Discrete Replicator Dynamics for the Ultimatum Game
William Harms

Empirical research has discovered that experimental subjects in ultimatum bargaining situations generally fail to play the decision-theoretic optimum strategy, and instead play something between that strategy and a fair split. In evolutionary dynamics, fair division and nearly fair division strategies often go to fixation and weakly dominated strategies can do quite well. Computer simulations were done using three different ultimatum bargaining games as determinates of fitness. (1) No tendency toward the elimination of weakly dominated strategies was observed, with or without mutation. (2) Strategies making fair demands had sizable basins of attraction. (3) In a system where five different demands can be made, demands closest to (approximately) 91% had the largest basins of attraction. (4) If the strategies have thresholds for acceptable demands, rather than individuated responses to each demand, the apparent optimum demand may be quite low - 64% for one set of trials.