* (MPER I 32) does transcribe the hyphen, the re-edition in the thirteenth volume of MPER omits it.

56 Cf. Andorlini (1997b). A full edition is being published in the forthcoming third volume of the *Greek Medical Papyri*.

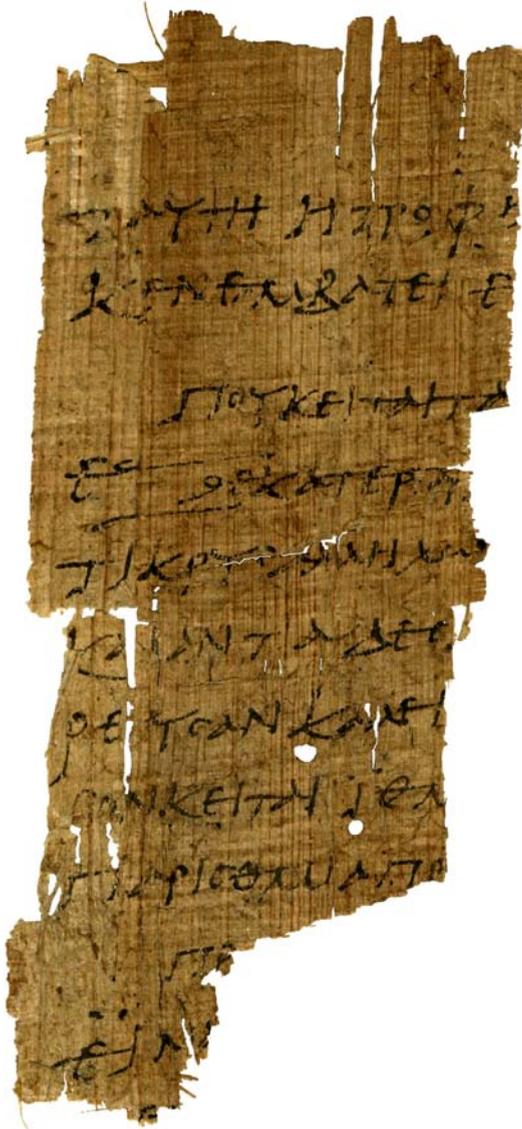


FIGURE 8.10 PSI xv 1510  
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 LOGICO "G. VITELLI", UNIVERSITY OF  
 FLORENCE



FIGURE 8.11 MPER XIII 19  
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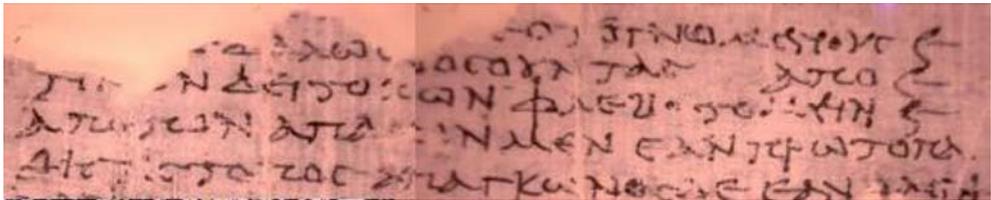


FIGURE 8.12 PSI inv. 3783  
COURTESY OF THE ISTITUTO PAPIROLOGICO “G. VITELLI”, UNIVERSITY OF FLORENCE

highlighters of key questions, which resemble common line fillers but carry out a different function, namely to mark the occurrence of a question phrase.<sup>57</sup>

The same practice, in fact, does appear in SB XXVI 16458, a parchment sheet dated to the first half of the IV cent. AD (possibly from a notebook in codex format?),<sup>58</sup> containing a series of medical recipes separated by means of *paragaphoi*. Each text section ends with peculiar ‘filling marks’ (ll. 2, 5, 12) that are very similar to the ones in the Florentine catechism. The first editor of the sheet (A. Olivieri, PSI VI 718) considered them as indications of weight measures (abbreviation for drachmas + number, overlined in one case: ll. 2 and 12) and tachygraphic marks (l. 5).<sup>59</sup> The second editor correctly read them as graphical devices aimed at separating different recipes, and described them as shaped in the same way: an S-like sign followed by a horizontal line, ending in a curl,

57 Andorlini (1997b: 160 with n. 13).

58 Cf. Reggiani (2019a) with further bibliography. Digital edition at <http://papyri.info/dclp/64564>. I was unable to publish a picture of this text because of restrictions applied by the holding institution (Biblioteca Mediceo-Laurenziana, Florence); an online image can be found at <http://www.psi-online.it/documents/psi;6;718>.

59 Cf. also McNamee (1981: 82), where it is transcribed as part of the preceding abbreviation.

the length of which depends on the blank space to be filled.<sup>60</sup> However, from the photo of the sheet it appears that at the end of l. 5 we have three signs: the S-shaped one; a curled one, which closely resembles the first one; and the horizontal line. The combination of the first two is the same as ll. 2 and 12, without horizontal line. We may infer that we are dealing with two different sets of signs: (1) a double 'curl', for which the old definition of "Koronis",<sup>61</sup> advanced by Wilcken, seems appropriate;<sup>62</sup> (2) a horizontal line acting as a filler mark. That the alleged *koronis* acts as more than a filling mark may be inferred from l. 12, where it is used to mark the end of a recipe, while the following one starts on the very same line.

Coming back to the Florentine catechism, it seems therefore that encoding those symbols as simple 'line fillers' might be rather inadequate with respect to their original meaning (namely indicators of the question sections). They do not even act as proper *koronides* as in GMP II 15, at the end of the fourth column (not indicated in Bäckström's transcriptions, see above) (Fig. 8.13). They are much more similar to the forked *paragraphoi* which in P.Lund I 7 (anatomical catechism, III–IV cent. AD)<sup>63</sup> (Fig. 8.14A/B) are located at the end of each definition block (i.e., at the end of the answers, and before the questions in *eisthesis*). Also in this case, this is not a 'line filler', since in some cases it simply does not fill the line entirely. P.Mil.Vogl. I 15 (therapeutic questionnaire, IV AD)<sup>64</sup> (Fig. 8.15) is even more clear in this use: here, the forked *paragraphoi* at the end of each answer are followed by blank spaces acting as 'inline' *eistheseis* before each question.<sup>65</sup> These are layout devices aimed at marking definition blocks, not mere filling marks. The same should apply to P.Oxy. LXXIV 4972v (surgical text, II–III AD) (Fig. 8.16), though here the 'answer-marks' seem to reach the line ends.

The distinction mentioned earlier between proper catechisms (i.e., introductory manuals for the student of medicine) and more general treatises on remedies (for study and reference use by physicians and learned laymen), also in Q&A form,<sup>66</sup> seems to be further stressed by the present reconsideration

60 Ronconi (2000).

61 On the *koronis*, the bird-like symbol that was commonly used in literary copies to mark the end of a book or a text section, cf., e.g., Schironi (2010: 16–18 and *passim*).

62 Wilcken (1924: 86).

63 Cf. Körte (1939: 127); Marganne (1987).

64 Cf. Körte (1939: 126–127); Snell (1939: 532); Leith (2014).

65 Cf. Moretti (1995: 22). P.Oxy. LXXX 5235, identified as belonging to the same work as the Milan fragment, seems to feature an indented question (col. ii, l. 5), but this may be due to the fact that the preceding answer exactly fits line 4, so that the 'inline' *eisthesis* coincides with the subsequent line beginning.

66 Suggested by David Leith in 2007, but already envisaged by Andorlini (1997b: 160).

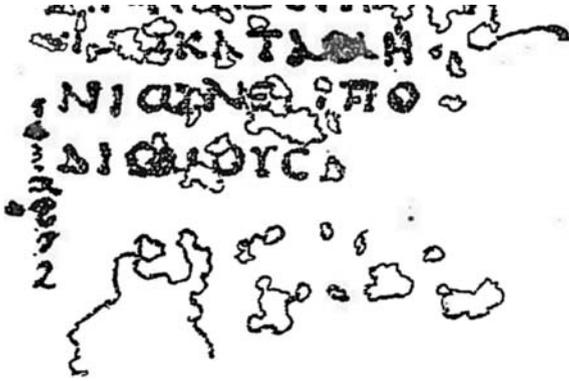


FIGURE 8.13 GMP II 15

of paratextual marks as favoured by the digital edition of the medical papyri. Leith's suggestion derives from the similarities detected between *erotapokriseis* on papyrus such as P.Turner 14 (see below) and PSI inv. 3783 and the excerpts from the physicians Herodotus and Antyllus as preserved in Oribasius' *Collectiones medicae*, but is not limited to those cases only: as Isabella Andorlini wrote apropos of PSI inv. 3783, the papyrus samples attest to the diffusion of medical catechisms in various formats and contents. Beside the simple articulation in question-like ὄροι, serving as a practical teaching system (cf. P.PisaLit. 6), there are more articulated and theoretical discourses, structured in the didactic catechistic model (cf. P.Mil.Vogl. I 15).<sup>67</sup>

We noted above that both PSI inv. 3783 and P.Mil.Vogl. I 15 exhibit the feature of the 'inline' *eisthesis*, accompanied by a special use of forked *paragraphoi* (or similar signs) to mark the Q&A structure; the same does indeed occur in P.Turner 14 (pharmacological/therapeutical questionnaire, II AD)<sup>68</sup> (Fig. 8.17), which deploys 'inline' *eisthesis* and *diple obelismene*—now in its 'standard' interlinear place—along with a double dot (*dikolon*) at the end of both the question sentence and the answer section. Conversely, it is understandable that more practical manuals needed to display the relevant information in a more usable format than inline marks, such as an emphasised indentation. High dots are deployed by GMP I 6 (II–III AD)<sup>69</sup> (Fig. 8.18), apparently at the end of each question, though it is not clear how the *eisthesis* system works in this case, since all the beginnings of the questions are lost, and the blanks, clearly recognisable on the right (they led the editors to identify the papyrus as a questionnaire, see

67 Andorlini (1997b: 160).

68 Cf. Leith (2007).

69 This papyrus is discussed by Isabella Bonati in her chapter in the present volume.



FIGURE 8.14A P.Lund I 7 recto

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above), may well point either to *vacat*'s before and after indented *eisthesis* or to the blanks of an 'inline' *eisthesis* (line 7, in particular, is supplemented by the editors as if it was not in *eisthesis*).

It does not seem unlikely to conceive of a differentiation in paratextual use according to different textual subgenres, but this requires further investigation and discussion: unfortunately, the fragmentary state of the available documentation makes things more complicated. What I want to stress here is the new series of observations that may arise from a deep and accurate reconsideration of papyrus texts as favoured by their digital encoding, which can—in turn—lead to new possibilities of research and comparison with other known texts. Medical papyri show how important it is to account for any paratextual feature deployed by the ancient scribes in the phases of text transmission, as this provides valuable information which 'traditional' printed editions often do not take into consideration, because it is not regarded as particularly relevant for the reconstruction of the texts.

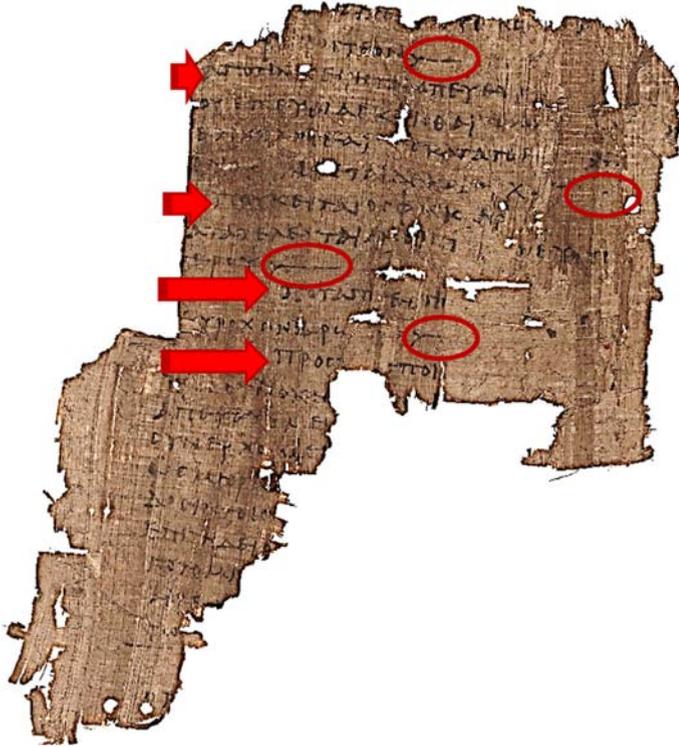


FIGURE 8.14B P.Lund 17 verso

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### 3 Concluding Remarks

Thanks to their peculiar textual structure, the medical catechisms on papyrus in Q&A prove extremely useful as *specimina* of the theoretical and practical issues raised by the digital encoding of ancient papyri in general, and more in specific of those belonging to a very technical corpus of medical texts. We have seen how the layout strategies and the paratextual framework deployed to enhance the peculiar articulation in questions and answers are strictly related to the educational and functional uses of this textual typology, fundamental in ancient medical learning and training. In turn, their technical use produced textual phenomena, the description and transmission of which go far beyond a traditional, ‘static’ philological model. Digital encoding provides a momentous opportunity to produce an accurate reproduction of the ancient texts presenting all their constitutive parts in an enhanced way: not just a mere graphical representation—often even lacking from printed editions—but a wider and

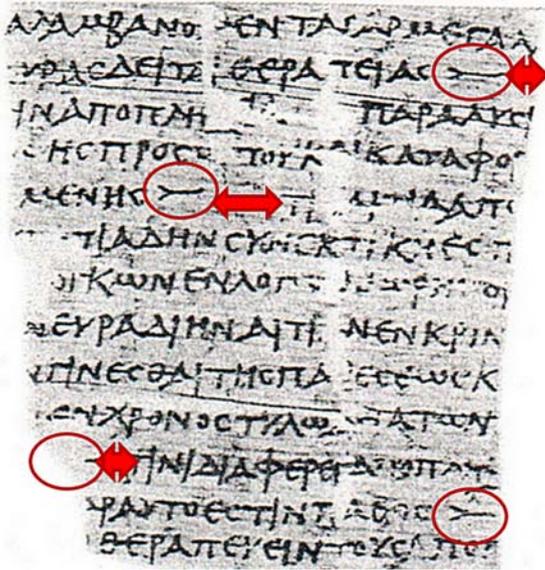


FIGURE 8.15 P.Mil.Vogl.115  
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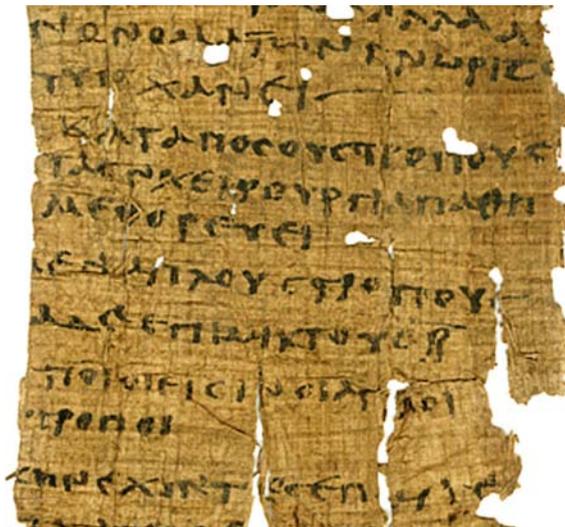


FIGURE 8.16 P.Oxy. LXXIV 4972v  
 COURTESY OF THE EGYPT EXPLORATION  
 SOCIETY AND IMAGING PAPYRI PROJECT,  
 OXFORD

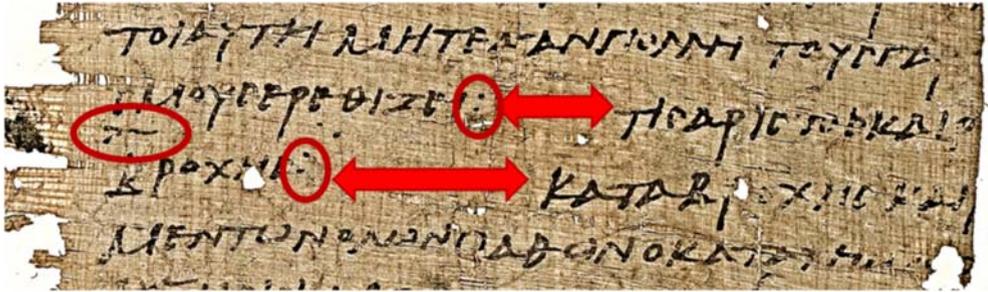
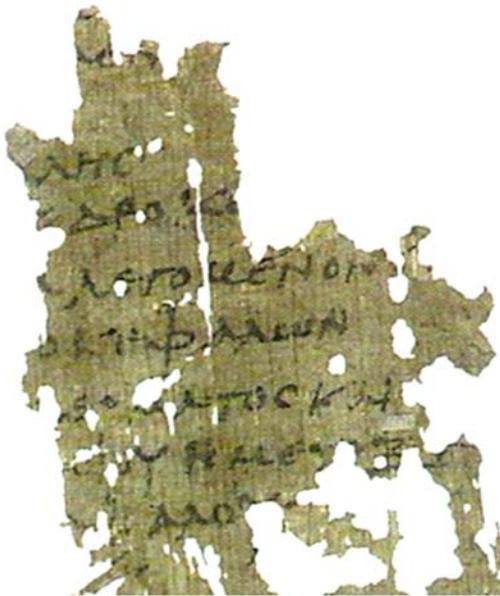


FIGURE 8.17 P.Turner 14  
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↓

-----

] [

]δεν (vac.)

τι εκτι το υγρον ον] (vac.)

(vac.) εν τιμη μερη της κεφ[αλης (vac.)

5 το παθος προσαγορευεται] υδροκε[φαλον]

δια το υγρον εν κεφαλη συ]λλεγομενον·

ποσαι αι διαφοραι των υδρ]οκεφαλων (vac.)

τεσσαρες η γαρ μεταξ[υ] του] δερματος και

περικρανιου η ? και ο]ς του η μεταξυ

10 οστου και μηνιγγος η ? ε]γκεφαλου· (vac.)

(vac.) ποσαι εις] αι [αιτι]α[ι] (vac.)

FIGURE 8.18 GMP 16  
COURTESY OF THE BEINECKE RARE BOOK AND MANUSCRIPT LIBRARY,  
YALE UNIVERSITY

deeper semantic comprehension. Moreover, it is an occasion to rethink and re-read these texts, and to pay specific attention to peculiar features sometimes neglected or misunderstood by printed editions (devoted as they were—and still are—to the reconstruction of an archetypal, ‘ideal’ text, sometimes far from the actual document at our disposal). It is, to sum up, fundamental to understand (and further transmit)<sup>70</sup> the objects of our study.

<sup>70</sup> I have argued that digital critical editions may act as a further step in the textual transmission in Reggiani (2020).

## Appendix: Overview of Digital Editions of Medical Questionnaires on Papyrus

Text	Link to the digital edition
P.Oxford Sackler s.n. (II BC), fragment on apoplexy	<a href="http://www.papyri.info/dclp/65633">http://www.papyri.info/dclp/65633</a>
PSI inv. 3783 (I–II AD), treatise on phlebotomy	<a href="http://www.papyri.info/dclp/63244">http://www.papyri.info/dclp/63244</a>
MPER XIII 19 (II AD), on physiology (anatomy?)	<a href="http://www.papyri.info/dclp/63723">http://www.papyri.info/dclp/63723</a>
P.Aberd. II (II AD), on ophthalmology	<a href="http://www.papyri.info/dclp/63332">http://www.papyri.info/dclp/63332</a>
P.Ross.Georg. I 20r (II AD), on ophthalmology	<a href="http://www.papyri.info/dclp/63569">http://www.papyri.info/dclp/63569</a>
P.Turner 14r (II AD), on therapy	<a href="http://www.papyri.info/dclp/63560">http://www.papyri.info/dclp/63560</a>
P.Oxy. LII 3654v (+ II 234) (II–III AD), composite roll, definitions on therapy followed by prescriptions	<a href="http://www.papyri.info/dclp/59150">http://www.papyri.info/dclp/59150</a>
P.Gen. inv. IIIv (II–III AD), on surgery	<a href="http://www.papyri.info/dclp/63819">http://www.papyri.info/dclp/63819</a>
P.PisaLit. 6r (II–III AD), on ophthalmic surgery	<a href="http://www.papyri.info/dclp/63748">http://www.papyri.info/dclp/63748</a>
GMP II 14 (II–III AD), fragment dealing with diseases	<a href="http://www.papyri.info/dclp/63804">http://www.papyri.info/dclp/63804</a>
GMP I 6 (II–III AD), on afflictions of the head	<a href="http://www.papyri.info/dclp/69007">http://www.papyri.info/dclp/69007</a>
P.Oxy. LXXIV 4972v (II–III AD), on surgery	<a href="http://www.papyri.info/dclp/119317">http://www.papyri.info/dclp/119317</a>
P.Oxy. LXXX 5238 (II–III AD), on therapy	Forthcoming
P.Oxy. LXXX 5239 (II–III AD), on pathology	Forthcoming
P.Oxy. LXXX 5241v (II–III AD), on ophthalmology	Forthcoming
P.Oxford Ashmolean inv. 28 (Petrie Box A3) (II–IV AD)	Unpublished
GMP II 15 (III AD), on gynaecology	<a href="http://www.papyri.info/dclp/64216">http://www.papyri.info/dclp/64216</a>
P.Aberd. 125v (III AD), on trichology	<a href="http://www.papyri.info/dclp/64262">http://www.papyri.info/dclp/64262</a>
PSI XV 1510 (III AD), on anatomy	<a href="http://www.papyri.info/dclp/64024">http://www.papyri.info/dclp/64024</a>
P.Oslo inv. 1576v (III AD), on pathology	Forthcoming
P.Lund I 7 (III–IV AD), on anatomy	<a href="http://www.papyri.info/dclp/64316">http://www.papyri.info/dclp/64316</a>
P.Mil.Vogl. I 15 + P.Oxy. LXXX 5235 (IV AD), on pathology	<a href="http://www.papyri.info/dclp/64473">http://www.papyri.info/dclp/64473</a>
P.Strasb. inv. 489 (IV AD), on ophthalmology	<a href="http://www.papyri.info/dclp/69028">http://www.papyri.info/dclp/69028</a>

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