Principal texts to be studied

- Aristotle, *Posterior Analytics* I 1-10
- Euclid, *Elements* book I

Texts in Greek


Translations and commentaries


In this seminar, I aim to examine Aristotle’s theory of science as described in the first ten chapters of book I of the *Posterior Analytics*, using Euclid’s *Elements* to illustrate Aristotle’s scientific theory, and to examine to what extent the *Elements* lives up to the strictures Aristotle imposes on what a science is.

In particular, I will focus on the following questions:

- What is the meaning of Aristotle’s definition of *episteme* in *Post An* I 2?
- What is the correct definition of *nous* in the *Post An*?
- What is the role of demonstration in the *Post An*?
- What are the different types of first principle in *Post An*?
- To what extent do the first principles in Euclid’s *Elements* exemplify Aristotle’s categorization of first principles?
• To what extent do Euclid’s proofs of the results of geometry meet Aristotle’s description of demonstration?

Syllabus

(1) Background
  • Epistemology in Plato’s *Meno*
    o To know what something is like, you have to know what it is;
    o To know something, you have to know why it is true.
  • Aristotelian Syllogistic in *Prior Analytics*

(2) The definition of *episteme* (understanding) in *Post An I 2*
  • To know something is to know why it is true;
  • To know something involves knowing it is necessary.
    o Why does a science contain terms for neither explanation nor necessity?
    o What is the role of *Post An I 1*?

(3) Demonstration in *Post An I 2*
  • *One way* of having *episteme* is knowledge through *demonstration* (*Post An I 2, 71b16-17*). What are the six conditions for a syllogism to be a demonstration?

(4) *Post An I 3*
  • Aristotle’s arguments against circular demonstrations and infinitely long demonstrations.
  • *Episteme* must come in two forms, demonstrative and non-demonstrative (also called *nous*).
    o Aristotle expresses this insight in another way, that there is episteme and the *source* or *principle* of episteme. What is the difference between this way of putting it, and the way of putting it where we have two forms of episteme (demonstrative and non-demonstrative)?
(5) The types of proposition which feature in science according to *Post An* I 4

- What does Aristotle mean by ‘of every case’;
- What does Aristotle mean by ‘in itself’;
- What does Aristotle mean by ‘universally’;
- The importance of the fourth type of ‘in itself’ proposition, and its interpretation;
  - Notice that ‘in itself’ drops out of the formulations of the science.

(6) What is *nous* in the *Posterior Analytics*? See especially I 3; I 33; II 19.

- How can it be defined?
- Advantages and disadvantages of David Bronstein’s definition of *nous* (see bibliography)?

(7) Necessity and the principles of science

- *Posterior Analytics* I 6: necessity in science;
- *Posterior Analytics* I 10: different types of principle.

(8) Euclid’s *Elements*

- Introduction to Euclid and the text of the *Elements*;
- Laying out the science with principles and theorems.
- Distinction between problems and theorems.

(9) Applying Aristotle to Euclid

- Can we match up the different types of first principles in Aristotle with those in Euclid?

(10) What is the nature of the problem-propositions, and is there a difficulty in capturing them in Aristotle’s system?
Further Bibliography:

- Beere, Jonathan, and Morison, Benjamin, ‘A mathematical form of knowing how in Greek geometry: the nature of the problem-propositions’, manuscript
- Bronstein, David, *Aristotle on Knowledge and Understanding* (OUP, 2016)