ANDRÉ FUHRMANN **Editorial**

MANFRED KUPFFER

During the recent two decades the philosophy of mathematics has undergone what some may call nothing less than a paradigm shift. Two of the chief players in the classical period of the philosophy of mathematics, intuitionism/contructivism and formalism, have retired (though see the paper by Gabbay). The remaining players, platonism and logicism have completely repositioned themselves: Fregean logicism has re-emerged after its foundational crisis at the beginning of the last century and represents, under the name of "neologicism", perhaps the most advanced version of platonism. Moreover, two newcomers, fictionalism and structuralism have contributed decisively to setting the current menu of theoretical options. The debate is still mainly about the proper content of mathematical propositions and about the ontological commitment carried by ascriptions of such content. But the menu of paraphrases is more varied, the paraphrases themselves worked out in much more detail and theory choice, accordingly, a more subtle affair.

In September 2009, 125 year after the publication of Frege's *Foundations of Arithmetic*, many of those who shaped the current debate in the field met with younger researchers during a conference at the Goethe-Universität in Frankfurt am Main. This conference, *Trends in the Philosophy of Mathematics*, was organized as an event in the *Trends in Logic* series under the auspices of this journal. The aim was to record the state of the art in the field and to ascertain those trends in current research that are likely to set the agenda in the foreseeable future. To complete the picture the editors invited further contributions after the conference. A selection of papers, both from the conference and from the subsequent call, are collected in this special issues. A further selection will be published in a book.

The papers by Baker, Kasa, and Urbaniak are concerned with the ongoing debate between neologicist platonists and nominalists. Baker defends an anti-nominalist argument by Burgess and Rosen against recent critique; Kasa attacks Field's famous anti-platonist argument. The paper by Urbaniak develops a nominalist account of mathematics. The author gives

a nominalist interpretation to the very abstraction principles that have been proposed by Frege and his followers in defence of their brand of platonism.

The papers by Rizza and Pleitz are both in the structuralist tradition: Shapiro's brand of ante rem structuralism identifies mathematical objects with places in structures. Now there seems to be a problem with distinct but indistinguishable such places. Rizza tries to solve the problem. In metalogical studies mathematical signs are treated as mathematical objects themselves. Pleitz addresses the ontology of mathematical signs within a structuralist framework.

Not all of the papers commit themselves to frameworks from our above list of current frontrunners. As already mentioned, Gabbay revives the doctrine of formalism. Irvine tries to defend Mill's mathematical naturalist view that numbers are physical properties against Frege's objections.

Recently, mathematical practice has gained renewed interest. Goethe and Friend observe a certain tension between the ideal of proof and proofs as actually done by mathematicians. Antonutti argues that we need a theory of informal proof and informal rigour.

The last two papers explore the connections between plurals and sets. Carrara and Martino propose to replace Boolos' semantics for monadic second-order logic in terms of plural quantification by a treatment of full second-order logic in terms of a notion of plural reference. Boccuni combines Boolos' ideas with a version of Frege's Basic Law V and with predicativism. While these papers employ similar techniques to solve similar problems, they do so from different philosophical outlooks. The first is committed to structuralism whereas the second presents an original attempt at a solution of the main problem for Frege's theory in his *Foundations of Arithemtic*.

André Fuhrmann and Manfred Kupffer
Institut für Philosophie, Goethe-Universität
Frankfurt am Main, Germany
a.fuhrmann@em.uni-frankfurt.de; Kupffer@em.uni-frankfurt.de