

Workshop : The Dynamics of Reason
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Title : Logic and Rational Solution in Games

Game theory is a mathematical theory used by social scientists to explain human action. A “game” models a situation of strategic action, and a “solution concept” characterizes outcomes -- the prediction, explanation, or what have you.

The best known solution concept is the equilibrium notion of John Nash. In this talk I will first investigate Nash's own motivations behind the concept. Then I will turn to criticism of the Nash equilibrium in the game theoretic literature. Using some epistemic logic I will show that much of the criticism is right, but that the proposed 'refinements' of Nash's equilibrium suffer from problems of the same sort.

The point of these observations is that one has to be careful to apply the Nash equilibrium. In fact, I will show what exactly makes the Nash equilibrium problematic, and for what kind of applications. It will turn out that the problem is with the assumption of the epistemic state of economic agents (knowledge about the actions of the opponent), rather than with the much debated rationality assumption (maximization of expected utility).