# Hypatia of Alexandria (c. 350–415 CE) Letter from Synesius of Cyrene to Paeonius (c. 355–415 CE)

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5

# Hypatia of Alexandria (c. 350–415 CE): Letter from Synesius of Cyrene to Paeonius (c. 355–415 CE)

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## Introduction

Hypatia was the head of the school of philosophy based in Alexandria, Egypt, which was part of the Eastern Roman Empire during her lifetime. It was one of two dominant philosophical schools in late antiquity, with the other school based in Athens, and therefore Hypatia was undoubtedly one of the most prominent philosophers, as well as mathematicians, of her day.[38] Hypatia is also one of very few women in antiquity who led a school. She inherited this position from her father, Theon, a celebrated mathematician. Theon and Hypatia worked closely together. The third book of Theon's commentary on Ptolemy's *Almagest* is titled 'Commentary by Theon of Alexandria on Book 3 of Ptolemy's *Almagest*, an edition revised by my daughter Hypatia, the philosopher.' This line, combined with the fact that Books 3-13 contain a long division method not found in Book 2, indicates that Theon was commenting on an edition of *Almagest* prepared by Hypatia.[39] This piece of information not only provides a glimpse into Hypatia's early mathematical work but is also one of the very few surviving sources of her writing.

The main obstacle in studying Hypatia's thought is that her written treatises have not survived. Although difficult, the reconstruction of her views is not impossible. Hypatia had a thriving school with pupils whose works have survived. The views of other philosophers have been reconstructed on the basis of the writings of pupils and other testimonies.

For example, neither Socrates or Pyrrho wrote anything at all, yet their thought is studied via the writings of their pupils. In the case of Hypatia, her pupil Synesius of Cyrene is a rich source of information, as he was a prolific writer himself. His surviving letters show correspondence with his teacher, as well as his fellow pupils, and he regularly refers to Hypatia as an authority on scientific and philosophical issues. This manner of referring to her teaching is evident in his letter to Pylamaenes, enclosed with the gift of an astrolabe.

## Source

Synesius On an Astrolabe 14-15, translated by Augustine Fitzgerald, slightly altered. Livius.org, 'Synesius On an Astrolabe 3', Last modified 4 May 2019. Accessed 17 February 2022. Available: https://www.livius.org/sources/content/synesius/synesius-on-an-astrolabe/synesius-on-an-astrolabe-3/

Astronomy itself is a venerable science, and might become a stepping stone to something more august, a science which I think is a convenient passage to ineffeable theology, for the happy body of heaven has matter underneath it, and its motion has seemed to the leaders in philosophy to be an imitation of mind. It proceeds to its demonstrations in no uncertain way, for it uses as its servants geometry and arithmetic, which it would not be improper to call a fixed standard of truth. I am therefore offering you a gift most befitting for me to give, and for you to receive. It is a work of my own devising, including all that she, my most reverend teacher [Hypatia], helped to contribute, and it was executed by the best hand to be found in our country in the art of the silversmiths.

## Analysis

This text has been used to suggest that Hypatia invented the astrolabe but this is now a widely rejected claim.[40] However, the claim about the invention of this astronomical instrument is arguably less interesting than the question of its application. Synesius regularly mentions various scientific devices in his letters, linking them to Hypatia in one way or another. For example, in his *Letter* 15, Synesius asks Hypatia to send him a hydrometer. These links prompt questions about how these instruments

were used in Hypatia's school. We are also prompted to consider what theoretical propositions could have been drawn based on the data collected with these instruments. The source sheds some light on this.

This passage contains some striking Platonic undertones. Arranging different types of knowledge (and, implicitly, sciences) in a hierarchical order, for instance, is reminiscent of the Divided Line metaphor in the *Republic* 6 (509D-511D), which divides different types of knowledge hierarchically into knowing imitations, objects, principles and the Forms in ascending order. This Platonic motif must have found its way into Synesius' writing by way of the education he received from Hypatia as he did not study with any other teachers. Our sources describe Hypatia as working in the tradition of Plotinus (Socrates Scholasticus *Historia Ecclesiastica* 7.15.1.), the founder of Neoplatonism. Furthermore, Synesius' mention of his teacher towards the end of the passage implies her approval of not only the instrument constructed but also the explanation of its significance. This revelation indicates that the contents of the passage either reflect Hypatia's own views or, at the very least, are compatible with her views.

A closer look at the passage reveals that there are some notable differences between this hierarchy and the one in the *Republic*. Synesius puts ineffable theology at the top of the hierarchy of knowledge, with astronomy just below and geometry and arithmetic as its subordinate sciences. This scheme overlaps with the standard philosophical curriculum in late antiquity: the students would start with mathematics, Aristotelian philosophy and slowly advance towards metaphysics, especially Platonist metaphysics. The most advanced, the inner circle students, were given the most esoteric teachings, called 'ineffable theology' by Synesius.[41] Despite Platonic motifs, the point of this passage is therefore quite different from that made by the Divided Line, and it has important implications for how scientific knowledge is modelled and understood. Far from being an inferior type of knowledge, as it is in the Divided Line, astronomy here is a stepping-stone to the understanding of the principles of the universe ('mystic theology'). Synesius explains this connection by noting that although the heavenly bodies are material, and their motion is rational, and they imitate the pattern of the divine mind. By comparing the hierarchy of knowledge in this passage and in Plato, we can draw two important conclusions: first, members of Hypatia's school were using motifs from Platonist tradition, thus embedding their views in a dominant philosophical tradition. Second, they interpreted and adapted these motifs to suit their interests. In this passage, a Platonic motif is interpreted to fit contemporary educational progression.

The source text contains two further notable concepts. First, the notion of a demonstration (*apodeixis*) as described here comes from Aristotle. By late antiquity, it was a popular model of scientific reasoning, found not only in standard theoretical sciences but also medicine; Galen of Pergamum was a famous advocate of medical demonstrations.[42] Aristotle defined a demonstration as a 'scientific deduction' in the *Posterior Analytics* (1.2; 71b18), and it is primarily understood as a tool for discovering unknown truths from what is known by means of logical reasoning. Synesius writes that an astronomical demonstration is produced not uncertainly but in a rigorously established way, by means of geometry and arithmetic. In describing this process, he uses the second notable concept: the criterion of truth. This notion originated in the Hellenistic period (323–30 BCE). Originally, the concept of the criterion of truth referred to the way in which we know that what we are perceiving is true and not, for example, a dream or an illusion. Synesius uses it differently. Here, sciences are fit to be called the criterion of truth because they pave the way for understanding how the divine mind operates. The study of heavenly bodies with the help of scientific instruments, such as an astrolabe, therefore, underpins the study of the divine origins of the universe and how it operates. In Hypatia's school, sciences and philosophy were modelled as uniquely converging domains of knowledge: a key original contribution to scientific and philosophical thought in late antiquity.

## Questions

1. How did Hypatia's school present mathematical reasoning as an introduction to philosophy? In what sense are geometry and arithmetic 'criteria of truth'?
2. In what ways does the study of Hypatia resemble the study of, for example, Socrates, who also has no surviving works? In what ways does it differ?
3. Which ideas in the source can be linked to established philosophical traditions and which are innovative?
4. How might we consider Hypatia in her cultural context; what other female philosophers and intellectual figures might we compare her with?
5. Consider the ways in which sources for ancient figures can be used. What are the difficulties, shortcomings, and advantages of the sorts of sources that we tend to be faced with?

## Further reading


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## Part I notes

1 Neugebauer, *The Exact Sciences in Antiquity,* and *A History of Ancient Mathematical Astronomy*; Toulmin and Goodfield, *The Fabric of the Heavens*.

2 Nutton, *Ancient Medicine*, for discussion of the specific problems of sources for ancient medicine while being broadly applicable when considering the ancient world and the lack of comprehensive written record; see also Homer, *Odyssey* (2018 translation), for an example of a radically different translation of Homer's *Odyssey* by Emily Wilson.

3 This publication is part of the research project 'Alchemy in the Making: From Ancient Babylonia via Graeco-Roman Egypt into the Byzantine, Syriac, and Arabic Traditions', acronym AlchemEast. The AlchemEast project has received funding from the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme (grant agreement no. 724914).

4 Martin Levey popularised knowledge of Assyro-Babylonian chemical texts during the mid-twentieth century, and introduced Tappūtī-bēlat-ekalle to historians of chemistry; see Levey, 'Perfumery in Ancient Babylonia', 1954.

5 KAR 220 is also referenced by its museum catalogue number VAT 10165; a digital edition of the text may be found at http://oracc.org/glass/P282617 (accessed 15 December 2022).

6 These conventions are in keeping with those generally utilised in Assyriology; see for example Radner and Robson, *The Oxford Handbook of Cuneiform Culture*, xxv. The clearest duplicate for KAR 220 is text KAR 140 (VAT 10096), http://oracc.org/glass/P282611 (accessed 15 December 2022).

7 To list only a few master perfumers: Ernest Beaux (creator of Chanel No. 5); Alberto Morillas (master perfumer at Firmenich); and Jean-Claude Ellena (Hermés). In 2016, after the retirement of Ellena at Hermès, Christine Nagel became the first woman to direct olfactive creations for Hermès Parfums, a rarity in a male-dominated industry. An interview with Nagel may be found at https://www.businessoffashion.com/articles/workplace-talent/how-i-became-hermes-in-house-perfumer (accessed 15 December 2022). The dominance of the 'male nose' – in both perfume production and literature – is not limited to modern or even Western perfume production, as it finds parallels in pre-modern India, for which see McHugh, *Sandalwood and Carrion*.

8 See, for example, MARV 2.22, a Middle Assyrian administrative text wherein a female perfume-maker named Tukulti-ša-šame is tasked with delivering aromatic oils over a period of eight months for state-sponsored cultic events in the city of Assur in Postgate, *Bronze Age Bureaucracy*, 158–59.

9 Jakob, *Mittelassyrische Verwaltung und Sozialstruktur*, 478.

10 See, for example, Pamela Smith's discussion of 'artisanal epistemology' in chapter one of Smith, *The Body of the Artisan*. The sociologist Harry Collins has also explored the concept of tacit knowledge in depth in Collins, *Tacit and Explicit Knowledge*.

11 An introduction to the history of Babylonian and Assyrian science may be found in Rochberg, 'The history of science and ancient Mesopotamia'. A more specialised treatment on the intellectual history of Akkadian procedures will be published in Escobar, 'Mathematics and Technological Change'.
12 For a summary of Akkadian dialects, including the Assyrian dialect of Akkadian, see George, 'Babylonian and Assyrian'.
13 Aruz et al., *Beyond Babylon*, explores the cultural exchange of elite goods during the late second millennium BCE and provides a valuable resource for this period.
14 See, for example, Graziosi, *Inventing Homer*.
15 Gregory, *Early Greek Philosophies of Nature*, 5, 31.
16 See Rochberg, *Before Nature*, 1; Lloyd, *Cognitive Variations*, 31–32; Lloyd, *Methods and Problems*, 419; Grant, *A History of Natural Philosophy*, 1.
17 Gregory, *The Presocratics and the Supernatural*.
18 If you are interested in this background, read Kramer and Sprenger, *Malleus Maleficarum*. The title *Malleus Maleficarum* means 'Hammer of the Evil Doers' and is effectively the first handbook on witch hunting. It is widely available in an English translation. Beware that it is an appallingly misogynistic book, but also fascinating in its paranoia.
19 For a new feminist translation of Homer's *Odyssey* which illustrates a different interpretation of Circe from more traditional works, Emily Wilson: Homer, *Odyssey* (2018 translation).
20 Based on the references to the *Dialogue* in other Greek alchemical works, the manuscript transmission of the treatise, and its contents, I argue for dating the extant version of the work to the seventh century CE. On these topics and the debate surrounding the date of composition of the *Dialogue*, see Reitzenstein, 'Zur Geschichte der Alchemie und des Mystizismus'; Letrouit, 'Chronologie des alchimistes grecs'; and Charron, 'The *Apocryphon of John* (NHC II, 1) and the Graeco-Egyptian alchemical literature'.
21 Original translation by Vincenzo Carlotta.
22 On the secretive language of some alchemical texts and its interpretation, see at least Halleux, *Les Textes Alchimiques*, 114–119 and Principe, *The Secrets of Alchemy*, 143–156.
23 On the crucial role of pseudo-Democritus in the history of Greco-Egyptian alchemy, see Martelli, *The Four-Books of Pseudo-Democritus,* in particular pp. 63–73 on the interplay of Egyptian and Persian elements in the foundational narrative of Greek alchemy.
24 See Marasco, 'Cléopâtre et les sciences de son temps'; and Flemming, 'Women, writing and medicine in the Classical world'.
25 On Cleopatra's cultural and political legacy in Egypt and the Eastern provinces of the Roman Empire, see Chauveau, *Cleopatra;* and El Daly, *Egyptology*.
26 On *Cleopatra's Gold Making*, see Mertens, *Zosime de Panopolis*, 22 and 175–184.
27 See Ullmann, 'Kleopatra in einer arabischen alchemistischen Disputation'.
28 Museo Larco, 'Museo Larco Catalogo en Linea'. Translation by the author.
29 Larco Hoyle, *Los Mochicas*.
30 Castillo-Butters and Quilter, 'Many Moche Models', 2010, 1–16.
31 Glass-Coffin, *The Gift of Life*.
32 Scher, 'The Achumera', 237–256.
33 Glass-Coffin, *The Gift of Life*.
34 Conkey and Spector, 'Archaeology and the study of gender', 1983, 1–38.
35 Clarke and Wilkie, 'The Prism of the Self', 2006.
36 Scher, 'The Achumera', 237–256.
37 Bussman and Sharon, 'Traditional medicinal plant use', 2006, 1–18; Museo Larco, 2010.
38 With reference to our comments in the introduction it is important to critically evaluate terms such as 'Late Antiquity'. Late Antiquity, roughly, spans the period from the third century to the sixth or seventh and traditionally marked the end of the Greco-Roman Classical world and the beginning of the European Middle Ages. It is therefore a term entrenched in Euro-centric conceptions of the past. It is helpful to consider this periodisation in light of the timeline at the beginning of this part marking significant global events and the different periodisations used within the part, such as Middle Assyrian, Southern Moche, Byzantine and Ancient Greek.
39 Cameron, 'Hypatia', 2016, 191.
40 Powell, *From Cave Art to Hubble*, 32.
41 Watts, *Hypatia*, 39–41.
42 Tieleman, 'Methodology', 2008, 49–53.

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