

PS 172: Strategies in Conflict

Tues. & Thurs. 2-3:50, Haines A25

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1. OVERVIEW

Game theory provides a model of actions in strategic settings. A strategic setting differs from a choice setting in that the outcome reached does not depend solely on any individual. Rather the actions of all the participants combine to determine the final result. From the very beginning, this naturally led game theorists to try to understand the interactions of nations, the precursors to conflict, and war itself.

However, very simple models of the actions of states lead to troubling conclusions. Self interest and first mover advantages led early game theorists to imagine that states should constantly be at war, and every advantage should be ruthlessly pressed. As the cold war developed this led to dark forecasts of a bleak endgame. If we consider game theory a *positive* theory (that is it describes the way the world is) then it clearly predicts a more hostile world than we see. If we consider the theory of games to be *normative* (that is, it prescribes the way people ought to behave, assuming they want to act rationally in their best interest) then our job is to be the most misanthropic of advisors.

In this class we will expand the simple models we are able to construct as graduates of PS30 by considering in detail subtle complications to the simple games we presently know how to solve. Chiefly, we will look at how rational actors would behave in the presence of incomplete information, signalling, repeat play and selection mechanisms. Many of these complications are relevant to the real world interaction of states and this will give us a much more nuanced and richer theory with which to model their actions. At the end of the course we either conclude that simple models are too dangerously naive, or perhaps we may gain confidence that these simple models are essentially correct, and we should go to war with the world immediately. More importantly, we will be able to apply rational actor theory to carefully deconstruct real world scenarios to understand why and how states act.

2. PRAGMATICS

The grading will be distributed 35 percent for a Midterm, 45 percent for the Final. The midterm will have both in-class and take-home portions. The remaining 20 percent is from near-weekly homework assignments. Homeworks are handed out in class on Wednesday and due the following Wednesday. Homeworks may be worked on in groups of up to four. Groups are encouraged, however, every member of the group should write up their own copy of the solutions from the notes or solutions figured out in the group. Also, *be sure to label at the top of your homework the members of the group you have worked with.*

Students interested in pursuing an honors contract should meet with the instructors. The honors contract will require creating a substantive project that links the topics and concepts of each week to some real-world application chosen by the student, with progress turned in fortnightly. This will culminate in a short final paper modelling the chosen topic.

3. CHRONOLOGY

There are two texts for this class, and a number of other readings, which will be posted on the class website. Below is the structure of the topics that will be covered in each week of term, with the related readings from the texts. Readings for each week should be completed *before* the first lecture of that week, however, part of the readings for the first two weeks are simply review of PS30 material, so skim or read as required. The supplemental readings will be downloadable from the course website, which can be found at:

<http://www.sscnet.ucla.edu/08S/polisci172-1/>

- Week 1: Introduction
 - Lecture 1: Describing strategic environments. Normal forms and strategic forms.
 - Lecture 2: The Nash equilibrium. Dominance and Indifference. Subgame perfection.
 - Review Morrow, *Game Theory for Political Scientists*. pp.1-7, 16-21.
 - (Also, pp.51-58, 73-91 should be review of material from PS30. You might want to skim these if you have questions from lecture, or want more of a review of PS30.)
- Week 2: Utility
 - Lecture 1: Von Neumann-Morgenstern Utility, preferences over lotteries,

- Lecture 2: Choice and Decision theory. Claims and Paradoxes of rationality.
- Review Morrow, pp.22-49.
- Read Schelling, Thomas. 1960. “The Retarded Science of International Strategy.” from *The Strategy of Conflict* pp1:20.
- Week 3: Repeat Play
 - Coordinating Signals
 - Taxonomy of Two-by-Two Games
 - Repeat Play and the Folk Theorem
 - Read Morrow, Chapter 9
 - Read Fearon, James D. 1995. “Rationalist Explanations for War.” *International Organization* 49: 379-414.
- Week 4: Tournaments
 - Tournaments and Applications of Tit-for-Tat Strategies.
 - Read Axelrod, *The Evolution of Cooperation* pp.1-105.
- Week 5: Applications of repeated games and tournaments in international relations
 - Read Kilgour, D. Marc, and Frank C. Zagare. 1991. “Credibility, Uncertainty, and Deterrence.” *American Journal of Political Science* 35:305-334.
 - Read additional readings in Axelrod.
- Midterm is Tuesday or Thursday of Sixth Week.**
- Week 6: Selective Forces
 - The Concept of Fitness (compared to Utility)
 - Automata (compared to Rationality)
 - Read Skyrms, *Evolution of the Social Contract* pp.1-44.
- Week 7: Evolutionary Stability
 - Types of Solutions in Evolutionary Settings
 - Read Skyrms, *Evolution of the Social Contract* pp.45-79.
- Week 8: Applications of Evolutionary Theory to Crisis Bargaining
 - Evolutionary Applications to the Study of Conflict
 - Read Skyrms, *Evolution of the Social Contract* pp.80-109.

- Week 9: Bayes and Signalling
 - Bayes Rules and Beliefs
 - Spence-like Signalling, and Cheap Talk
 - Read Morrow, Chapter 6 and pp.199-211
 - Read Frank C. Zagare and D. Marc Kilgour. 1993. “Asymmetric Deterrence.” *International Studies Quarterly* 37:1-27.
 - Read Schultz, Kenneth A. 1999. “Do Democratic Institutions Constrain or Inform? Contrasting Institutional Perspectives on Democracy and War.” *International Organization* 53: 233-266.

- Week 10: Signalling among Evolutionary, and applications to International Relations

Final is Wednesday, June 10, 3:00pm-6:00pm.