

Letter concerning a review of the *Handbook of the History and Philosophy of Mathematical Practice*

Stelios Negrepointis, Athanase Papadopoulos and Bharath Sriraman

This concerns a review of the *Handbook of the History and Philosophy of Mathematical Practice* edited by Bharath Sriraman which appeared in the EMS Magazine, Issue 135 (2025). In a lengthy introduction, the reviewer explains what he considers to be the history and philosophy of mathematics, a viewpoint we do not share. Concerning the present *Handbook*, we believe that he overlooks the essential point, which is the word “practice” in the title. In the following paragraphs, we would like to address only the reviewer’s explicit criticisms, of which there are two; the other criticisms are vague or unsupported by anything specific and will not be addressed in this letter.

The first criticism concerns articles on Plato’s philosophy, which occupy (according to the reviewer) 170 pages of the four volumes of the *Handbook* – a length that the reviewer finds excessive. But more importantly, he considers the articles not in the spirit of the *Handbook*.

The articles on Plato are written by Stelios Negrepointis, one of the signatories of the present response. These chapters appear either not to have received detailed attention from the reviewer, or their meaning and scope may not have been fully understood, much less the relevance of Plato’s writings to mathematical practice. This is what we would like to address first, in simple terms.

The aim of these chapters is to show, through examples, that mathematics, and in particular the notion of periodic anthyphaireisis, underlies Plato’s entire philosophy. For this purpose, different themes and writings of Plato are analyzed. We do not seek to repeat what is written in these articles, but the importance of Plato in Western philosophy, especially in the philosophy of mathematics, and also in the history of mathematics, may not be fully clear to the reviewer and this compels us to reiterate certain points that should be widely known but are not. To this end, we quote some authors who have written on the subject and who know what they are talking about.

Aristoxenus of Tarentum, who was a student of Aristotle, writes in his opus magnum, Ἀρμονικὰ στοιχεῖα, referring to Aristotle, that Plato’s teaching was essentially mathematical: “Such was the condition, as Aristotle used often to relate, of most of the audience that attended Plato’s lectures on the Good. They came, he used to say, every one of them, in the conviction that they would get

from the lectures some one or other of the things that the world calls good; riches or health, or strength, in fine, some extraordinary gift of fortune. But when they found that Plato’s reasonings [logoi] were of sciences [mathemata/mathematics] and numbers, and geometry, and astronomy, and of good and unity as predicates of the finite, [...]” The fact that Plato was a mathematician is also confirmed by Proclus, the major philosopher of late antiquity, whose opinion is generally considered to be reliable. Proclus includes the name of Plato in the list of mathematicians he gives in Part II of the Prologue of his *Commentary on the First Book of Euclid’s Elements*, an information generally considered to be due to Eudemus, another student of Aristotle. Proclus writes: “[...] Plato, who appeared after them, greatly advanced mathematics in general and geometry in particular because of his zeal for these studies. It is well known that his writings are thickly sprinkled with mathematical ratios [mathematikois logois] and that he everywhere tries to arouse admiration for mathematics among students of philosophy.” In addition to those testimonials from antiquity, we come to the modern period, namely to Bertrand Russell, who writes in his *History of Western Philosophy*: “It is noteworthy that modern Platonists, almost without exception, are ignorant of mathematics, in spite of the immense importance that Plato attached to arithmetic and geometry, and the immense influence that they had on his philosophy.” Finally, we quote Bourbaki, from the *Éléments d’histoire des mathématiques*: “It has been said that Plato was almost obsessed with mathematics; without being an inventor in this field himself, he became, from a certain point in his life, acquainted with the discoveries of contemporary mathematicians (many of whom were his friends or students), and never ceased to take a direct interest in them, even going so far as to suggest new directions for research; thus, in his writing, mathematics constantly serves as an illustration or a model (and sometimes even nurtures, as with the Pythagoreans, his inclination for mysticism).”

In fact, reading the chapters by Negrepointis in this *Handbook* conveys the full breadth and depth of the work of Plato, as opposed to simplistically dismissing it because of a lack of awareness of its mathematical significance. The concept of “anthyphaireisis” relates all of Plato’s philosophy to mathematical reasoning and the method of recollection and is at the heart of the Platonic idea that learning

is a process of recollection of the perfect forms. But the reviewer, who is an early-stage researcher in the history of mathematics, instead of delving deeper into what the chapters of this Handbook say about Plato, considers that the subject has nothing to do with the “philosophy of mathematical practice.”

Incidentally, the total number of pages of the articles written by Negrepontis on Plato and included in this Handbook is 270 and not 170, so the reviewer, while skimming the four volumes of the Handbook, has probably missed some of them, and in any case, it seems like he did not go through the full table of contents in detail.

The second explicit criticism that seems inappropriate to us is the following.

The reviewer wonders why there is an article about Yuri Manin, written by the second signatory of the present text; he declares that the article “seems rather out of place.” If he had examined the list of editors of the Handbook, the reviewer would have understood why. Indeed, Manin is one of the editors. And since he passed away while the Handbook was still in production, the editor-in-chief asked the author to write an article about him. But it must also be said that, quite apart from this, Manin is one of the quintessential working mathematician-philosophers, and it was also for this reason that an article about him, emphasizing his philosophical side, which is less well known to the mathematical community, was not only appropriate, but a duty we set for ourselves. In this regard, it should be noted that among the editors of the Handbook, apart from Yuri Manin (1937–2023), two other editors passed away before the end of the project, which obviously took several years; these were Reuben Hersh (1927–2020) and Chandler Davis (1926–2022), for whom philosophy, mathematics, and the philosophy and history of mathematics were a matter of everyday practice.

The articles that are explicitly criticized by the reviewer are written by mathematicians, who also work on the history of mathematics, but from the point of view of a mathematician plainly engaged in mathematical research. This brings us again to the word “practice” in the title of the Handbook, and this is probably the source of misunderstanding with the reviewer, who is a historian of mathematics with no professed practice in mathematics. We align ourselves with the perspective expressed by André Weil in his famous 1978 letter to the Editor of the *Archive for History of Exact Sciences* titled *Who Betrayed Euclid?*, in which he observed that when a discipline emerges at the intersection of two established fields, misunderstandings may arise from a lack of familiarity with one or both areas. Explicitly, André Weil writes: “When a discipline, intermediary in some sense between two already existing ones (say A and B) becomes newly established, this often makes room for the proliferation of parasites, equally ignorant of both A and B, who seek to thrive by intimating to practitioners of A that they do not understand B, and vice versa. We see this happening now, alas, in the history of mathematics. Let us try to stop the disease before it proves fatal.”

Without wishing to engage in controversy, we suggest that certain features of the report in question may reflect the reviewer’s early career stage. This, in turn, raises the question of the criteria by which reviewers are selected for the EMS Magazine. Under different circumstances, one might have hoped for an additional review offering a more extensive engagement with this huge project (114 articles involving a very large spectrum of topics). Let us end by pointing out that the publishers’ website of the book includes reviews by Jean-Pierre Bourguignon, Barry Mazur and John Stillwell who all express a different perception of the Handbook.