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(d. Alexandria, 415), *mathematical commentaries, philosophy*. For the original article on Hypatia, see *DSB*, vol. 6.

Hypatia was the daughter of Theon of Alexandria and the only woman in antiquity for whom historians have some positive evidence of her mathematical activities. However, the information about her achievements in this and other fields is particularly scanty, and comes either from authors, such as Christian writers, that were overtly hostile to her or from sources not favorably oriented. The latter is the case of Damascius' testimony, making up the bulk of the entry of the *Suidas* lexicon. Such biased reports have exposed even the reasons and the oft-repeated circumstances of her murder to scholarly romancing.

Hypatia was renowned as a philosopher, but only conjectures can be made about her philosophical allegiances and her teaching. The former have been characterized either as Cynic, on the basis of tendentious and caricatural remarks by Damascius, or Neoplatonic with a strong Iamblichean tinge, mainly because of analogous doctrines embraced in the works of her pupil Synesius of Cyrene. No testimony about her philosophical writings has survived, and it is reasonable to doubt that any such writings ever existed. It seems sufficiently established that a circle of pupils of remarkable intellectual level gathered around her, but it is not clear whether her teaching was a public or a private one, whether formal or informal, and there is not the slightest hint that she held an official chair. She was never the head of the Neoplatonic school in Alexandria.

Damascius asserts that his master Isidorus was superior to Hypatia as a philosopher is to a mathematician. At best this suggests that Hypatia was probably no first-rank philosopher, and Isidorus was definitely a very bad mathematician. To be sure, it is no great virtue to be a good mathematician in a period in which this meant being able

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to understand and expound the mathematical proofs in the treatises of the canonical authors.

In fact, the only two sources mentioning Hypatia's mathematical achievements attest that she was engaged in composing commentaries. The *Suidas*, drawing from Hesychius, reports that she "Here wrote a commentary on Diophantus, the astronomical table, a commentary on Apollonius' *Conics*" (Adler, 1935, 644.3-5). The inscription of Theon's commentary on *Almagest III* reads "Commentary of Theon of Alexandria on the third of Ptolemy's *Mathematical Syntaxis*, the edition having been proof-read by the philosopher Hypatia, my daughter" (Rome, 1943, p. 807). Both testimonies raise serious problems. The wording of the former probably requires emendations and does not allow the reader to decide whether Hypatia wrote an astronomical table or a commentary on such a work (in this case almost surely Ptolemy's *Handy Tables*). The latter option can be doubted, because Theon already had written two commentaries on the same work. However, writing an astronomical table is not the same as editing the text of the *Handy Tables* and the latter proposal too should be dismissed. Even more implausible is the hypothesis that Hypatia compiled new tables of which nothing has survived.

As for the second testimony, one interpretation pictures Hypatia as proofreading the text of the *Almagest* itself in assistance to her father's effort as a commentator, thereby procuring a reliable edition of Ptolemy's treatise. Yet, the minimal interpretation that Hypatia simply checked the final version of Theon's commentary on book III appears by far the most plausible one. Theon's exegeses were first performed as lectures and then redacted in due form, and a checking was necessary—given the presence of non-trivial calculations. Such an authorized copy was the edition alluded to by the inscription. Parallel passages in Eutocius' commentaries confirm that this was the current practice. There have been attempts to detect stylistic differences between the third and the other books of Theon's commentary, but the result is that no differences subsist. A recent and thorough search for Hypatia's own contributions to book III itself rests on arbitrary assumptions about her style and is at bottom circular. Attempts, based on the same stylistic criteria, at assigning Hypatia a role in the very complex tradition of Archimedes' *Dimensio circuli* and at singling out relics from her commentary in the extant commentary by Eutocius on Apollonius' *Conics*, must be regarded as highly hypothetical speculations as well.

Many of the above proposals rest on the questionable assumption that a wide-ranging enterprise of editing and commenting on mathematical texts was undertaken by Theon and his circle. On the contrary, Theon apparently wrote no commentaries on the only two works historians can be reasonably sure he edited, the *Elements* and the *Data*, whereas he commented on treatises that researchers have not the slightest reason to suspect he edited. An analogous net of conjectures has been built upon Hypatia's alleged commentary on Diophantus' *Arithmetica*. The Greek text is incomplete. To explain this, it can be surmised that Hypatia procured a revised and commented text; her commentary arrived as far as the sixth book only and this entailed that the remaining seventh book got lost. The discovery of an Arabic version, containing four more books, disproves such a hypothesis. In its turn, the Arabic text, fairly different in its format, has led to conjecture that it is the translation of a text commented by Hypatia. Difficulties with this proposal are that the Arabic version is a new recension of the treatise, not a

commentary, and normally a commentary does not interfere with the text in such a way. Moreover, the modifications with respect to the format of the Greek text are extensive but of no mathematical relevance. It is more charitable to deny than to affirm any Hypatian authorship to such worthless and pedantic additions.

In a letter to a certain Paeonius, Synesius provides a rather clumsy description of a plane astrolabe. As Theon is reported to have written a treatise on the construction of the astrolabe, it is likely that Synesius directly drew from that work, even if he mentions Hypatia as his teacher on the matter. A reference to a hydroscope in a letter of Synesius to Hypatia is too obscure to be explained except arbitrarily. Such a quantity of entirely conjectural reconstructions is self-perpetuating, as any new hypothesis is allegedly supported by all the others taken as established facts, and very often they consist in questionable projections of doctrines and textual formats typical of some of the works of Hypatia's pupils or relatives.

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