

*MBS 99-07*

The (Spatial) Evolution of the Equal Split

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The replicator dynamics have been used to study the evolution of a population of rational agents playing the Nash bargaining game, where an individual's "fitness" is determined by an individual's success in playing the game. In these models, a population whose initial conditions was randomly chosen from the space of population proportions converges to a state of fair division approximately 62% of the time. (Higher rates of convergence to final states of fair division can be obtained by introducing artificial correlations into the models.) Spatial models of the Nash bargaining game exhibit considerably more robust convergence properties. These properties are considered at length, and a sufficient condition for convergence to fair division is proved.