

## Preface

Which philosophy for which mathematics? This is a fundamental question, which the philosophy of mathematics must face in ever new ways. The various answers that have been given to this question have resulted in a variety of approaches, often competing, during the second half of the 20th century. Some of them were oriented towards language and logical or syntactic questions. Others focused on ontology. Others have pursued a dialogue with philosophical theories, and sometimes embedded their development in national traditions. More recently, the philosophy of mathematical practice has proposed to reorient the philosophy of mathematics towards the interests and methods of mathematicians. The history of philosophy and mathematics remains an inexhaustible source of developments, which can be combined with any of the philosophical strategies mentioned above.

We could multiply the examples and go into more detail about each of these approaches: the fact remains that the philosophy of mathematics has largely detached itself from mathematical *contents and advances*; from mathematics "in the making", its issues, its progress, and what they imply for general philosophy, the theory of knowledge, or mathematical philosophy proper.

This situation has not always been the rule: without going back to the golden age of Descartes and Leibniz in the 17th century, the first half of the 20th century was marked by a strong presence of mathematicians in philosophical debates with Enriques, Hilbert, Poincaré, Brouwer or Weyl, and their dialogue with the proponents of more logical and foundational approaches — Couturat, Frege, Russell... The activity at the interface of physics was equally dynamic with the birth of relativity and quantum mechanics, and it is known that the same Hilbert, Poincaré and Weyl were involved in and contributed to these discoveries.

From this point of view, the contemporary period is very disappointing. There are, of course, exceptions, and there is a basic

tendency for the philosophy of mathematics to try to take hold of current mathematical events, but these attempts remain timid, rather isolated, and of limited impact.

It was this observation, shared by all of its founders, which led to the creation of the *Annals of Mathematics and Philosophy*. We wanted to create a space for debate between philosophers and mathematicians, similar to what the *Revue de Métaphysique et de Morale* had achieved in its early days: a journal that meets all the criteria of academic rigour, that is very selective about the quality of its publications, but that encourages collaboration between philosophers and mathematicians, in particular around all the developments in contemporary mathematics and the questions that agitate the mathematical community and structure its activity.

For all that, and it is important to specify this immediately, this approach is not exclusive. Intellectual progress always takes place in a double movement: that of the conquest of new theoretical fields, and that of the reappropriation and rereading of the past. We also expect a lot from contributions related to the conceptual history of mathematics, as long as they enrich our view of mathematics or contribute to renewing our understanding of what mathematics can contribute to contemporary philosophical debates.

It is in this spirit that we also intend to work on the collective reappropriation of the contributions of important authors, but little known beyond a geographical or linguistic area, by publishing, for example, translations with commentary or accompanied by articles contextualising them of texts written in languages other than English and therefore inaccessible to the whole of the international community for which English remains, in fact, the only shared language of reference.

The same interest in questions of language, but also the concern for style, which is for us an essential component of philosophical activity, has led us to adopt the choice of multilingualism, tempered by the need to be able to reach out to the whole philosophy of mathematics community — and beyond. The authors of the *Annals of Mathematics and Philosophy* are therefore encouraged to write in their mother tongue, with all the sophistication and quality of writing that this allows. We do, however, ask them to translate their work into English. This process is, in our experience, facilitated by the existence of excellent translation softwares. We hope that it will help to combat the impoverishment and standardisation of philosophical language that can be observed in recent production, including in English. Editorial management constraints require us

to restrict the set of vernacular languages for which dual publication will be possible. At the moment, these are German, Spanish, French and Italian. We do not exclude the possibility of developing this offer in the future.

As far as the project of promoting an *effective* dialogue between philosophy and mathematics is concerned, we are aware of the difficulties it presents. The time of Poincaré, Enriques, Hilbert, Brouwer and Weyl has passed, in a context where specialisation within a given discipline is inevitable, sometimes to excess. It would be absurd to expect a professional philosopher to master the technical contents of contemporary mathematics, just as it would be vain to expect a mathematician interested in the general conceptual stakes of his/her work and his/her discipline to master the references and codes of philosophical writing. However, we do not intend to sacrifice the academic standards of the journal on the altar of pragmatism. In particular, all accepted articles must have a significant philosophical content. We therefore expect authors to accept, with the necessary humility, to undergo the scrutiny of experts from the other discipline, in order to enrich their discourse and thoughts with elements and references from other fields of knowledge.

Two phenomena have finally caught our attention and contributed to structuring the project of this journal. First, the philosophy of mathematics is evolving. There is a movement of internationalisation that goes hand in hand with an increase and a reciprocal fertilisation of traditions. The *Annals of Mathematics and Philosophy* will therefore be deliberately ecumenical and open to *all* philosophical approaches, without exclusivity, but with the constraint of focusing on mathematical issues or concepts, and with the idea that we intend to privilege the work of concepts for its own sake to the often sterile debates internal to this or that current.

Another phenomenon that has caught our attention is the profound transformation of mathematics, with the emergence of new fields, new practices, and new challenges. We can cite, without any concern for exhaustiveness, a growing interdisciplinarity *within* mathematics — to take one example among many others, contemporary group theory is structurally nourished and profoundly transformed by interactions with several forms of geometry, with arithmetic, but also with probability, dynamical systems, analysis — ; a transformation of the relationship between “pure mathematics” and “applied mathematics”; an opening to the human and

natural sciences that goes beyond the case of physics and chemistry; finally, the presence of numerous issues in theoretical computer science, logic (complexity theory, proof theory...), statistical learning and machine learning. The field to be explored is immense, and we hope that the journal will contribute to its exploration.

In conclusion, we hope, with the entire editorial board, to offer with these *Annals* a place of renewal for the interactions between philosophy and mathematics, and a journal combining rigour and the will to be read by a public of philosophers, mathematicians, logicians, historians and didacticians of mathematics.

The first issue, which you are about to discover, has been conceived in an atypical mode, reflecting the different issues of this new publication. We have given carte blanche to a whole group of authors, emblematic of contemporary mathematical philosophy, to address subjects close to their hearts, whether in the form of testimonials or programmatic texts. The exercise was difficult and unconventional, and we thank them warmly for having complied with the rules of the game. The style and tone vary from one contribution to another; we see in this variety and in the variety of their theoretical interests, the exact reflection of the project of the journal: that of a profound renewal and a revitalization, where the form itself adapts to the contents and the requirements of the thought.