

Cattedra di Filosofia del linguaggio  
Dipartimento di Filosofia e Scienze sociali  
CISCL - Centro Interdipartimentale di Studi Cognitivi sul Linguaggio

# IV Summer School in *Mind & Language*

**30.5.2011 – 1.6.2011**

Siena, Collegio Santa Chiara, via Valdimontone, 1 – Aula Cantucci

The Fourth Summer School in Mind and Language will be devoted to two central issues in the philosophy of logic and mathematics: the concept of logical consequence and the concept of function. To the former will be devoted the course of Professor Dag Prawitz (3 lectures, 8 hours), to the latter the course of Professor Marco Panza (3 lectures, 8 hours). Both courses will be integrated with additions and commentaries by Professor Göran Sundholm. Here is the schedule and a brief abstract of each course, with a list of recommended readings:

## **Schedule**

30.5.2011

11.00 – 13.00: D. Prawitz, G. Sundholm

15.00 – 18.00: M. Panza, G. Sundholm

31.5.2011

10.00 – 13.00: D. Prawitz, G. Sundholm

15.00 – 18.00: M. Panza, G. Sundholm

1.6.2011

10.00 – 13.00: D. Prawitz, G. Sundholm

15.00 – 17.00: M. Panza, G. Sundholm

## **Abstracts and Recommended Readings**

Dag Prawitz (Stockholm University)

**Deductive consequence and validity of inference from a constructivist point of view.**

The lectures will discuss the relation of logical consequence and the phenomenon of inference from various points of view, in particular a constructivist one. It will be assumed that the participants are

acquainted with ordinary classical logic (in the form of first order predicate logic). Those who do not know about intuitionistic logic is recommended to familiarize themselves with basic ideas, e.g. by reading parts of

Michael Dummett, *Elements of Intuitionism*, Clarendon Press, Oxford 1977.

Read in particular: Introductory remarks, Chapter 1, and Sections 4.1-4.2; Sections 7.1-7.2 are also relevant.

To prepare oneself for the main themes of the course, the following papers are suggested; ideas appearing there will be critically discussed in the lectures, but knowledge of the papers will not be presupposed:

John MacFarlane, "Prawitz's proof-theoretic account of consequence", 2001; available at the web: [www.johnmacfarlane.net/142/prawitz.pdf](http://www.johnmacfarlane.net/142/prawitz.pdf)

Per Martin-Löf, "On the Meanings of the Logical Constants and the Justifications of the Logical Laws", in: *Atti degli Incontri di Logica Matematica*, vol. 2, Scuola di Specializzazione in Logica Matematica, Dipartimento di Matematica, Università di Siena, pp 203-281. Republished in *Nordic Journal of Philosophical Logic* 1, pp 11-60.

Per Martin-Löf, "Truth and knowability: on the principles C and K of Michael Dummett", in: H. G. Dales and G. Oliveri (eds), *Truth in Mathematics*, Clarendon Press, Oxford, 1998, pp 105-114.

Dag Prawitz, "Logical Consequence from a Constructivist Point of View", in S. Shapiro (ed.), *Oxford Handbook of Philosophy of Mathematics and Logic*, Oxford University Press, 2005, pp. 671-695.

Göran Sundholm, "Inference versus Consequence", *LOGICA Yearbook 1977*, Filosofia Publishers, Prague, 1998. The paper will be republished in *Synthese* with an afterword, which will soon be available at the Internet.

Marco Panza (IHPST-CNRS, Paris)  
**Foundation of mathematics and functions.**

The lectures will discuss the role the notion of function has played in foundation of mathematics starting from middle 18<sup>th</sup> century up to Frege, with a particular attention to the letter. It will be assumed that the participants are acquainted with the basic notions of logicism, and have some basic notions concerning the history of mathematics in 18<sup>th</sup> and 19<sup>th</sup> century (though the relevant information will be provided during the course).

The course will be based on the following paper:

M. Panza, "From Lagrange to Frege: Functions and Expressions", to appear in a collective book edited by A. Arana and C. Alvarez for Palgrave MacMillan (I can send the preprint to who is interested).

Other possible readings:

J. P. Burgess, "Frege on arbitrary functions", In W. Demopoulos, editor, *Frege's Philosophy of Mathematics*, pages 89–107. Harvard U. P., Cambridge (Mass.), London, 1995.

A. L. W. Demopoulos. "Frege and the rigorization of analysis", *Journal of Philosophical Logic*, 23:225–245, 1994.

W. Demopoulos, "On logicist conceptions of functions and classes", In D. DeVidi, M. Hallett, and

- P. Clark, editors, *Vintage Enthusiasms. Essays in Honour of J.L. Bell*, pages 3–18. To appear for Springer.
- W. Demopoulos and J. L. Bell, “Frege’s theory of concepts and objects and the interpretation of second-order logic”, *Philosophia Mathematica*, Ser. 3 1:139–156, 1993.
- M. Dummett, *Frege. Philosophy of Mathematics*, Duckworth, London, 1991.
- G. Ferraro and M. Panza, “Lagrange’s theory of analytical functions and his ideal of purity of method”, Forthcoming (I can send the preprint to who is interested).
- G. Frege, “Function und Begriff”, H. Pohle, Jena, 1891.
- G. Frege. “Grundgesetze der Arithmetik.” H. Pohle, Jena, 1893-1903. 2 volumes.
- G. Frege. “Was ist eine funktion?”, In S. Meyer, editor, *Festschrift Ludwig Boltzmann*, 1904, pages 656–666. J. A. Barth, Leipzig, 1904.
- G. Frege, *Translations from the Philosophical Writings of Gottlob Frege*, Basil Blackwell, Oxford, 1960. Ed. by P. Geach, and M. Black.
- G. Frege, *The Basic Laws of Arithmetic. Exposition of the System*. Univ. of California Press, Berkeley and Los Angeles, 1967. Translated and Edited with an Introduction by Montgomery Furth.
- I. Grattan-Guinness. *The Development of Foundations of Mathematical Analysis from Euler to Riemann*, MIT Press, Cambridge Mass., London, 1970.
- R. G. Heck Jr. and J. Stanley, “Reply to Hintikka and Sandu: Frege and second-order logic”, *The Journal of Philosophy*, 90:416–424, 1993.
- J. Hintikka and G. Sandu. “The skeleton in Frege’s cupboard: The standard versus nonstandard distinction”, *The Journal of Philosophy*, 89:290–315, 1992.
- M. Panza. *La forma del la quantità. Analisi algebrica e analisi superiore: il problema del l’unità della matematica nel secolo dell’illuminismo*, volume 38 and 39 of *Cahiers d’histoire et de philosophie des sciences*. Paris, 1992. 2 vols.
- M. Panza, “Euler’s *Introductio in analysin infinitorum* and the program of algebraic analysis: quantities, functions and numerical partitions”, In R. Backer, editor, *Euler Reconsidered. Tercentenary essays*, pages 119–166. Kendrick Press, Heber City Utah, 2007.
- G. Sandu, “Ramsey and the notion of arbitrary function”, In M. J. Frapolli, editor, *F. P. Ramsey. Critical Reassessment*, pages 237–256. Continuum, London, New York, 2005.
- M. Schirn, “Frege’s objects of a quite special kind”, *Erkenntnis*, 32:27–60, 1990.
- J. Tappenden. “The Riemannian background to Frege’s philosophy”, in J. Ferreiros, and J. J. Gray, (eds.), *The Architecture of Modern Mathematics. Essays in History and Philosophy*, pp. 97–132, Oxford U. P., Oxford, New York, etc., 2006.
- A. Youschkevitch. “The concept of function up to the middle of the 19th century”, *Archive for History of Exact Sciences*, 16:37–85, 1976.

## Practical Information

Attendance is free of charge.

If you want to subscribe to the Siena Summer School in *Mind & Language*, or for further information, please send an e-mail to Prof. Gabriele Usberti ([usberty@unisi.it](mailto:usberty@unisi.it)).