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DELETED TEXT IN A MANUSCRIPT. GALEN ON THE EYE AND THE MARC. GR. 276

Barbara Zipser

It is very rare for a scribe to cross out text he has just written unless he is correcting a mistake in copying; one would expect editorial matters, *e.g.* the content of a volume, to be decided well in advance before the book was in production, and any doubts about the content or the authorship of a treatise were commonly annotated in the margins of a manuscript rather than in the main body of the text.

It would not be surprising to find a text with the title *On the diagnosis of the diseases of the eye* amongst Galenic works. We know from autobiographical evidence and from cross references in other books that Galen wrote a tract with this title; the Greek original is lost but some Arabic manuscripts transmit what may very well be an epitome of the lost work;³ moreover an Armenian manuscript⁴ contains a text that would match the description, but it has not yet been edited.

¹ An edition of this fragment appeared first in an appendix of my doctoral thesis Zipser 2003, p. 97-101. This project has been funded by a research grant of the Landesgraduiertenförderung Baden-Württemberg in Heidelberg. A preliminary edition was also discussed at the Arbeitskreis alte Medizin 2002 in Mainz.

The present article was written in the course of a Wellcome Trust funded project on Greek medical manuscripts; a number of colleagues read and discussed various stages of drafts that led to this article, K.-D. Fischer, I. Garofalo, G. W. Most, V. Nutton, P. Horden, and I am very grateful for their comments. J. Greppin helped with the Armenian material and D. Schweinfurth double-checked the final version of the article with precision. Any remaining mistakes are of course my own.

- ² Diels I, p. 129.
- ³ Some Arabic manuscripts contain a text that would match the Galenic treatise, v. Ullmann 1970, p. 56. See further Savage Smith 2002. The manuscript C 875 Institute of Oriental Studies of the Russian Academy in St. Petersburg, the oldest witness, has a text that could very well be an epitome of the lost Galenic tract.
 - ⁴ For the Armenian translation of the text v. Greppin 1982.

The most reliable information is provided by Galen himself; he writes in his *de libris propriis* that he gave a «book on the diagnosis of eye diseases» to a «young man who treated the eye»; it is said to be a «brief book» like the one «on the anatomy of the womb». We learn more about its content from another Galenic work, *de locis affectis*, where it is said that the specific treatise on the eye lists the names of the diseases, whereas their causes ($\alpha i \tau i \alpha i$) are described in *de symptomatum causis*. Indeed, the latter contains a comprehensive and detailed chapter on the most frequent ophthalmic disorders.

Another important source – although much later and written in a different cultural context – is the *Risala* of Ḥunain ibn Isḥāq, who mentions two Galenic texts on the eye. The information he provides is brief: one treatise, n. 54, *On the signs of the diseases of the eye*, describes the eye diseases according to the anatomical structure in which they appear, whereas the second text, n. 35, *On the anatomy of the eye*, seems not to be a genuine Galenic work.⁸

The title and the structure of the fragment found in the 14th century Venetian *Marc. gr. 276* at first sight seems to meet all the criteria of the lost text,⁹ although the style is a bit too compressed for Galen. The fragment reads:

+ Γαληνοῦ περὶ τῶν ἐν ὀφθαλμοῖς παθῶν διάγνωςις +

όφθαλμοὶ νοςοῦςι ὥςπερ καὶ τἆλλα τοιαῦτα καθὰ πεφύκαςι. φύςις δ' αὐτῶν ἥδε. δύο περιέχουςι χιτῶνες διττὸν εἶδος ὑγρόν. τῶν δ' ὑγρῶν τὸ μὲν κρυςταλλοειδὲς ὀνομάζεται, ἔτι δὲ καὶ τῆ χροιῷ καὶ τῆ ςυςτάςει τοιοῦτόν ἐςτιν, τὸ δὲ ὑαλοειδές. ἔοικεν γὰρ καὶ τοῦτο κατὰ πάντα ὑάλῳ κεχυμένη. μέςον δ' ἐποχεῖται τὸ κρυςταλλοειδὲς οἶᾳ ςφαίρᾳ τῷ ὑαλοειδεῖ. τῶν χιτώνων δὲ ὁ μὲν ἔνδοθεν ῥαγὶ ςταφυλῆς ἔοικεν, ὅθεν αὐτῷ (coniec. Garofalo, αὐτὸ ms.) τοὖνομα οὕτως. +

+ Galen's On the Diagnosis of the Diseases of the Eye: +

The eyes, as all things of this kind, are affected by diseases according to their nature. Their nature is as follows: two tunics enclose a twofold liquid structure. One of the liquids is called «ice-like», and it is like this according to its colour and consistency, the other one «glass-like», for it resembles completely liquid glass. The «ice-like» is carried within the «glass-like» like a ball. The inner tunic resembles a grape, hence it has the name «grape-like». +

- - ⁶ Galen, *de sympt. caus.* I 2 (= 7.86-101 K).
 - ⁷ Galen, de locis affectis IV 2 (= 8.228, 17 ff. K).
 - ⁸ Bergsträßer 1925. p. 30 (Arabic text).
- ⁹ For a detailed description of the codex see Mioni 1981 p. 399 f. Parts of the manuscript are in very bad condition, others, like the passage edited in this article, are easily readable. However, the damage makes it impossible to examine the manuscript itself and therefore the text has been transcribed from a microfilm.

Although its title indicates a diagnostic work, the fragment starts off with anatomy, which is not unprecedented in ophthalmological texts¹o (but not attested in any other diagnostic writing). The reason for this was purely practical. Medical treatises were commonly arranged in a simple head to foot order. That is to say, the diseases of the head were covered at the beginning of the book, while the diseases of the feet were described towards the end. Usually, this system was straightforward and easy to apply, as the location of the diseases was mostly obvious.

In the case of eye diseases, however, the situation was more complicated. The anatomy of the eye itself was a contested issue, and as a result there was no straightforward order in the sense of *a capite ad calcem*. As with other diagnostic topics, authors chose to present their subject in a structural sequence, for instance proceeding from the outside of the eye, the conjunctiva, towards the innermost. Thus, it became necessary to outline the anatomical theory first, in order to make the author's specialist knowledge accessible to the reader.¹¹

Therefore, the literary form of our fragment makes sense, and it is quite likely that the lost Galenic tract also contained a brief chapter on anatomy. Another issue, however, argues strongly against Galenic authorship: the content of the anatomical passage is not consistent with what we know about Galen's understanding of anatomy. The discrepancy lies in the number of tunics and fluids that form the eye. The two major Galenic works on the anatomy of the human body, *anatomicae administrationes* and *de usu partium* have a three liquid/four tunic system, ¹² whereas the fragment only mentions two of these structures each.

Most of the Greek texts which have come down to us contain an almost identical understanding of the anatomy of the eye: it consists of three liquids and several tunics and can be divided into anterior and posterior chamber. Some of the descriptions give us an idealized impression of the eye as a ball-like shape with liquids in the centre and tunics enclosing them like an onion. The lens is situated in the middle of the eye, and it was believed to be the organ of perception.¹³

- ¹⁰ A chapter on anatomy can be found as an introduction to other therapeutic texts on the eye, *e.g.* the cύνοψις ὶατρικῆc of Leo medicus and the seventh book of Aetius Amidenus (see n. 14 for the exact reference).
 - ¹¹ For exact references see n. 12.
- The most detailled descriptions of the anatomy of the eye can be found in Aetius Amidenus VII 1 (= CMG VIII 2, 253, 30 ff. Olivieri); The Syriac Book of Medicines V 1 (= I 67-70/II 73-76 Budge); Cassius probl. 27 (= 154, 15 ff. Ideler); Celsus, med. VII 7, 13 (= 319, 7 ff. Marx); Galen, UP X 1-15 (= II 54-113 Helmreich and 3.759-841 K), anat. admin. (Arabic) vol. I 32-62, Bd. II 24-46 Simon; Ps. Galen, introd. 11. (= 14.711 f. K), Galeno adscriptus liber de anatomia oculorum; Hunain, Ten Treatises on the Eye I (= 3-14 Meyerhof), livre des questions sur l'œil I 1-71 (= 81-100/17-40 Sbath, Meyerhof); Leo, consp. med. III 1 (= 127, 10 ff. Ermerins und 367 f. Boissonade) and de nat. hom. 35-43 (= 30-36 Renehan); Meletius II (= 61-72 Cramer); Rufus anat. 9-17 (= 170-173 Daremberg-Ruelle) and onom. 15-30 und 153 (= 135-137 und 154 Daremberg-Ruelle); Theoph. Prot., de corp. hum. IV 15-25 (= 150-173 Greenhill); al-Mawsili 1-30 (= 28-38 Hirschberg-Lippert-Mittwoch); 'Ali ibn 'Isa I (= 8-30 Hirschberg-Lippert).
- 13 Problematic were in particular membranes which were visible during dissection but did not fit into the anatomical system of the author; e.g. a membrane covering the lens is not compatible with Galen's understanding of vision. Cf. Zipser, Fischer p. 15 n. 26.

Some of the accounts go into further detail and describe even very subtle structures which are macroscopically almost invisible. Yet, even within any one treatise the terminology is sometimes not entirely clear – is a structure a tunic or a membrane and do tunics in the anterior and posterior chamber form a unit or are they separate? And is the retina a tunic although it is part of the optic nerve which is an extension of the brain? Throughout the medical literature there is, despite all similarities, no consistent terminology, and often even colloquial expressions like 'the black of the eye' invade the text and make it unclear whether an author meant the iris or the pupil.

As many sources are lost, it is very difficult for us to reconstruct the origins of this understanding. We have three brief historical accounts on the history of the anatomy of the eye, one in Greek, in the pseudogalenic *introductio*¹⁴ and two in Arabic, both in ophthalmological works of Ḥunain ibn Isḥāq¹⁵ describing and rationalizing different approaches; it is not clear whether they built their assumptions on primary sources (i.e. a text on the anatomy of the eye) or on a secondary source that is today lost, for instance yet another historical analysis.

All three texts mention an anatomical system resembling the one found in our fragment, namely two liquids, lens and vitreous body, and two tunics, of which choiroid/iris form the inner layer and the sclera/cornea the outer one, and one of the texts, the *introductio*, attributes the system to Hippocrates. ¹⁶ The key difference from Galen's system is the absence of the retina – although it is not entirely clear whether it was unknown to the author of our fragment, or whether it was known, but not regarded as a tunic. ¹⁷ Moreover, the absence of another anatomical detail, the aqueous humour, a liquid situated between the lens and the cornea, means that the anatomical understanding underlying this fragment is out of date and superseded by Galen and his contemporaries. ¹⁸

- 14 ὁ δὲ ὀφθαλμὸς cuyécthken μὲν καθ΄ Ἰπποκράτην ἐκ χιτώνων δύο οὖς μήνιγγας ὁ Ἰπποκράτης καλεῖ, ἐπειδὴ ἐκ τῶν μηνίγγων ἐκπεφύκαςιν. «According to Hippocrates the eye consists of two tunics which Hippocrates calls meningeal membranes because they originate from the meningeal membranes». Ps. Gal. introd. XI (= 14.711, 13-15 K, 29, 11-13 Petit).
- 15 «Those who say that they are three, argue equally that the uvea and choroid are only one tunic as the uvea, as we mentioned before, grows out of the choroid. Finally, those who say that the tunics of the eye are only two in number maintain, likewise, that the sclerotic and the cornea are only one tunic, because the cornea proceeds from the sclerotic». Ḥunain, *Ten Treatises* 81, 2-6. The corresponding passage in *Livre des questions sur l'æil* is I 47 (= 17/92 Sbath/Meyerhof). Both works are reprinted by Sezgin.
- ¹⁶ A Hippocratic text on the eye which has survived to our times is entirely different from the Venetian fragment and any other later source. See Craik 2006.
- This might have been the case in two Arabic sources, the *summaria Alexandrinorum* and the *synopsis* of Ioannes grammatikos, transmitting a two tunic/three humour system; both are aware of the anterior and the posterior half of the two outer layers of tunics, in our terms the uvea/chorioidea and the sklera/cornea. But since they call (what would be in modern terms) the sklera «netlike», which one would rather expect to describe the retina, it is very likely that the source of both texts was aware of this structure but did not regard it as a tunic. The terminology used in the texts must have been caused by an error. For the *Summaria* see *Jawāmi* 2001, vol. I, p. 64. For Ioannes see ms. *Arund. Or.* 17 f. 6°. More material can be found in Garofalo 2000. I owe these two references to I. Garofalo.
- ¹⁸ The aqueous humour and its importance is for instance described in *de usu partium* X 6 = 1174 12 ff. Helmreich).

Whether or not our fragment is, in some way, Hippocratic is impossible to decide; the reference in the *introductio* certainly suggests that it is, but of course it could be the case that two medical authors independently postulated a two tunic/two liquid system. The fact that the fragment is crossed out probably means that the scribe realized it was not Galenic (which requires a considerable amount of specialist knowledge), and therefore not worth copying.

I would like to conclude with an observation that is even more intriguing from a historical point of view. From the present fragment we can see that a primary source, an original work, with an outdated anatomical understanding was still extant as late as the fourteenth century, and one is wondering how it happened to have invaded a collection of Galenic works. That a text was falsely attributed to an author is not uncommon; this could occur either by mistake or in order to increase the value of a manuscript. But our fragment is odd enough to have been crossed out, and apart from its title it is neither in style nor in content in any way close to Galen. Maybe there were more diverse texts on the eye circulating that evaded the predominance of Galenic thought than previously believed, and it could very well have been the case that both the author of the *introductio* and Hunain were aware of primary sources like our fragment when they compiled their historical accounts of the anatomy of the eye.

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