

POS 6725
Wed 7:30-10:00 p.m.
DM 457 A
Spring, 2002

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Formal Political Modeling

This seminar introduces students to the foundations of formal political theory -- otherwise known as public choice. Our emphasis will be on how formal models apply to politics, but the material should be of interest to graduate students in economics, international relations, sociology and other social sciences. No prior knowledge of the subject is needed, however, I will assume that students have sufficient aptitude for abstract reasoning and mathematics to move at a fairly quick pace. Required readings are followed by recommended readings to allow more advance students to study the material in greater detail.

After a brief introduction to decision theory and criticisms of individual rationality, we will turn our attention to game theory and how it is applied to problems of collective action. Students will learn how to solve sequential and simultaneous games, as well as games with mixed equilibria. Students will apply their knowledge to a problem of their choosing and learn an alternative approach to the collective action problem called expressive behavior. The next section of the course introduces students to spatial voting models and how they apply to legislatures and other deliberative voting bodies. Anomalies such as voting cycles and McKelvey's Chaos Theorem will be introduced during this section. The final section in the course introduces social choice theory, Arrow's Impossibility Theorem, and the properties of majority rule voting. This helps us understand a century-old philosophical debate about which voting procedure is "best." In the end, students should acquire a good introduction to the applications and techniques of formal political theory.

Grading

Your grade consists of three homework assignments, a book report, and a research paper. The homework assignments will help you practice the analytical techniques introduced in class and assure that you understand the material. The book report will allow you to delve into an application of game theory that your colleagues will gain from. Each is worth 10% of your overall grade. The remaining 60% of your grade will be reserved for a research paper roughly 20 pages in length, depending on your topic. You may write on any topic directly related to the course, but I will offer suggestions to get you started.

	<u>Date</u>	<u>Percent of Grade</u>
HOMEWORK 1 (decision theory)	Jan 30	10%
HOMEWORK 2 (game theory)	Feb 13	10%
BOOK REPORT	Feb 27	10%
HOMEWORK 3 (spatial voting)	Apr 10	10%
RESEARCH PAPER	Apr 17	60%

Make-ups

Papers and homework assignments require research and/or a fair amount of analysis time. Please plan ahead to avoid turning them in late. **Late papers and homeworks will be lowered one letter grade for every *working day* they are late.** If an assignment is late, it would be a good idea to stick it under my office door (DM 482B) as soon as possible to avoid any unnecessary late penalties. Grades are lowered for every *working day* they are late, not every class day they are late. Please plan ahead.

Required Texts

We will read both theoretical and substantive works in this course which vary in length. Unlike most social science courses, you may have to read the works two or three times to fully comprehend them. Use a pencil and paper to work out the logic behind the material as you read. It will help. Recommended readings may help you understand the material from a different angle, though they are typically more difficult than the required readings, cover more detail, and may address a specific application.

I will assume that all students will have read the material prior to class and that you are professional enough to know the consequences of not attending class. If you miss a class, please obtain the notes from another student. I do not give them out. Remember, if you work hard and complete all the readings, this should be a very rewarding course.

The following books can be purchased from the campus book store...

1. Dixit, Avinash and Susan Skeath. 1999. *Games of Strategy*. New York: W.W. Norton -- required.
2. Hinich, Melvin and Michael Munger. 1997. *Analytic Politics*. New York: Cambridge University Press -- required
3. Olson, Mancur. 1965. *The Logic of Collective Action*. New York: Harvard University Press -- required, but you could just read the copy on reserve.
4. Brennan, Geoffrey and Loren Lomasky. 1997. *Democracy and Decision: the pure theory of electoral preference*. New York: Cambridge University Press -- required, but you could just read the copy on reserve.
5. Course Packet -- pick-up at the University Copy Center. The University Copy Center is two doors down from the campus bookstore in the student union, University Park campus. Readings from the course packet are marked with a “CP” below. Only three readings. Very cheap, very small.

Schedule of Topics and Readings

note: [+] = difficult, but technically correct.
[-] = easier to understand.
[&] = application to a substantive area.

I. DECISION THEORY

Jan 9 Introduction

Recommended:

Dixit and Skeath, Ch 1, "Basic Ideas and Examples."

Jan 16 Preference Theory and Utility Theory

Required:

Hinich and Munger, Ch 1, "The Analysis of Politics."

Dixit and Skeath, Ch 2, "How to Think about Strategic Games."

Tversky, Amos and Daniel Kahneman. 1979. "Prospect Theory: an Analysis of Decision Under Risk." *Econometrica*. 47 (2): 263-91, **CP**.

Recommended:

Shoemaker, Paul. 1982. "The Expected Utility Model: It's Variants, Purposes, Evidence, and Limitations." *Journal of Economic Literature*, 20: 529-63.

James Morrow (1994) *Game Theory for Political Scientists*. Princeton, NJ: Princeton University Press, Ch 2, "Utility Theory."

Jarrow, Robert (1987). "An integrated Axiomatic Approach to the Existence of Ordinal and Cardinal Utility," *Theory and Decision*. 22: 99-110 [+].

Myerson, Roger. 1991. *Game Theory*. Cambridge: Harvard University Press [+].

Simon French. 1986. *Decision Theory*. New York: Halsted Press [+].

Frohlich, Norman and Joe Oppenheimer 1984. "Beyond Economic Man." *Journal of Conflict Resolution* 28 (1): 3-24 [-].

Green, Donald P. and Ian Shapiro. 1994. *Pathologies of Rational Choice*. New York: Yale University Press [-].

Jan 23 No Class!

II. GAME THEORY

Jan 30 Games with Sequential Moves

Required:

Dixit and Skeath, Ch 3, “Games with Sequential Moves.”

Recommended:

Morrow, Ch 4, “Classical Game Theory;” and Ch 5, “Solving Extensive Form Games.”

Brams, Steven J. 1975. *Game Theory and Politics*. New York: Free Press [-].

Hamburger, Henry. 1978. *Games as Models of Social Phenomena*. New York: W.H. Freeman [-].

Luce, Duncan R. and Howard Raiffa. 1989. *Games and Decisions*. New York: Dover Publications Inc.

Feb 6 Games with Simultaneous Moves

Required:

Dixit and Skeath, Ch 4, “Games with Simultaneous Moves.”

Recommended:

Fudenberg, Drew and Jean Tirole. *Game Theory*. Cambridge, MA: MIT Press [+].

Gibbons, Robert. 1992. *Game Theory for Applied Economists*. Princeton, NJ: Princeton University Press.

Myerson, Roger. 1991. *Game Theory*. Cambridge: Harvard University Press [+].

Feb 13 Mixed Strategies and their Application to the Cuban Missile Crisis

Required:

Dixit and Skeath, Ch 5, “Simultaneous-Move Games with Mixed Strategies.”

Dixit and Skeath, Ch 13, “Brinkmanship: The Cuban Missile Crisis.”

Recommended:

Bates, Robert. 1998. “The International Coffee Organization: An International Institution” in Robert Bates et. al. Eds. *Analytic Narratives*. Princeton: Princeton University Press. p. 194-230 [&, -].

Bueno de Mesquita, Bruce. 1981. *The War Trap*. New Haven: Yale University Press [&, -].

Bueno de Mesquita, Bruce and David Lalman. 1992. *War and Reason*. New Haven: Yale University Press [&].

Nicholson, Michael. 1989. *Formal Theories in International Relations*. New York: Cambridge University Press [&].

Snidel, Duncan. 1985. "The Limits of Hegemonic Stability Theory." *International Organization*. 39: 579-614 [&, -].

Feb 20 Collective Action Theory

Required:

Olson, Mancur. 1965. *The Logic of Collective Action*. Cambridge, MA: Harvard University Press, Ch 1 - 3 (on reserve in the library under POS 3064).

Dixit and Skeath, Ch 11, "Collective Action Games."

Recommended:

Olson, Mancur. 1965. *The Logic of Collective Action*. Cambridge, MA: Harvard University Press, Ch 5.

Dixit and Skeath, Ch 8, "The Prisoners' Dilemma Game."

Feb 27 Applications of Collective Action Theory

Required:

Each student will present a short report (story, game, critique) of one of the articles / books listed below (or another approved by the instructor). These will be assigned in accordance with student preferences.

Buchanan, James. 1965. "An Economic Theory of Clubs" *Economica*. 35(125): 1-14. (do Buchanan and Tiebout together).

Cain, Michael C.J. and Keith L. Dougherty. 1999. "Suppressing Shays' Rebellion: Collective Action and Constitutional Design under the Articles of Confederation," with Michael Cain. *Journal of Theoretical Politics*. 11(2): 233-260 [&, -].

Chong, Dennis. 1991. *Collective Action and the Civil Rights Movement*. Chicago: University of Chicago Press [&, -].

Keohane, Robert O. 1984. *After Hegemony: cooperation and discord in the world political economy*. Princeton, N.J. : Princeton University Press [&, -].

Sandler, Todd. 1993. "The Economic Theory of Alliances." *Journal of Conflict Resolution*. 37: 446-483 [&, -].

Lichbach, Mark. 1995. *The Rebel's Dilemma*. Ann Arbor : University of Michigan Press [&, -].

Opp, Karl-Dieter. 1986. "Soft Incentives and Collective Action: Participation in the Anti-Nuclear Movement." *British Journal of Political Science*, 16(1): 87-112 [&].

Ostrom, Elinor. 1990. *Governing the Commons*. New York: Cambridge University Press [&, -].

Sabia, Daniel R. 1988. "Rationality, Collective Action, and Karl Marx" *American Journal of Political Science*, 32 (1): 50-71 [&, -].

Tiebout, Charles M. 1956. "A Pure Theory of Local Expenditures" *Journal of Political Economy* 64 (October): 416-24 (do Buchanan and Tiebout together).

Mar 6 Expressive Voting: A Formal Model that is not Rational Choice (?)

Required:

Brennan, Geoffrey and Loren Lomasky. 1993. *Democracy and Decision*. New York: Cambridge University Press, Ch 2 - 3, and Ch 6 (on reserve in the library under POS 6725).

Recommended:

Aldrich, John H. 1993. "Rational Choice and Turnout" *American Journal of Political Science*, 37 (1): 246-278.

Caplan, Bryan. 2001. "Rational Irrationality and the Microfoundations of Political Failure." *Public Choice*. 107 (June, 3/4): 311-331.

Schuessler, Alexander A. 2000. *A Logic of Expressive Choice*. Princeton, N.J.: Princeton University Press.

III. SPATIAL VOTING MODELS

Mar 13 The Median Voter Theorem and the Single Dimensional Model

Required:

Hinich and Munger, Ch 2, "The Spatial Model of Downs and Black"

Recommended:

Enelow, James and Melvin Hinich. 1984. *The Spatial Theory of Voting*. New York: Cambridge: University Press [+].

Farquharson, Robin. 1969. *Theory of Voting*. New Haven: Yale University Press.

Black, Duncan. 1951. *Theory of Committees and Elections*. London: William Hodge [-].

Mar 20 NO CLASS! SPRING BREAK

Mar 27 Applications of the Single Dimensional Model

Required:

Strom, Gerald. 1990. Ch 2, "The Unidimensional Model of Legislative Decision Making" *The Logic of Lawmaking: a Spatial Theory Approach*. Baltimore: Johns Hopkins, CP.

Recommended:

- Riker, William. 1982. "The Two-Party System and Duverger's Law: An Essay on the History of Political Science," *American Political Science Review*. 76: 753-766 [&, -].
- Shepsle, Kenneth and Barry Weingast (1994). "Positive Theories of Congressional Institutions," *Legislative Studies Quarterly*. 19 (2): 149-79 [&, -].
- Holcombe, James. 1989. "The Median Voter model in Public Choice Theory, *Public Choice* 61:115-125 [&].
- Eavy, Cheryl L. and Gary J. Miller. 1978. "Bureaucratic Agenda Control: Imposition or Bargaining?" *American Political Science Review*. 78 (Dec): 719-733 [&, -].
- Downs, Anthony (1957) *An Economic Theory of Democracy*. New York: Harper and Row [&, -].
- Morgan, Clifton. 1984. "A Spatial Model of Crisis Bargaining." *International Studies Quarterly*, 28: 407-26 [&, -].
- Segal, Jeffrey A., Charles M. Cameron, Albert D. Cover. 1992. "A Spatial Model of Roll Call Voting: Senators, Constituents, Presidents, and Interest Groups in Supreme Court Confirmations," *American Journal of Political Science*, 36(1) 96-121.

Apr 3 Multidimensional Spatial Voting Models

Required:

Hinich and Munger, Ch 3, "Two Dimensions"

Recommended:

- Hinich and Munger, Ch 4, "Multiple Dimensions: Weighted Euclidean Distance."
- Shepsle, Kenneth A. and Barry R. Weingast. 1981. "Structure Induced Equilibrium and Legislative Choice." *Public Choice*. 37: 503-19 [&].
- Jenkins, Jeffery and Brian Sala. 1998. "The Spatial Theory of Voting and the Presidential Election of 1824." *American Journal of Political Science*, 42 (4): 1157- 1179 [&].
- Jillson, Calvin and Rick K. Wilson. 1994. *Congressional dynamics: structure, coordination, and choice in the first American Congress 1774-1789*. Stanford, CA: Stanford University Press [&].
- McKelvey, Richard D. 1976. "Intransitivities in Multidimensional Voting Models and Some Implications for Agenda Control." *Journal of Economic Theory*. 12: 472-84 [+].
- McKelvey, Richard. 1979. "General Conditions for Global Intransitivities in Formal Voting Models." *Econometrica*. 47 (5): 1085-1112 [+].
- Hinich, M.J. and Michael C. Munger. 1994. *Ideology and the Theory of Political Choice*. Ann Arbor: University of Michigan [&].
- Poole, Keith T. and Howard Rosenthal. 1998. *Congress: A Political-Economic History of Roll-Call Voting*. New York: Oxford University Press [&].

- Krehbiel, Keith. 1988. "Spatial Models of Legislative Choice", *Legislative Studies Quarterly* 13 (3, Aug) [& , -].
- Riker, William. 1958. "The Paradox of Voting and Congressional Rules for Voting on Amendments." *American Political Science Review*. 52 (June): 349-366 [& , -].
- Riker, William. 1984. Implications from the Disequilibrium of Majority Rule for the Study of Institutions," *American Political Science Review*, 74: 432-458.
- Weingast, Barry and Kenneth A. Shepsle. 1995. *Positive Theories of Congressional Institutions*. Ann Arbor: University of Michigan Press.

II. SOCIAL CHOICE AND PREFERENCE AGGREGATION

Apr 10 Arrow's Impossibility Theorem

Required:

- Hinich and Munger, Ch 5, "Social Choice and Other Voting Models"
Dixit and Skeath, Ch 14, "Strategy and Voting"

Recommended:

- Shepsle, Kenneth and Mark Bonchek. 1997. *Analyzing Politics*. New York: W.W. Norton, pp. 63-71 [-].
- Sen, Amartya. 1979. *Collective Choice and Social Welfare*. North-Holland: New York [+].
- Arrow, Kenneth. 1963. *Social choice and individual values*. New Haven, Yale University Press [+].
- Austen-Smith, David and Jeffrey S. Banks. 1999. *Positive Political Theory 1: collective preference*. Ann Arbor: University of Michigan Press [+].

Apr 17 Majority Rule as a Reasonable Voting Rule

Required:

- Mueller, Dennis. 1989. Ch 6, "Majority Rule -- Normative Properties" *Public Choice II*. New York: Cambridge University Press, CP.

Recommended:

- Dougherty, Keith and Julian Edward. 2001. "The Pareto efficiency and expected cost of k-majority rules: a probabilistic study of The Calculus of Consent" (working paper).
<http://www.fiu.edu/~dougherk/pareto2.pdf>
- Buchanan, James M. and Gordon Tullock. 1965. *The Calculus of Consent*. Ann Arbor: University of Michigan Press.

- May, Kenneth O. 1952. "A Set of Independent Necessary and Sufficient Conditions for Simple Majority Decision." *Econometrica*, 20 (4): 680-684 [-].
- Mueller, Dennis C. 1996. *Constitutional Democracy*. New York: Oxford University Press
- Rae, Douglas W. 1975. "The Limits of Consensual Decision" *American Political Science Review*. 69: 1270-1294 [-].