ASSIGNED READINGS FOR THE FIRST CLASS MUST BE DONE BEFORE COMING TO THE FIRST CLASS

Political scientists often aim to explain, predict, or evaluate political events, systems, and acts. To achieve these objectives they often claim to use theories and methods of testing these theories. Indeed, much has been written about the need for both scientific and normative theory, and scientific methods of testing theories, in political science. Yet it is generally accepted that, outside of demography and economics, there are virtually no widely recognized scientific theories in the social sciences. There seems to be a sort of paradox here: the paradox of the missing theory. Or where is the science in the social sciences? This seminar will deal with questions underlying this paradox.

We will ask, and answer: 1) Why is everyone interested in theory? 2) Why have so many products which sold as theory ended up so useless? 3) What is theory, and how does it compare to the normal political science product which is passed off as theory? 4) What is the special role of experimental techniques in the testing of theories? Answering these questions will force us to consider, in a technical way, both philosophical and methodological topics.

The main concern of this course will be the rigorous specification of what is meant by "theory", an in-depth examination of theoretical explanation and the special role of experimentation in science. In studying these things, we will study a good deal of philosophy of science, more than the basics of formal - or symbolic - logic and some experimental methods. One could describe the content of the course as a skewed and advanced survey of the philosophy of science; quantified logic; experimental methods; and methods of ethical theory construction: all with a continual reference to political science products and concerns.

But too much should not be made of the above description. The thrust of the course is skill oriented. The student will be able, upon completion of the course, (1) to tell when something is a properly formulated theory; (2) to construct theories (with practice); (3) to read formalized arguments and understand both their logical steps (and notation) and the reasons for the formalization; and (4) design and run an experimental test of a formalized theory. The student will also have an enhanced understanding for the proper uses and inherent limitations of such diverse tools as statistics, mathematics, definitions, experiments, proofs, and data in normative and positive theoretical work in political science.
The course should help any student wishing to develop rigorous critical and constructive skills, regardless of their specializations. The course is not recommended for students with previously acquired strong backgrounds in both logic and philosophy of science. Although the course should be helpful for courses in formal theory, it is not required for those courses. It counts toward the methods requirement (PhD) but not toward the theory requirement.

During the weeks when the assignments are on logic, each student will be required to do homework problems. These problems must be handed in no later than 1 p.m. on Tuesday preceding the next class. They will be graded and returned at class, on Thursday night.

The students' obligations in the course include readings, homework problems, a paper, and a final exam. Students will each write a paper and will be encouraged to present some of their paper materials to the class as a whole. The paper either 1) MUST be oriented about an aspect of some formalized theory and utilize some formal logical analysis, or 2) MUST be a lab report about an experiment designed, and run, testing a hypothesis connected to the prisoner dilemma game. Experimental work is, I believe, a more useful experience for all students. The subject of the paper must be cleared with me in advance. Suggestions for non experimental paper topics are available at the end of the syllabus. There will also be a final examination which will test the material on formal logic and its methodological implications. A copy of some relevant earlier final exam questions is attached to the end of the syllabus.

**TEXTBOOKS:**

(ordered for purchase; all others at Kinko, & grad libe rsv)

*Jeffrey, Logic: Its Scope and Limits (2nd. ed.)
*Ionesco, Four Plays
*Merton, On Theoretical Sociology
*Popper, The Logic of Scientific Discovery
ASSIGNMENTS:

ALL ASSIGNMENTS ARE TO BE DONE BEFORE THE CLASS INDICATED!

PART I: SCIENCE, EVALUATION AND THEORY

Sept 3: Why Deductive Theory?

1. Is there an alternative epistemology?
   A. Ionesco, *The Bald Soprano*

2. The nature of scientific method:

3. On the consequences of ignoring the rules and procedures of
   scientific understanding in an empirical, policy science:
     1/19/73, 250-258.

RECOMMENDED:

1. On the ease of mixing up science and the arts and the confusion
   in psychiatry:

Sept 10: What is theory and is it what social scientists have
been asking for?

1. (in the sciences)
     2 and *Aspects*, 231-244.
   B. Cohen and Nagel, *An Introduction to Logic and
     Scientific Method*, 407-418.

2. (in the social sciences)

3. (in ethics or normative argument)
   A. Sen, *Collective Choice and Social Welfare*, Sections
     5.3-5.4 (pp. 59-64).

RECOMMENDED:

There have been other calls for theory, including: Deutsch,

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The notion that we can agree as to what constitutes truth is a bit "far out," perhaps, yet somewhere it is at the root of some of these discussions. Consider, for openners: Pitcher, *Truth* (Prentice Hall); Sleigh, *Necessary Truth* (Prentice Hall); and Alan White, *Truth* (Anchor).

**Sept 17: Products from our sponsor:**

**Functionalism & Psychiatry**

Each student is to select one of the two based on their own interests and announce in the class preceding which that one will be and become conversant with one of these two literatures and its associated critique.

1. **Functionalism**
   A. Merton, *Theoretical Sociology*, 73-139.
   C. Nagel, *Structure of Science*, 391-7; 401-10; 520-535 and skim 410-428.
   D. Olson, "Economics, Sociology and the Best of All Possible Worlds," *The Public Interest*, Summer 1968 (#12), 96-118.

2. **Psychiatry**

   **RECOMMENDED:**

Much has been written about functionalism, from various points of view. Let me assume you have access to a number of large bibliographies on this.

On the merits, and not, of psychiatric classifications, any really current, solid text on abnormal psych must deal with the works of Rosenhan, Szasz, and Lang. Most recently, these scholars have been joined by a group of debunkers like Masson, of Freud and other psychoanalytic theorists. See Jeffrey Moussaieff Masson, *The Assault on Truth: Freud's Suppression of the Seduction Theory.*
PART II: How to Deduce, the Rules of Valid Argument

Sept 24: Propositional logic (I): Review and Introduction

1. Read: Jeffrey, Logic, Chap. 1 (all), 3 (thru section 3-1; skim: 3-2, 3-4, 3-5, & 3-6), 4 (through section 4-1; skim 4-2, & 4-9).

2. Do Problems:
   A. p. 12: # 1 or 2, then 2 from #3 (a, c, e, or g) and apply #5 & 6 to these problems; #4 and 1 from #7. Play with #9 & 10 for yourselves. p. 43: two from each of #4 & 5. P. 53-4: #1A, 7. Play with # 8, 9.
   B. Skim one of the pieces on prisoner dilemma theory (from the assignment of Nov. 12) and identify one of its important arguments which you believe is deduced from some simple and stateable premises. Xerox the relevant section. Then, rewrite it, in plain English and try to translate as much of it as you can be sure of, into logical notation. In other words, select a simple, & short (i.e. 2-5 sentence argument) about politics. Do it as well as you can. Write down what the biggest problems seem to be in the translation.

PROBLEMS MUST BE HANDED IN BY Tuesday 1 p.m.

RECOMMENDED:


Oct 1 Propositional Logic (II):
A Proof Technique and Applications

1. Read: Jeffrey, Logic, Chap. 2 (thru sect. 2; skim 2-4), chap 4 (sections 4-3, 4, 5; skim sections 4-6 & 7); chap 5 (through section 5-1)

2. Do Problems:
   A. p. 27: #(1 & 2)a 4, 5, 6, 8; pp. 80+: #1 (a, b, e, g), 3, 4a, 4c, and play with # 5. Again use the political science argument from last week.
   B. Develop the translation a bit more, if you can, and then, using the tree method, check it, as well as you can, for consistancy, and validity of argument.

PROBLEMS MUST BE HANDED IN BY Tuesday 1 p.m.
Oct 8: Quantified Logic

1. Read: Jeffrey, Logic, Chaps. 5 (sect. 5-2, 3, 5, 7; skim sect. 5-9, 10); Chap. 6, (skim pp. 125-8).

2. Do Problems:
   A. p. 96: 1a, c; 3a, c; 4a, c; p. 106: 1, 2, 4, 7 p. 111: 1a, b, c; 3
   B. Reexamine your political science argument. Now that you know how to translate it using quantifiers, do so. Test to see if the proposition is a tautology or a contradiction. Is the argument valid? Show your tests.

   PROBLEMS MUST BE HANDED IN BY Tuesday 1 p.m.

PART III: The role of testing in, and the logical structure of scientific and normative theorizing

Oct 15: a) Review and discussion of logic and b) the role of general laws in science and ethics


2. (in science) Nagel, Structure of Science, Chap. 3.

   RECOMMENDED:

   Allan Gewirth, Moral Rationality, Univ. of Kansas, 1972.

Oct 22: The logical structure of laws

1. Nagel, Structure of Science, Chap. 4.


3. Lambert and Brittan, An Introduction to the Philosophy of Science, Chap. 3 (pp. 37-45).


   RECOMMENDED:

   Scheffler, Anatomy of Inquiry, pp. 19-31. Lambert and Brittan's Oppenheimer -- Fall 87 -- GVPT 730 -- p. 6
footnotes are a good place to start to identify the extensive literature on the subject of counter factual conditionals and accidental generalizations. Those who wish more bibliography should ask. Other essays in Brody (esp. those by Ross, Smart, Strang, and Brandt) are interesting and some take a position quite opposed to that developed in the course.

**Oct 29: The logical structure of law: problems with confirmation and testability**

1. Hempel, Aspects, pp. 3-46; or Lambert and Brittan, An Introduction to the Philosophy of Science, Chap. 4.


**RECOMMENDED:**


**Nov 5: The role & possibility of experimentation in political theory**

1. **Normative Theory:**
   A. Rawls, The Theory of Justice, Chapter 1 (sections 1-4), 2 (sections 11-17) and Chapter 3 (all)

2. **Positive Theory:**
   A. Plott, Charles R. (1979) "The Application of Laboratory

RECOMMENDED:

Nov 12: An application of the material: prisoner dilemma games & experimentation

1. The theory of the prisoner dilemma
   A. Luce and Raiffa, pp. 94-102.
   B. Rapoport, FG & D, Part II: pp. 107 - 225.
   C. Schelling, Micro and Macro, Chap. 7

2. The Theory of the Core:
   A. Luce and Raiffa, Games and Decisions: Chapter 8, (except sections 8.3, 8.4, and 8.7)
   B. Rapoport, N-Person, Chap 3, pp. 87-92.

3. Experiments about PD's

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4. Develop a hypothesis as to what you think is going on in the PD games. Write it down, and be prepared to defend it, and test it with an experiment.

RECOMMENDED:


Another application of the theory to the ideas of distributive justice hand includes Howe, Roger E. and John E. Roemer. "Rawlsian Justice as the Core of A Game." American Economic Review 5, December: 880-895. They develop a theory which predicts the sorts of results which we discovered in the Rawlsian experiments noted in the previous week.


One of the big issues here is the claim that the size of the group determines the success in collective action: See Olson, The Logic of Collective Action; Frohlich and Oppenheimer, World Politics, 1970; Hardin, Collective Action Chap. 2.


Nov 19: An application of the courses material: prisoner dilemma hypothesis & experimentation - your turn

1. Software to author your experiments - be sure to allocate time, and make an appointment, for a lab tutorial before this class!
   A. Oppenheimer, Winer, Lu, and Wu. C&C - develop a "seed" game and a few variations to test one of the hypothesis from the last class. It needn't be yours, but you must team up with the author if it isn't. (Can be done in groups of 3.)
   B. Develop the experimental design, hand it in BY TUES noon. It will be handed back by Thurs.

RECOMMENDED:


Dec 3: What to do with false theories:


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**RECOMMENDED:**


**(Possible) Dec 10:**

Review or -

**Probabilistic laws, inductive confirmation,**

and the need for a methodology of evidence

1. The need for a new method of evidence:
   B. Either Lambert and Brittan, *An Introduction to the Philosophy of Science*, pp. 30-36

2. An Application:
   A. Meadows & Meadows, *The Limits to Growth* skim quickly. Then look at one of the critiques in Dorfman and Dorfman (pp. 371 - 389) and Baumol and Oates, *Economics, Environmental Policy and the Quality of Life* Chapters 6 and 9.

**RECOMMENDED:**

There is a good deal written on induction as a statistical program of verification and some of the articles can be found in Brody, *Readings in the Philosophy of Science*. For those without background in probability matters, consider reading: Black, "Probability," in *Encyclopedia of Philosophy*, vol. 6, 464 - 479. Kemeny, Snell, and Thompson, *An Introduction to Finite Math*, pp. 94 - 109 and Ch. 4 have introductory discussion of the theory of probability accessible to all. Other articles, discussions re the
Hempel argument regarding the need for a different rule for evidence can be found in Scheffler, 31-43 and in Jeffrey, "Probability and Falsification: Critique of the Popper Program," Synthese v. 30, 1975, 95-117 and comments and replies, 118 – 157.

NON-EXPERIMENTAL PAPER

TOPICS & STARTING POINTS:

1. **General (in)stability of social choice e.g., Paradox of Voting:** Frohlich and Oppenheimer, Modern Political Economy, Intro., chaps. 1 and 6 or Intro. and chaps. 2-5.

2. **On pork barrel:** Weingast and Shepsle, Miller and Oppenheimer, and Frohlich and Oppenheimer (Chap 6).

3. **Spatial stability and democracy:** Black, Theory of Committees and Elections.

4. **On legislative structure and stability:** Shepsle and Weingast, Sullivan, Roemer and Rosenthal.

5. **Predicting voting strategies:** Farquharson, Theory of Voting.


7. **Deontic Logic** (the logic of obligation). (See entry in the Encyc. of Phil.)


PANEL OF SAMPLE

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EXAM QUESTIONS

1. What does it mean to explain something? Does it matter whether the thing being explained is a statement about an objective phenomenon or about a normative matter?

2. Why might we be interested in consistancy, and how might we achieve it?

3. Discuss the nature of the characterization of scientific laws as being 1) not known to be false, 2) universal conditionals, 3) more than accidental generalizations, and 4) capable of supporting counterfactual conditionals.

4. Is logic useful or important to political analysis? How and why?

5. Identify, illustrate and discuss (briefly) your understanding of the following terms or statements:
   I) a method for the discovery or testing of:
      a) consistancy
      b) inconsistancy
      c) deductive validity
      d) equivilance
      and
   II) a) statements
      b) truth value
      c) quantifiers
      d) logical connectives
      e) two place predicates
      f) paradoxes of confirmation
      g) inductive statistical argument
      h) basic values

6. What are the scope and limits of formal methods of theorizing about politics? Be concrete in your discussion.

7. Logic Problem: Prove that implication is transitive. Does this have any importance?

8. You have read a number of testable, deductive political arguments. They at least include game theoretic arguments. You have certainly also read non-deductive arguments about politics. Discuss some of the potential (or realized) epistemological gains and/or costs of using deductive methods in political science. Use (at least) one of the assigned arguments for illustrative purposes.
LIBRARY Reserve LIST

14. Hempel The Philosophy of the Natural Sciences, Ch. 2
16. Ionesco, E. Bald Soprano
17. Jeffrey Logic: Its Scope and Limits (2nd. ed.)
21. Lambert & Brittan, An Introduction to the Philosophy of Science, Ch. 3, 4.

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22. Luce and Raiffa, Games and Decisions, Ch. 5 & 8.
27. Meadows & Meadows The Limits to Growth
28. Merton On Theoretical Sociology
31. Nagel, E. Structure of Science, Ch. 1 - 4, 391-97, 12, 14.
32. Olson "Economics, Sociology and the Best of All Possible Worlds," The Public Interest, Summer 1968 (#12), 96-118.
36. Popper, K. The Logic of Scientific Discovery, Ch.3-5.
38. Rapoport, A. Fights, Games, and Debates.
41. Rawls The Theory of Justice, Ch. 1 - 3.
42. Rosenhan "On Being Sane in Insane Places," Science, 1/19/73, 250-258.
43. Schelling Micromotives and Macrobahavior, Ch. 7.
47. Szasz Psychiatric Justice, Chaps. 1 and 4.