



# Axiomatic Thinking

by **Fernando Ferreira\*** and **Reinhard Kahle\*\***

On October 11-14, 2017, a meeting on Axiomatic Thinking took place at the *Academia das Ciências de Lisboa* and the *Faculdade de Ciência e Tecnologia da Universidade Nova de Lisboa*. It was jointly organized by the *Académie Internationale de Philosophie des Sciences* and the *Academia das Ciências de Lisboa*, with support of CIM, SPM, FCT-MCTES, Nova.ID.FCT, TAP and the research centers CMA (FCT,UNL), CMAF-CIO (FC,UL) and CFCUL (FC,UL). The programme committee consisted of Fernando Ferreira (Lisbon), Gerhard Heinzmann (Nancy), and Reinhard Kahle (Lisbon).

100 years ago, in 1917, David Hilbert gave his seminal talk *Axiomatisches Denken* at a meeting of the Swiss Mathematical Society in Zurich. It marks the beginning of Hilbert's return to his foundational studies, which ultimately resulted in the establishment of proof theory as a new branch in the emerging field of mathematical logic. Hilbert also used the opportunity to bring Paul Bernays back to Göttingen as his main collaborator in foundational studies in the years to come.

At the conference the success of Hilbert's axiomatic method was reevaluated. It did not only lay the foundations

for the understanding of modern mathematics, but it also found its way in many applications, first of all—and as vividly advocated by Hilbert—in Physics. Even for the seemingly negative results, as in the case of Gödel's incompleteness theorems, it was Hilbert's sharply posed questions which opened up completely new and unexpected perspectives for our understanding of Mathematics.

On Wednesday, at the *Academia das Ciências de Lisboa*, the speakers were Michael Detlefsen, Wolfram Pohlers, Steve Simpson, Peter Koellner, Michael Rathjen, and Mark van Atten. The day finished with a panel discussion on the current state of foundational research in Mathematics by Koellner, Rathjen and van Atten, moderated by Fernando Ferreira. Thursday to Saturday, at FCT-UNL, the speakers were: Evandro Agazzi, José Ferreirós, Wilfried Sieg, Marco Buzzoni, Gregor Schiemann, Daniel Vanderveken, Fabio Minazzi, Michel Ghins, Dennis Dieks, Mario Alai, Lorenzo Magnani, Olga Pombo, Valentin Bazhanov, Paul Weingartner, Itala D'Ottaviano, and Alberto Cordero.

The organizers plan to publish a volume with contributions of the meeting and further papers by experts in the field.

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