Organon F 24 (1) 2017: 135-137

The Emergence of Structuralism and Formalism: A Conference Report[1]

On June 24-26, 2016, Catholic Theological Faculty of the Charles University, Prague, and the Institute of Philosophy of the Czech Academy of Sciences co-hosted "The Emergence of Structuralism and Formalism" conference. The organizers succeeded in attracting four leading scholars of the field – Michael Detlefsen, Leon Horsten, Michael Resnik and Stewart Shapiro – as keynote speakers, with many other well-known figures participating in one of the six conference sessions during the three days of the event.

The topics discussed at the conference were the following (the order of presentations is retained). Opening the first session, L. Horsten considered the prospects of structuralism about set theory in his talk "Structuralism for Set Theory?". N. Tennant in "Structuralism about Truth Itself" explained why verification and falsification in a model are structural notions. V. Kolman's "Intuition and the End of all -isms" discussed implications of the tendency to stress the practical rather than the subjective dimension of intuition. C. Posy in "The Flight from Intuition Revisited" explained why modern mathematics, category theory notwithstanding, is still sensitive to intuition. M. Detlefsen's "The Elements of Formalism" aimed at identification and clarification of principle elements of mathematical formalism. M. Steiner considered Wittgenstein's readiness to employ mathematical systems without previous proof of their consistency in "Wittgenstein against Formalism". M. Gabbay in "Formalism and (set theoretic) truth" considered possibilities of infinitary logic utilization for overcoming the limitations of the problems raised by Gödel's theorem. D. Svoboda questioned the validity of the reasons that led formalists to regard mathematics as a contentless game in "The Emergence of Formalism and a new Conception of Science". C. Mayo-Wilson in "Formalization and Justification" argued that informal proofs often provide greater justification for believing a theorem than do formal derivations.

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Saturday programme was opened by O. Linnebo's talk "Structure Abstraction". He tried to revise his former position regarding pure structures understood as being abstracted from particular systems. J. Wigglesworth in "Non-eliminative Structuralism, Fregean Abstraction, and Non-Rigid Structures" addressed the problem of structures admitting non-trivial automorphisms. L. Kvasz in "Structuralism as a Philosophy of Mathematics – What it is about?" claimed that structuralism explains only some aspects of mathematics which he explicitly identified. J. Menšík's "Mathematical Structuralism: Internal and External" was concerned with a division of structuralists into two broad groups and offered some possibilities for their reconciliation. M. Resnik in "Non-Ontological Structuralism" explained how his approach evolved from sui generis structuralism to a non-ontological version that embraces Quine's doctrine of ontological relativity. P. Sousedík in "Ante-rem Structuralism and Identity" addressed the supposed non-relational properties of mathematical entities, the cross-structural identity in particular. J. Seldin in "Formalism and Structuralism, a Synthesis: the Philosophical Ideas of H. B. Curry" showed that while considering himself as a formalist, Curry should better be recognized as a kind of structuralist. G. Schiemer in "Klein's invariant-theoretic Structuralism" discussed Klein's group theoretical approach in geometry and analyzed its structuralist underpinnings.

Last day of the conference was opened by S. Shapiro, R. Samuels, E. Snyder who in "Neo-logicism, Structuralism and Frege Application Constraints" argued that both neo-logicism and structuralism meet (or fail to meet) Frege's application constraint – a condition to incorporate the applications of a mathematical theory into its very foundations – in a remarkably parallel manner. D. Macbeth in "A Non-structuralist Alternative to Formalism" drew attention to the idea of Freage and Peirce that deductive reason can be both constructive and extend our knowledge. A. Islami in "Formalism in the Face of Complex Numbers" showed that the process acceptance of complex numbers did not fit the formalist conception of mathematics as a purposeless introduction of concepts and their manipulations. F. Doherty in "The Structuralist Roots of Formalism: Hilbert's Early Views" claimed that Hilbert's early views were misunderstood and that he was actually a structuralist before becoming formalist. J. von Plato in "Formal Computation as Deduction" gave an account of how in 1930s steps of formal computation were identified with steps of formal deduction. M. Schirn's "On Hilbert's Formalist Approach before and after Gödel's Incompleteness Theorems" enquired into the evolution of Hilbert's formalism. V. Švejdar in "Modern Czech Logic: Vopěnka and Hájek, History and Background" introduced the Czech logicians Vopěnka and Hájek and discussed their work and their mutual interactions. The last talk also closed the programme of the last of the conference sessions.

All in all, the conference provided a well focused platform of just about the right size for a lively exchange of ideas and contacts, as well as a welcomed opportunity for the present leaders of the field to carry on with various ongoing discussions which started elsewhere. As the event drew to the end, contentment was registered all around with only one question being repeated all over again: when is the next Prague conference on the philosophy of mathematics going to take place?

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