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EDITORIAL PREFACE

Twentieth-century research in philosophy of mathematics was mainly focused on foundational studies. Either specific mathematical theories were proposed as ultimate foundations (set theory, group theory, category theory), or mathematics was imbedded in specific philosophical theories (naturalism, realism, neo-platonism, structuralism). All these approaches were mainly, if not exclusively, focused on the outcomes or "products" of mathematical practice. Since the publication of the seminal case-study *Proofs and Refutations* by Imre Lakatos, however, it has become clear to an increasing number of scholars that a full understanding of mathematics also involves a grip on mathematical activity itself, as a process. This concern with what it *actually* is that mathematicians do when they do mathematics, implicit in Lakatos' work, has thus pointed to new ways of steering our way out of foundational crisis, which has in fact continued even if officially terminated. A nice analogy grasping the latter, nasty circumstance in the philosophy of mathematics, has been provided by Noel Curran. "In constructing a building," he writes, "the foundations are laid first and the building is raised on top of that, reaching completion with the roof. In mathematics the procedure appears to be the reverse. There is an immense structure of mathematics built up over the centuries, but the very foundations of mathematics — what it really means — have not yet been provided" (Curran [1997], p. 16).

The foundational problems in the discipline indeed largely originated from the particular development modern mathematics has gone through. Especially in the course of the 18th century, a lot of spectacular cum successful results were arrived at (notably in the calculus), but these were accomplished on an intuitive basis, and it was not until the turn of the century that scholars came to see the need of securing this vast body of knowledge, of putting it on firm footings. The subsequent search for foundations, which reached its dramatic heights in the first third of the twentieth century, has been well documented in such recent publications as Grattan-Guinness [2000], from a historical point of view, and Giaquinto [2002], from a philosophical perspective. Kurt Gödel famously terminated the crisis in the early nineteen thirties, not by establishing the foundations of mathematics, but by showing the formal impossibility of carrying through this particular task within a

reasonably rich system — arguably one of the single most enormous efforts in the history of mathematics. Roughly, the sequel of the story is, however, that mathematicians have largely ignored its purported deep implications, for being too remote from daily practice (where, apart from a few exceptional cases such as Hilbert's 10th problem about Diophantine equations, one does not tend to meet undecidable results), while most philosophers disputed its significance, and continued their foundational labor.

Nevertheless, under the influence of a small group of mathematical 'humanists', in the last third of the twentieth century philosophical discussion *did* partly shift, from the question which are the appropriate foundations of mathematics, to whether we really stand in need of such foundations (that is, in the formal sense); hence crisis 'continued'. The two most groundbreaking monographs of this alternative movement were both published in 1980, all authors being research mathematicians, one by *Morris Kline*, declaring foundationalism bankrupt with renewed strength, the other by *Philip J. Davis* and *Reuben Hersh*, challenging philosophical perfectibilism by offering internal perspectives on mathematical practice. In their wake, several fresh, i.c. 'contextually' or 'socio-historically' coloured, items were put on the philosophical agenda, and, in the course of the past quarter century, they came to occupy an ever more prominent place there. Some examples of such newly arising subjects for philosophical inquiry and discussion are: status of picture and probabilistic proofs, epistemological consequences attached to the digital revolution (computer proofs), and influences of institutional circumstances such as raging specialization and fragmentation on the trustworthiness of even mathematical knowledge (e.g. feasibility).

The *Perspectives on Mathematical Practices* (PMP2002) international conference, organized by the Centre for Logic and Philosophy of Science (CLWF) at Brussels University (VUB) between 24 and 26 October 2002, was explicitly aimed at bringing together all sorts of contributions, preferably from a variety of disciplines, that were relevant to these and related topics. This issue gathers the forthcoming papers by the majority of contributed speakers attending the conference. Its companion volume will, so we hope, be published by Kluwer in the course of 2005, containing, among others, the contributions of all invited speakers at the conference: Jill Adler (University of the Witwatersrand), Jody Azzouni (Tufts University), Eduard Glas (Technische Universiteit Delft), Reuben Hersh (The University of New Mexico), Sal Restivo (Rensselaer Polytechnic Institute), and Robert Thomas (University of Manitoba). The editors hope these publications may be an impetus for others to join their efforts of facilitating contacts within the informal research community sympathetic to "mathematical practice". In this very respect, please note that the conference website http://www.vub.ac.be/CLWF/PMP2002 is not dead. Obviously, information about the meeting will remain

available there, including schedule and abstracts. More importantly, the organizers have also conceived the plan to gradually convert it into a modest thematic on line platform or "Mathematical Practice Page", including a mailing group, in the course of the year 2005.

Bart Van Kerkhove
Jean Paul Van Bendegem

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