

Game Theory/Strategy and Its Evolutionary Implication

Coordinator: James Smith

Most educated people today are familiar with the Prisoners' Dilemma and if you saw *A Beautiful Mind* you might want to add an understanding of the Nash Equilibrium to your strategy toolbox. Game theory is the study of interactive decision-making -- situations where each person's action affects the outcome for the whole group. It is used in economics, political science, and psychology, as well as logic, computer science, and biology. And you are involved in game decisions everyday. We explore the basic types of games, and strategies that help you improve your outcomes. We also examine games and cooperation in the context of evolutionary biology, and the resulting structure of human societies. Only rudimentary math skills, and lots of basic logic, required.

Readings:

Presh Talwalker, *The Joy of Game Theory: An Introduction to Strategic Thinking*; CreateSpace, 2014, ISBN-10 1500497444, \$10.99.

Martin Nowak, *SuperCooperators: Altruism, Evolution, and Why We Need Each Other to Succeed*; Free Press, 2012, ISBN-10 9781451626636, \$16.

James Smith spent his career in education, and has coordinated groups in evolutionary psychology and cultural development.

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Week 1: Why Learn Game Theory?

Week 2: Dominated Strategies and "Beauty Contests"

Week 3: Prisoners' Dilemma

Week 4: Nash Equilibrium

Week 5: Ultimatum Games and Mutually Assured Destruction

Week 6: Changing the Game

Week 7: Auctions, Voting, and Games of Chicken

Week 8: Game Theory and Evolution

Week 9: Cooperation vs Competition

Week 10: From Cells and Ants to Human Societies

Week 11: Public Benefits of Cooperation

Week 12: Course recap and summary