

Operations, Sets, and Truth

On the occasion of Andrea Cantini's 65th birthday

Friday, 16 December 2016

Sala conferenze
Dipartimento di Lettere e Filosofia
via Bolognese 52
50139 - Firenze

Programme

9.15 *Welcome*

9.30 Gerhard Jäger (Institute of Computer Science, University of Bern, Switzerland)

About Fixed Points

We discuss fixed points of various sorts and in different formal and non-formal environments. Some technical results are about fixed points of Sigma functions in Kripke-Platek like contexts.

10.15 Laura Crosilla (School of Philosophy, University of Leeds, England)

On a Predicative Concept of Set

I shall discuss a conception of set that is to be found in Poincare' and in Weyl's reflections on predicativity, and compare some of its features with aspects of the concept of set in Martin-Loef type theory.

11.00 *Coffee break*

11.30 Volker Halbach (New College, University of Oxford, England)

Logical Consequence and Axiomatic Truth

I present a new analysis of logical consequence. Logical consequence is defined as truth preservation under all substitution instances where a substitution instance is a substitution of arbitrary expressions of a suitable grammatical category for the nonlogical expressions in a given sentence. Every sentence is a substitution instance of itself. Thus the intended interpretation is not an elusive object as on the model-theoretic account. On my account, however, the semantic notions are no longer reducible to set theory and I invoke an axiomatic theory of satisfaction. I show that the new substitutional analysis of logical consequence does not suffer from the same weaknesses as earlier substitutional definitions by Quine and others.

12.15 Riccardo Bruni (Dipartimento di Lettere e Filosofia, Università di Firenze, Italy)

On Conditionals for Truth by Revision

Adding a new conditional to logical frameworks for truth in order to overcome expressive limits and recover deductive power has become common practice. In recent years, some proposals in this sense have been made that appear to be inspired to the Revision theory of truth. In this talk, I will discuss ideas and present some initial results related to the axiomatic and proof-theoretical account of them.

13.00 Lunch

15.00 Michael Rathjen (School of Mathematics, University of Leeds, England)

Partial combinatory algebras and derived rules

Each partial combinatory algebra A gives rise to a set-theoretic realizability universe, $V^(A)$, that amalgamates standard realizability with truth in the background universe V . If A is taken to be the first Kleene algebra, then this technique can be used to show that the disjunction and numerical existence property as well as closure under Church's rule hold for almost all (reasonable) intuitionistic set theories. This result lends itself to the question whether other pcas can be usefully employed in ascertaining further derived rules. The talk will explore these possibilities.*

15.45 Lorenzo Rossi (Faculty of Philosophy, University of Salzburg, Austria)

Graphs, truth, and paradoxes

In this paper, I present a new model-theoretic semantics for a naïve truth predicate, that employs some graph-theoretical tools. The construction I develop can be applied to a number of interpretations of the logical vocabulary (essentially, all the compositional interpretations), in a way that makes them consistent with naïve truth. For example, my construction can be applied to every Łukasiewicz semantics, yielding partial versions of them that are consistent and omega-consistent with naïve truth. At the same time, this construction allows one to distinguish a number of different semantic behaviours deployed by paradoxical sentences, that the standard semantic theories of truth cannot account for (this includes inductive constructions (such as Kripke's theory), revision semantics (such as Field's theory) and also other graph-theoretical approaches (such as Gaifman's theory)).

16.30 Coffee break

17.00 Thomas Strahm (Institute of Computer Science, University of Bern, Switzerland)

Weak theories of operations, types, and truth

In this talk we survey various developments in the study of proof-theoretically weak systems of Feferman's explicit mathematics and theories of truth. We start off from pure first-order applicative theories based on a version of untyped combinatory logic and augment them by the typing and naming discipline of explicit mathematics or, alternatively, by a truth predicate in the sense of Frege structures. We discuss the proof-theoretic strength of the so-obtained formalisms and the general relationship between weak truth theories and explicit mathematics.

17.45 Peter Schuster (Dipartimento di Informatica, Università di Verona, Italy)

About AC

Some choices sway our lives, others affect our mathematics. Particularly striking is Zermelo's choice of the homonymous axiom (AC), of which especially the later elaborations by Kuratowski, Zorn and others have proved utterly efficient. For example, certain forms of the axiom enable us to reduce proofs to very convenient special cases. Yet there often is computational content behind, as has been known at least since the rise of dynamical methods in algebra. Recently we have even detected surprisingly simple but fairly inclusive conservation patterns. Does all this vindicate the axiom or rather its abolition? Should we care? The non-personal parts of this talk are based on work by and with Davide Rinaldi and Daniel Wessel.

18.30 Conclusion