Andre Rodin (Ens Ulm)
Functorial Semantics

21 novembre 14h16h

Category theory not only allows for new technical developments in logic but also suggests a new understanding of the idea of semantics. In functorial semantics suggested by Lawvere (in his thesis) the usual distinction between standard and non-standard models looses its appeal, and categoricity (in the standard sense) no longer looks like a desirable property. The distinction between syntax and semantics is blurred to the effect that theories are viewed as "generic models". The major impact of categories on the model theory can be perhaps expressed through this slogan: ALL morphisms (but not only isomorphisms and embeddings) between models matter.
In the beginning of my talk I shall briefly introduce main categorical notions.
The following literature can be also helpful:

Lawvere, F. W. & Schanuel, S., 1997, Conceptual Mathematics: a First Introduction to Categories, Cambridge: Cambridge University Press

This is a fair introduction written for undergrads

See also the entry of Stanford encyclopedia:
http://plato.stanford.edu/entries/category-theory/

this contains a very good bibliography among other things

McLarty, C., 1992, Elementary Categories, Elementary Toposes, Oxford: Oxford University Press

is the best formal introduction for a philosopher I know

Lambek, J. & Scott, P.J., 1986, Introduction to Higher Order Categorical Logic, Cambridge: Cambridge University Press.

is how categories may be seen from a logician's point of view

Mac Lane, S., 1971, Categories for the Working Mathematician, New York: Springer Verlag

is a standard introduction but it hardly works unless you are a working mathematician indeed

Lawvere's thesis with an extensive introduction written by the author in 2004 is downloadable from here:

http://www.tac.mta.ca/tac/reprints/articles/5/tr5abs.html

Principle points of the thesis are summarized in the following early publications by the author:

Lawvere, F.W., 1963, "Functorial Semantics of Algebraic Theories", Proceedings of the National Academy of Sciences U.S.A., 50, 869-872.
Lawvere, F. W., 1964, "An Elementary Theory of the Category of Sets", Proceedings of the National Academy of Sciences U.S.A., 52, 1506-1511.
Lawvere, F. W., 1965, "Algebraic Theories, Algebraic Categories, and Algebraic Functors", Theory of Models, Amsterdam: North Holland, 413-418.
Lawvere, F. W., 1966, "The Category of Categories as a Foundation for Mathematics", Proceedings of the Conference on Categorical Algebra, La Jolla, New York: Springer Verlag, 1-21.