



Reasoning about the Liar

Philippe Schlenker
(Paris)

Kripke's theory of truth succeeded in providing a trivalent semantics for a language that contains its own truth predicate; but it did so by radically restricting the expressive power of the language. The Liar (e.g. This very sentence is not true) is given the indeterminate truth value. But the language cannot express the fact that the Liar is something other than true: in order to do so, we would need a weak negation not^* , which returns true when applied to an indeterminate formula. But not^* would immediately make the logic inconsistent (because the 'Super Liar' This very sentence is not^* true could not be assigned any truth value). Taking a hint from the quantificational form of the problematic sentences (... is something other than true), we define a hierarchy of negations which each quantifies over a domain of truth values, assimilated to ordinals. The resulting logic has as many negations and truth values as there are ordinals. Unlike Kripke's logic, it enjoys a form of expressive completeness. By refining Kripke's method, we show that when the language forms a set, our logic has a variety of fixed points; one of them emulates Kripke's 'least fixed point', while another one assigns a different truth value to each Super Liar.