



**University of
Zurich** ^{UZH}

Department of Economics – Neuroeconomics Seminar

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The dual accumulator model of strategic deliberation and decision making

What are the mental operations involved in game theoretic decision making? How do players deliberate (intelligently, but perhaps imperfectly) about strategic interdependencies and ultimately decide on a strategy? We address these questions using an evidence accumulation model, with bidirectional connections between preferences for the strategies available to the decision maker and beliefs regarding the opponent's choices. Our dual accumulator model accounts for a variety of behavioral patterns, including limited iterated reasoning, payoff sensitivity, consideration of risk-reward tradeoffs, and salient label effects, and it provides a good quantitative fit to existing behavioral data. In a comparison with other popular behavioral game theoretic models fit at the individual subject level to choices across a set of games, the dual accumulator model makes the most accurate out-of-sample predictions. Additionally, as a cognitive-process model, it can also be used to make predictions about response time patterns, time pressure effects, and attention during deliberation. Stochastic sampling and dynamic accumulation, cognitive mechanisms foundational to decision making, play a critical role in explaining well-known behavioral patterns as well as in generating novel predictions.