Who are the Historians?

A Sample Project

What precisely was written over the door of Plato's Academy?

Plato's Academy

... Plato's influence on mathematics was not due to any mathematical discoveries he made, but rather to his enthusiastic conviction that the study of mathematics furnished the finest training for the mind and, hence, was essential for the cultivation of philosophers and those who should govern his ideal state. This explains the renowned motto over the door of his Academy: *Let no one unversed in geometry enter here*. Because of its logical element and the pure attitude of mind that he felt its study created, mathematics seemed of utmost importance to Plato; for this reason, it occupied a valued place in the curriculum of the Academy.

Plato's Academy

All the authorities agree that he [Plato] made a study of geometry or some exact science an indispensable preliminary to that of philosophy. The inscription over the entrance to his school ran "Let none ignorant of geometry enter my door," and on one occasion an applicant who knew no geometry is said to have been refused admission as a student.

Plato's Academy

... At any rate, in later years he is said to have placed above the entrance to his school of philosophy (the Academy) the words, "Let no one ignorant of geometry enter my doors,"[3] – the oldest recorded entrance requirement of a college, - and to have spoken of God as the great geometer.[4]

[3] Μηδείς ἀγεωμέτρητος εἰσίτω μον τήν στέγην.

[4] "God eternally geometrizes," Ἀεί θεός γεωμετρεῖ. This is not in Plato's works, but is stated by Plutarch as due to him. Plutarch, *Convivalium Disputationum libri novem*, viii, 2 ed., Didot (Paris, 1841).

Plato's Academy

... Plato's Academy, founded in Athens around 385 B.C.E., drew together scholars from all over the Greek world. These scholars conducted seminars in mathematics and philosophy with small groups of advanced students and also conducted research in mathematics, among other fields. There is an unverifiable story, dating from some 700 years after the school's founding, that over the entrance to the Academy was inscribed the Greek phrase ΑΓΕΩΜΕΤΡΗΤΟΣ ΜΗΔΕΙΣ ΕΙΣΙΤΩ, meaning approximately "Let no one ignorant of geometry enter here." A student "ignorant of geometry" would also be ignorant of logic and hence unable to understand philosophy.

... it is certain that Plato brought in the best mathematicians of his day to teach and do research, including Theaetetus (c. 417-369 B.C.E.) and Eudoxus (c. 408-355 B.C.E.). The most famous person associated with the Academy, however, was Aristotle.

Plato's Academy

From Smith, Μηδείς άγεωμέτρητος είσίτω μον τήν στέγην

From Katz, ΑΓΕΩΜΕΤΡΗΤΟΣ ΜΗΔΕΙΣ ΕΙΣΙΤΩ

Moritz, *On Mathematics: A Collection of Witty, Profound, Amusing Passages about Mathematics and Mathematicians* (Dover, 1958)
  gives Smith's version and cites *Tzetzes, Chiliad, 8, 972*

Christopher Planeaux's webpage on Plato's Academy cites the Katz version with Phlp. *In de An*., cxvii 26-7 and Olymp. *Proll*., viii 39 – ix 1.

From an e-mail inquery to Planeaux:
  Phlp = Philippus of Opus   Olymp = Olympiodorus

Plato's Academy

Planeaux also suggested that I should look at:

"AGEWMETRHTOJ MHDEIJ EISITW: Une inscription légendaire" by H.D. Saffrey in Revue des Études Grecques, vol. 81.

Scouring the web I determined that Philipus of Opus was Plato's secretary, and that there were at least 4 famous Olympiodorus's, a general, an historian and two philosophers. The general was older than Plato, the historian wrote about the sacking of Rome and one of the philosphers was a neo-Platonist who wrote commentaries on Plato and Aristotle. Bingo!

Plato's Academy

Planeaux's e-mail:

Thanks for the note. I am surprised anyone can still find that website. IU has moved it around quite a bit, and, ugh, I haven't updated it in quite a while. Anyway, thanks.

The citations are the accepted standard for ancient authors (the abbreviations can be found in the Oxford Classical Dictionary 3rd ed.). Olymp. = Olympiodoros (Olympiodorus) & Phlp = Phillipos of Opos (Philippus of Opus).

A good article to read would be "AGEWMETRHTOJ MHDEIJ EISITW: Une inscription le/gendaire" by H.D. Saffrey in Revue des E/tudes Grecques vol. 81.

Hope this helps,
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Plato's Academy

We should look at perhaps the only 'fact' which is usually given about the Academy in Plato's time. This is that above the door Plato inscribed "Let no one who is not a geometer enter". This is not stated in any literature which has come down to us earlier than a document from the middle of the 4th century AD which, therefore, was written about 750 years after Plato founded the Academy. Before we discuss whether it is likely that indeed this was written above the door of the Academy, let us give what is probably a more accurate translation - "Let no one who cannot think geometrically enter".

First we note that above the doors of sacred places there was often placed an inscription "Let no unfair or unjust person enter". What is reported above the door of the Academy is exactly the same Greek words except "unfair or unjust" has been replaced by "non-geometrical". Next we note that the sentiment is exactly what Plato might have written, for it expresses an idea which runs throughout his writings. However, it seems highly unlikely that something of this nature would be handed down by word of mouth for 750 years before being written down, so despite it being an attractive idea, it is almost certainly fictitious.

The actual evidence

The earliest reference occurs in an oration written by the emperor **Julian the Apostate** in **362**, who mentions an inscription over the entrance to Aristotle's classroom and alludes to another over Plato's, without giving any details of their contents. (No other reference to Aristotle's inscription is known.)

The first details of the wording of Plato's inscription come from an anonymous scholiast who has been identified as probably the 4th century orator **Sopatros**, in an annotation of a manuscript of Aelius Aristides.
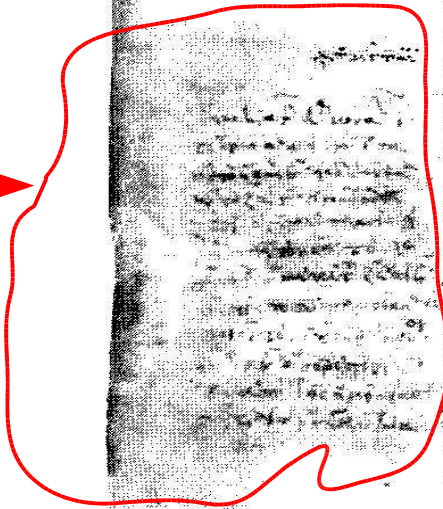
(David Fowler, The Mathematics of Plato's Academy: A New Reconstruction, Oxford: Clarendon Press, 1999)
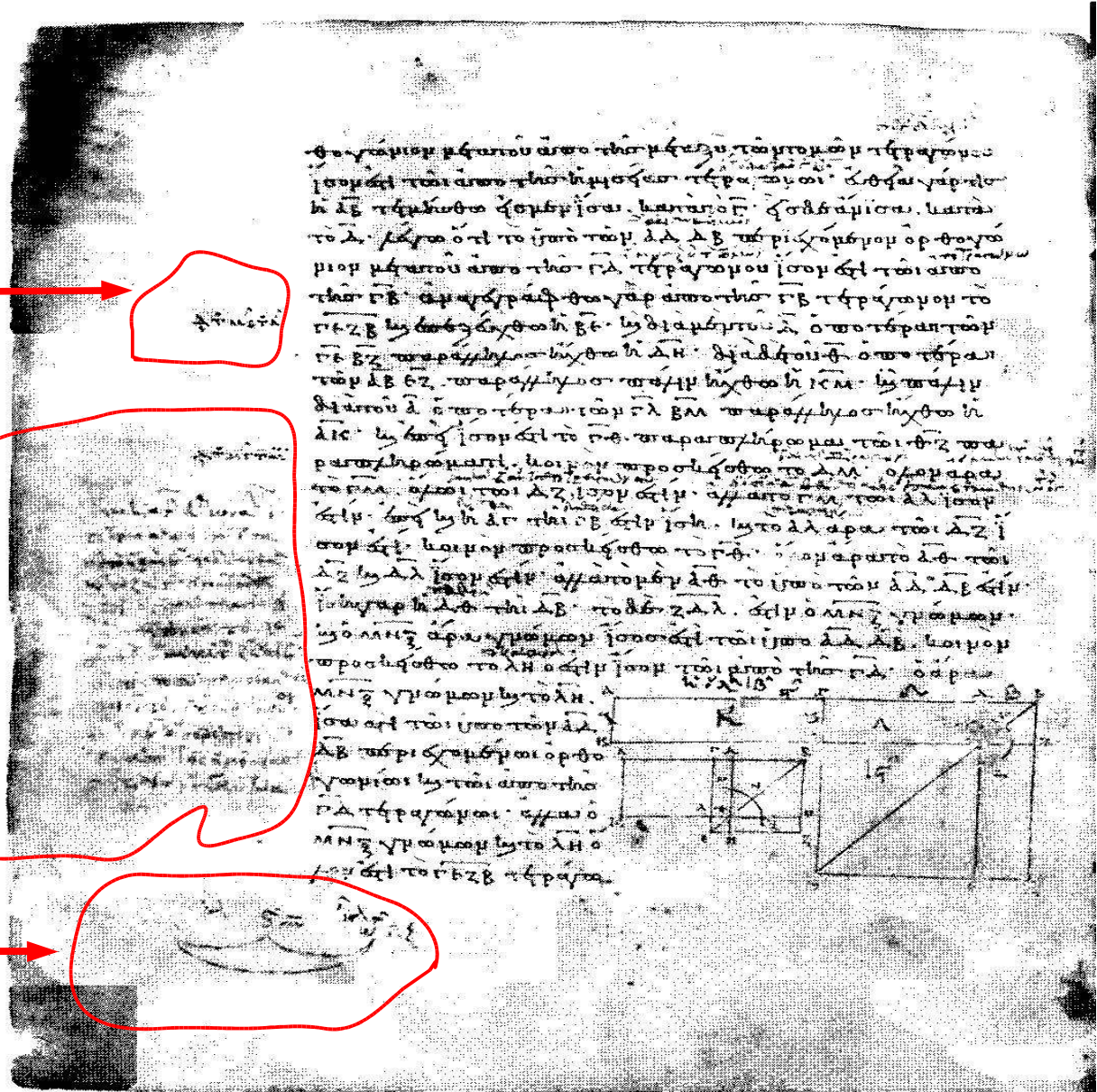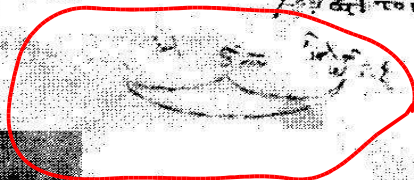
Scholia

Annotation

Scholium

Inserted Figure

The Scholium

εί δέ ή γεωμετρία ἐπεγέγραπτο δέ ἔμπροςθεν τής διατριβής τοΰ Πλάτωυος ότι ΑΓΕΩΜΕΤΡΗΤΟΣ ΜΗΔΕΙΣ ΕΙΣΙΤΩ. άυτί άυίςος καί άδικος. ...

Which translates to [Andrew Barker, *transl*.]

  There had been inscribed at the front of the school of Plato. "Let no one who is not a geometer enter". [That is] in place of 'unfair' or 'unjust': for geometry pursues fairness and justice.

The translator notes that 'unfair' or 'unjust' could also be translated as 'unfair and unjust'. In this context the meaning of καί is unclear.

Also, note that the scholium does not say that Plato put it there.

The Stories

The story is repeated and used by the 6th century Alexandrian neo-Platonic philosophers Philoponus, Olympiodorus, Elias, and David to impute a variety of different motives to Plato in having the inscription put up in the first place. Finally, the most commonly used standard source for the story is the 12th century Byzantine Johannes Tzetzes.

From Fowler who uses the article by Saffrey as a source.

Tzetzes

Πρό τω προθύρωη τω αύτοῦ γράψας ύπήρχε Πλάτωη
Μηδείς άγεωμέτρητος είσίτω μου τήν στέγην
Τουτέστιν, άδικος μηδείς παρεισε ρχέσθω τήδε
Ίσότης γάρ καί δίκαιόν έστι γεωμετρία.

Tzetzes, *Chiliades*, VIII, 974-7

Which translates to:

On the front of his doorway Plato had written
'Let no one who is not a geometer enter my house.'
That is, 'Let no one who is unjust come in here',
for geometry is equality and justice.

Tzetzes

12th century AD, Constantinople   **[c. 1110 – c. 1180]**

Byzantine didactic poet and scholar who preserved much valuable information from ancient Greek literature and scholarship, in which he was widely read. Tzetzes was for a time secretary to a provincial governor, then earned a meagre living by teaching and writing. He has been described as the perfect specimen of the Byzantine pedant. His literary and scholarly output was enormous, although it contained many inaccuracies--mostly because he was quoting from memory, lacking books, which he said his poverty forced him to do without. Of his numerous and varied works the most important is the *Chiliades* ("Thousands"). Also known as the *Book of Histories*, the work is a long poem (more than 12,000 lines of 15 syllables) containing literary, historical, antiquarian, and mythological miscellanies, intended to serve as a commentary on Tzetzes' own letters, which are addressed to friends and famous contemporaries as well as to fictitious persons. Though the whole work suffers from an unnecessary display of learning, the total number of authors quoted being more than 400, it contains much information unavailable elsewhere.

Tzetzes

TZETZES, JOHN: Byzantine poet and grammarian, flourished at Constantinople during the 12th century A.D. Tzetzes has been described as a perfect specimen of the Byzantine pedant. Excessively vain, he resented any attempt at rivalry, and violently attacked his fellow grammarians. Owing to want of books, he was obliged to trust to his memory; hence he is to be used with caution. But he was a learned man, and deserves gratitude for his efforts to keep up the study of ancient Greek literature. Of his numerous works the most important is the *Book of Histories*, usually called *Chiliades* ("thousands ") from the arbitrary division by its first editor (N. Gerbel, 1546) into books each containing 1000 lines (it actually consists of 12,674 lines in "political" verse). It is a collection of literary, historical, theological and antiquarian miscellanies, whose chief value consists in the fact that it to some extent makes up for the loss of works which were accessible to Tzetzes. The whole production suffers from an unnecessary display of learning, the total number of authors quoted being more than 400 (H. Spelthahn, *Studien zu den Chiliaden des Johannes Tzetzes*, diss., Munich, 1904).

Plato's Academy

Academy was a suburb of Athens, named after the hero Academos or Ecademos. The site was continuously inhabited from the prehistoric period until the 6th century A.D. During the 6th century B.C., one of the three famous Gymnasiums of Athens was founded here. Moreover, it is recorded that Hippias, the son of Peisistratos, built a circuit wall, and Cimon planted the area with trees which were destroyed by Sulla in 86 B.C. In 387 B.C. Plato founded his philosophical school, which became very famous due to the Neoplatonists, and remained in use until A.D. 526, when it was finally closed down by emperor Justinian. The first exvavations on the site were carried out between 1929 and 1940 by P. Aristophron, at his own expense. Work was resumed in 1955 by Ph. Stavropoulos under the auspices of the Athens Archaeological Society, and lasted until 1963. Since then, excavations have been conducted by the 3rd Ephorate of Antiquities. (Athens Tourist Guide)

Plato's Academy

It appears that the Head of the Academy was elected for life by a majority vote. The first few to lead the Academy were: Plato, Speuisppus, Xenocrates, Polemon, Crates and Crantor. Aristotle was a member of the Academy for many years but never became its Head. We should note, however, that Cicero, writing in the first century BC, traces the Academy back earlier than Plato and gives its leaders up to 265 BC as: Democritus, Anaxagoras, Empedocles, Parmenides, Xenophanes, Socrates, Plato, Speusippus, Xenocrates, Polemo, Crates, and Crantor. A new phase began when Arcesilaus became Head of the Academy in 265 BC. Some authors see this as the beginning of the New Academy as opposed to the that from the time of Plato to that of Crantor which is called the Old Academy. Cicero gives the leaders of the New Academy as: Arcesilaus, Lacydes, Evander, Hegesinus, Carneades, Clitomachus,and Philo.

(St. Andrews Website)

Plato's Academy

Philo left Athens in about 85 BC and went to Rome. About a year earlier Lucius Sulla had marched an army on Athens. During the siege of Athens many of the trees in the Academy park were cut down to provide timber for the war effort but there is no evidence that by this time the school led by Philo had any connection with the Academy parkland. It appears that after Philo left Athens the activity in the school ended and there is little evidence that it was restarted before the 2nd century AD. The usual suggestion that Plato's Academy existed from 387 BC until Justinian closed it down in 529 AD is, therefore, not only inaccurate because it appears that there was no Academy from 85 BC until the 2nd Century AD but also because the Academy continued to exist after Justinian's edict to close the pagan schools. Damascius was Head of the Academy in 529 AD and he left Athens at this time with Simplicius and other members of the school. However Simplicius returned to Athens where he certainly wrote, undertook research and was Head of a very restricted Academy until his death in 560 AD.   (St. Andrews website)

Sources

It is important to consciously distinguish between different kinds of sources:

Primary sources are the original writings from the period under study. In the history of mathematics, an article by D'Alembert, a book by Euler, a historical account in Montucla's book would all be primary sources.

Secondary sources are scholarly works based on the primary sources.   This would include articles in *Isis*, *Historia Mathematica*, and so on, moreso than books.

Tertiary sources are expository accounts based on the secondary sources. Often articles in more popular publications are of this kind. Pages on the web are also often of this kind if not further down the chain.

Sources

The material on which you will base your papers will probably consist mostly of secondary sources. Be very careful when using tertiary sources: *they may be unreliable*. It is probably better to use such sources mostly as pointers to secondary sources that you can then use with a bit more confidence. If you have access to the relevant primary sources, then make sure to make use of them; by looking at the primary sources yourself you have the chance to propose an original interpretation, to correct wrong perceptions, or simply to get a feeling for the flavor and tone of the original texts. You should put a lot of effort into locating the right sources for your paper, using electronic indices, published bibliographies (e.g., Dauben), sourcebooks, and references in articles and books you already have. To write a good paper you must spend enough time in the library.

Limitations

While it is nice to say that one should use primary sources, in practice this is not always possible. In some cases, primary sources either don't or no longer exist. In other cases they may be unreadable to us, either because the language has changed too much or because they are written in languages we don't read. In the latter situation, we must rely on translations of the primary sources and the quality of these depends on the abilities of the translator.

Unless we are willing to spend the time to learn the needed skills, we must depend on the work of others who have those skills. In general, we are not in the position of being able to judge the quality of such work, but we can at least recognize the fact that such work has occurred and acknowledge it when we can.

Using the Web

Prof. Daniel Otero of Xaiver University, who teaches History of Mathematics there, writes:

There are several sites which are particularly valuable to students in this course. Be warned that care must be exercised when using information you have obtained from the Web. Consider sources. Is the site based at a trustworthy location such as a university or government department? Are the documents written by scholars and experts, or by dilettantes and cranks? Frequently it is too easy to follow references given at a website than to use the documents without review.

Using the Web

Prof. Fred Rickey of the U.S. Military Academy expresses similar concerns. He has written a small internet exercise which is intended to give you a healthy skepticism about what you find on the web.

I have taken the liberty of reproducing this exercise set and updating it to correct for links that no longer exist or have changed. This is available on our website in the handouts section. Consider this a homework assignment.

Using the Web

I am not trying to discourage you from using the web, indeed I constantly use it myself and expect you to do so as well. What I am trying to do is make sure that you understand the limitations of web research. While there are valuable gems that can be found on the web, there is also a whole lot of chaff and you must develop the ability to distinguish between the two, in order to be able to use the web effectively.