Tutorials in Epistemology and Methodology of the Social Sciences

François Briatte
Fall 2017
This course is about SCIENCE
Ruining Everything Since 1543
The first principle is that you must not fool yourself—and you are the easiest person to fool.

Richard P. Feynman
This course is about **social science**

Video extract
Mark Abrahams Keynote,
BAHFest East 2017
Analyzing human behaviour isn’t rocket science. It’s harder than rocket science.

Edward R. Tufte
What about **political science**?
Political science is the study of politics through the procedures of science.

Robert O. Keohane
Course ingredients

Philosophy
Social Science
Methods

and coffee
optional
A mathematician is a machine for **turning coffee into theorems**.

Paul Erdős
Welcome to the course
Tutorial organization

- **Syllabus**
  Check lectures and tutorials numbering.

- **Instructors**
  François (Tutorials 1, 2, 5, 6), Gayatri (Tutorials 3, 4, 7, 8).

- **Language**
  Lecture and tutorials are taught 100% in English.

**Additional material** available online at frama.link/emss-2017
Tutorial rules

- **Readings**
  Do them. Take notes. Come to class.

- **Laptops**
  Not allowed on Tutorials 1 and 2.

- **Quizzes**
  One per tutorial. Notes allowed, readings not.

Gayatri’s tutorials: her classes, her rules.

**N.B.** Neither of us handle absences.
Compulsory readings

The Function of General Laws in History

1. It is a rather widely held opinion that history, in contradistinction to the so-called physical sciences, is concerned with the description of particular events of the past rather than with the search for general laws which might govern those events. As a characterization of the type of problem in which some historians are mainly interested, this view probably can not be denied; as a statement of the theoretical function of general laws in scientific historical research, it is certainly unacceptable. The following considerations are an attempt to substantiate this point by showing in some detail that general laws have quite analogous functions in history and in the natural sciences, that they form an indispensable instrument of historical research, and that they even constitute the common basis of various procedures which are often considered as characteristics of the social in contradistinction to the natural sciences.

By a general law, we shall here understand a statement of universal conditional form which is capable of being confirmed or disconfirmed by suitable empirical findings. The term “law” suggests the idea that the statement in question is actually well confirmed by the relevant evidence available; as this qualification is, in many cases, irrelevant for our purpose, we shall frequently use the term “hypothesis of universal form” or briefly “universal hypothesis” instead of “general law,” and state the condition of satisfactory confirmation separately, if necessary. In the context of this paper, a universal hypothesis may be assumed to assert a regularity of the following type: In every case where an event of a specified kind C occurs at a certain place and time, an event of a specified kind D will occur at a place and time which is related in a specified manner to the place and time of the occurrence of the first event. (The symbols “C” and “D” have been chosen to suggest the terms “cause” and “effect,” which are often, though by no means always, applied to events related by a law of the above kind.)

2. The main function of general laws in the natural sciences is to connect events in patterns which are usually referred to as explanatory and predictive.
After the break

- **Short quiz**
  Please clean up your desk and leave the room.

- **Readings 1–3**
  Notes on the readings, with quiz answers.

- **Reading 4**
  We will look at Popper next week, when.

**During the second hour,** please feel free to ask any question on the readings **in class, in English.**
QUESTIONS
10 minute break
short quiz
10’ max
no questions
no chatting
Political Science as a Vocation

Robert O. Keohane, Woodrow Wilson School of Public and International Affairs, Princeton University

This lecture was presented at the University of Sheffield on October 22, 2008, inaugurating the Graduate School of Politics; and at Oxford University on October 16, 2008. I have retained the lecture style for this publication, only making minor changes and additions in the text.

A bout 50 years ago, at the end of World War I, Max Weber gave two now-famous lectures, published in English as “Science as a Vocation” and “Politics as a Vocation.” They well repay reading and re-reading. Thinking of those lectures, it seemed appropriate, on this occasion, to reflect on “Political Science as a Vocation.” As the title of my lecture indicates, I am directing my comments principally to the graduate students in attendance here, who are beginning careers in our field. After the lecture, I want to hear about your reasons for becoming political scientists, and your aspirations. In the lecture, I will reflect on our vocation from the vantage point of someone who has been a practicing political scientist—teaching, reflecting, and writing about politics—for 43 years.

I begin by pointing out that, viewed historically, you are in a distinguished company. Aristotle was probably the first systematic Western political scientist, theorizing the relationship of politics to other spheres of life and creating a typology of regimes—what we would call comparative politics. Machiavelli not only advised the prince but sought to analyze the nature of leadership, the characteristic hypocrisy of political speech, and the sources of republican greatness. Hobbes provided what is still one of the most compelling discussions of the causes of political violence and the sources of, and justifications for, the state. Montesquieu and Madison developed a durable theory of constitutionalism, and Tocqueville put forward insights into the nature of democracy that remain vibrant today—for example, in the work of Robert Putnam. I have already mentioned Max Weber. In the generation of political scientists born in the first three decades of this century I would list, somewhat arbitrarily, Gabriel Almond, Robert Dahl, Judith Shklar, and Kenneth Waltz—all of whom profoundly affected our knowledge of politics. Today, there are so many fine colleagues doing insightful work that to mention a few would be to risk slighting others whose work is equally important. The point is that you are joining a vibrant profession with a rich history. If I were conversant with classical Chinese and Indian sources, I could probably add to this list and extend this history even further into the past.

Following Virginia Woolf, many of you probably noticed that except for Judith Shklar, this is a “processee” of men. Fortunately, however, this lamentable situation has changed. Had I listed contemporary political scientists of note I would have had to include Elke Ostrem, Theda Skocpol, Margaret Levi, and Suzanne Rudolph, as well as many younger women who are now leaders in our profession. Although exclusion on gender and racial lines was long a reality, our profession is now increasingly open to talented people from a wide variety of backgrounds.

What, then, is “political science”? I have an economist colleague who likes to say that any discipline with “science” in its name is not really a science—that it proceeds too much. Were one to adopt a narrow view of science, as requiring mathematical formalizations of its propositions, precise quantitative testing, or even experimental validation, political science would indeed be an exception. But today I will defend our nomenclature by taking a broader view.

I define political science involving attempts to organize human groups to determine internal rules and, externally, to compete and cooperate with other organized groups; and reactions to such attempts. This definition is meant to encompass a range of activities from the governance of a democracy such as Great Britain to warfare from corporate takeovers to decisions made in the UN Security Council. It includes acts of leadership and resistance to leadership, behavior resulting from deference and from defiance. I define science as a publicly known set of procedures designed to make and evaluate decisions and causal influences on the basis of the self-conscious application of methods that are themselves subject to public evaluation. All science is carried out with the understanding that any conclusions are uncertain and subject to revision or refutation (King, Keohane, and Verba 1994, 7–8). Political science is the study of politics through the procedures of science.

I define science as a publicly known set of procedures designed to make and evaluate descriptive and causal inferences on the basis of the self-conscious application of methods that are themselves subject to public evaluation.

All science is carried out with the understanding that any conclusions are uncertain and subject to revision or refutation.

Keohane 2009: 359
The **sociologist** [...] is someone concerned with understanding society in a disciplined way. The nature of this discipline is scientific.

This means that what the sociologist finds and says about the social phenomena he studies occurs within a certain rather strictly defined frame of reference.

One of the main characteristics of this scientific frame of reference is that operations are bound by certain rules of evidence.

Berger 1963: 16
As a **scientist**, the sociologist tries to be objective, to control his personal preferences and prejudices, to perceive clearly rather than to judge normatively.

This restraint, of course, does not embrace the totality of the sociologist’s existence as a human being, but is limited to his operations *qua* sociologist.

Nor does the sociologist claim that his **frame of reference** is the only one within which society can be looked at.

Berger 1963: 16–7
1. **Important notions**

- **Research puzzles**
  Science aims at answering questions

- **Conceptualization**
  Solving questions require *explicit* definitions of their terms

- **Descriptive inference**
  *Generalization from established premises + facts*
  If (interpretation) and (description) then (inference)

- **Causal inference**
  Counterfactuals, experiments
2 Challenges

- Inferences are subject to error \(^{(p.\ 361)}\)
  Precision · Reliability · Validity

- Most political phenomena are non-manipulable \(^{(p.\ 361–2)}\)
  e.g. No “Rwandan genocide, – Christianity, + Islam”

- Many political phenomena are singular events \(^{(p.\ 362)}\)
  e.g. French Revolution, World War I

- Human reasoning is heavily biased \(^{(p.\ 362)}\)
  Omitted variables · Confirmation bias
3 Principles

- **No covering laws** (p. 362)
  Political (and social) science ≠ Newtonian physics

- **Mertonian rules** (p. 363)
  (Organized) Skepticism · Universalism · Disinterestedness · Communism

- **Forget value-neutrality** (p. 363)
  e.g. “symbiotic relationship with democracy”, war vs. peace

- **Strive for objectivity** (p. 363)
  Objectivity = Absence of bias
Value-neutrality

How to reconcile science with values is an important, ongoing, and probably endless debate.

Introduction
At what point, if any, is one to reasonably concede that the ‘realities’ of world politics require compromise from cherished principles or moral ends, and that what has been achieved is ethically justified? How do we really know we have reached an ethical limit when we see one, or fallen short in ways that deserve the withholding of moral praise? Less abstractly, how might we seek to reconcile the cherished freedoms of liberal democracy with restrictions on immigration? Can war legitimately be waged in defence of human rights, and override competing moral claims to self-determination? Can the perpetuation of slaughter be risked by refusing amnesties to perpetrators of atrocities in order to enforce international criminal law? Is there any way to ethically navigate moral dilemmas such as the above, ones that seem to require choices between cosmopolitanism and communitarianism, or consequentialism and deontology, or the oft-competing demands between procedural and substantive justice?
Conclusion

Why do we need a science of politics?

What is relevant political science?

Obvious
True v. False · Sein
Public v. Private
Less obvious
Important v. Trivial
Free v. Sold · Open v. Closed
Universal v. Particular
Right v. Wrong · Sollen
Useful v. Useless
Complex v. Simple
I will talk about **Hempel** next week, with the other readings for that week.
1 Important notions

- **Theory** (p. 7)
  \[ (\text{Laws} \mid \text{Hypotheses}) + \text{Explanations} + \text{Conditions} \]

- **Laws** (p. 8)
  Deterministic vs. Probabilistic
  Causal vs. non-causal (correlation)

- **Hypotheses** (p. 9)
  Conjectured relationship between variables
  \[ \text{H: } A \rightarrow B \]

- **Explanation** (p. 9)
  Connexion between cause and effect
2 ‘DV/IV’ terminology

- **Dependent variable** – **DV** (p. 11)
  The *outcome* that we want to explain or *predict*
  \[ Y = f( X_1 + X_2 + X_3 \ldots ) \]

- **Independent variables** – **IVs** (p. 10)
  The *explanatory factors* that *predict* the outcome
  \[ Y = f( X_1 + X_2 + X_3 \ldots ) \]

- **Antecedent conditions** – a.k.a ‘interaction terms’ (p. 10)
  Prerequisites that enable *Y* to depend on *X*₁
  \[ Y = f( X_1 \times A_1 + X_2 + X_3 \ldots ) \]
Homework

Read Popper – again

Read Kuhn and Motterlini
References


All references above are covered and/or cited in the previous slides. For additional – and always optional – readings, see my emails.
Tutorial 2 in Epistemology and Methodology of the Social Sciences

François Briatte
Fall 2017
Gravitational wave discoverers win physics Nobel prize

HOW THE FIRST GRAVITATIONAL WAVES WERE FOUND

LIGO and Gravitational Waves: A Graphic Explanation

theory
evidence
As the black holes circle each other, their intense gravity warps the starlight around them.
Tutorial organization – Reminders

- **Downloads**
  Tutorial material – emails, slides, videos
  Compulsory and additional readings
  frama.link/emss-2017

- **Language**
  Lecture and tutorials – 100% in English
  Emails and questions – 100% in English

- **Keep reading and taking notes**
  Create your own style of written notes
3 DEDUCTIVE TESTING OF THEORIES

According to the view that will be put forward here, the method of critically testing theories, and selecting them according to the results of tests, always proceeds on the following lines. From a new idea, put up tentatively, and not yet justified in any way—an anticipation, a hypothesis, a theoretical system, or what you will—conclusions are drawn by means of logical deduction. These conclusions are then compared with one another and with other relevant statements, so as to find what logical relations (such as equivalence, derivability, compatibility, or incompatibility) exist between them.

We may if we like distinguish four different lines along which the testing of a theory could be carried out. First there is the logical comparison of the conclusions among themselves, by which the internal consistency of the system is tested. Secondly, there is the investigation of the logical form of the theory, with the object of determining whether it has the character of an empirical or a scientific theory, or whether it is, for example, tautological. Thirdly, there is the comparison with other theories, chiefly with the aim of determining whether the theory would constitute a scientific advance should it survive our various tests. And finally, there is the testing of the theory by way of empirical applications of the conclusions which can be derived from it.

The purpose of this last kind of test is to find out how far the new consequences of the theory—whatever may be new in what it asserts—stand up to the demands of practice, whether raised by purely scientific experiments, or by practical technological applications. Here the procedure of testing turns out to be deductive. With the help of

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other statements, previously accepted, certain singular statements—which we may call 'predictions'—are deduced from the theory, especially predictions that are easily testable or applicable. From among these statements, those are selected which are not derivable from the current theory, and more especially those which the current theory contradicts. Next we seek a decision as regards these (and other) derived statements by comparing them with the results of practical applications and experiments. If this decision is positive, that is, if the singular conclusions turn out to be acceptable, or verified, then the theory has, for the time being, passed its test: we have found no reason to discard it. But if the decision is negative, or in other words, if the conclusions have been falsified, then their falsification also falsifies the theory from which they were logically deduced.

It should be noticed that a positive decision can only temporarily support the theory, for subsequent negative decisions may always overthrow it. So long as theory withstands detailed and severe tests and is not superseded by another theory in the course of scientific progress, we may say that it has 'proved its mettle' or that it is 'ornamented' by past experience.

Nothing resembling inductive logic appears in the procedure here outlined. I never assume that we can argue from the truth of singular statements to the truth of theories. I never assume that by force of 'verified' conclusions, theories can be established as 'true', or even as merely 'probable'.

In this book I intend to give a more detailed analysis of the methods of deductive testing. And I shall attempt to show that, within the framework of this analysis, all the problems can be dealt with that are usually called 'epistemological'. Those problems, more especially, to which inductive logic gives rise, can be eliminated without creating new ones in their place.

4 THE PROBLEM OF DEMARCATION

Of the many objections which are likely to be raised against the view here advanced, the most serious is perhaps the following. In rejecting

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* For this term, see note *1 before section 79, and section *29 of my Princ.
Objectivity


1. Value
   - But first, def
   - Attainability

   \[ \text{obj} = \text{sci value (sci > belief)} \]
   \[ \text{bzw. sci = obj) \}

   \text{Product obj: sci, finding (laws, obs) are accurate descr. of}
   \text{accuracy the world}

   \text{Process obj: sci uses methods that are not contingent}
   \text{abs. of bias on social/ethical/personal bias}

2. Faithfulness to facts
3. Abs. of normative commitments = value - freedom
4. Abs. of personal bias
5. Instrumentalism

Carnap, Popper, Hempel: sci is obj when it succeeds
- at establishing + generalizing facts
- "discovering"

- Sci. proceeds by elimination of false theories & competing are separated by obs.
- Linear progress of sci.
- Verification: Popper, Hempel
- Counter-args: Delaney, Wuthenau, observations are
- Hanson, theory-laden: Kuhn

why? 1. meaning changes over context
   - e.g. Feynman: "mass" "length"
   - are fit in measurements
   - 2. perception influences obs. relat. relativist phys.
   - e.g. Tycho Brahe (Ptolemic)
   - Johannes Kepler (Copernican)
   - looked at the same data (sun)
vestigation might lead us. It is, however, pertinent to say that much more in the way of positive results has already been attained than is indicated anywhere in this article.

COLUMBIA UNIVERSITY.

John Dewey.

THE FUNCTION OF GENERAL LAWS IN HISTORY

1. It is a rather widely held opinion that history, in contradistinction to the so-called physical sciences, is concerned with the description of particular events of the past rather than with the search for general laws which might govern those events. As a characterization of the type of problem in which some historians are mainly interested, this view probably can not be denied; as a statement of the theoretical function of general laws in scientific historical research, it is certainly unacceptable. The following considerations are an attempt to substantiate this point by showing in some detail that general laws have quite analogous functions in history and in the natural sciences, that they form an indispensable instrument of historical research, and that they even constitute the common basis of various procedures which are often considered as characteristic of the social in contradistinction to the natural sciences.

By a general law, we shall here understand a statement of universal conditional form which is capable of being confirmed or disconfirmed by suitable empirical findings. The term “law” suggests the idea that the statement in question is actually well confirmed by the relevant evidence available; as this qualification is, in many cases, irrelevant for our purpose, we shall frequently use the term “hypothesis of universal form” or briefly “universal hypothesis” instead of “general law,” and state the condition of satisfactory confirmation separately, if necessary. In the context of this paper, a universal hypothesis may be assumed to assert a regularity of the following type: In every case where an event of a specified kind $C$ occurs at a certain place and time, an event of a specified kind $E$ will occur at a place and time which is related in a specified manner to the place and time of the occurrence of the first event. (The symbols “$C$” and “$E$” have been chosen to suggest the terms “cause” and “effect,” which are often, though by no means always, applied to events related by a law of the above kind.)

2.1 The main function of general laws in the natural sciences is to connect events in patterns which are usually referred to as explanation and prediction.
1 Important notions

- **General laws** (p. 35)
  
  If (cause C) then (event E)
  
  Purpose = *Explanation* = *Prediction*
  
  Instruments = *Empirics* + *Logic* ≠ ‘fate’ | ‘spirit’ | chance

- **Unicity of science** (p. 37)
  
  *History* = *Biology* = *Physics*
  
  All are concerned with *general*, not *singular*, laws

- **Opposition to** (e.g. p. 9)
  
  Much of – late 19\(^{th}\), early 20\(^{th}\) – social science
  
  *Metaphysics* · *Psychoanalysis*
But there is no difference, in this respect, between history and the natural sciences: both can give an account of their subject-matter only in terms of general concepts, and history can “grasp the unique individuality” of its objects of study no more and no less than can physics or chemistry.

- **Empirical positivism** · Vienna Circle, interwar period
- **Principle of verification** as the criterion of demarcation
  - Scientific statements are **meaningful**, i.e. true | false
  - We know that by subjecting them to **empirical tests**
Example: ‘Laws’ in modern physics

Maxwell’s continuity equation

- A flux $q$ is a real physical quantity that can flow or move (e.g. energy, molecules)

$$\frac{\partial \rho}{\partial t} + \nabla \cdot j = \sigma$$

- The flux moves according to a vector field denoted $j$

- In its differential form, the equation states a conservation law (e.g. conservation of electric charge)

Disclaimer – I have no idea of what this equation really means in either theory or practice. Ask a real physicist.
Example: ‘Laws’ in modern archaeology

**Principles of stratigraphy**

- **Superposition**
  Upper layers are younger than lower ones

- **Original horizontality**
  Layers will initially form horizontally

- **Lateral continuity**
  Layers are bounded at the edges of their basin of deposition
Know thy enemies – classical examples

Astrology

Marxism

Metaphysics

Psychoanalysis

‘Racial biology’
Know thy enemies – contemporary examples

Mesdames, si vous allez faire les soldes, c'est car vous n'avez pas de pénis
QUESTIONS
A SURVEY OF SOME FUNDAMENTAL PROBLEMS

A scientist, whether theorist or experimenter, puts forward statements, or systems of statements, and tests them step by step. In the field of the empirical sciences, more particularly, he constructs hypotheses, or systems of theories, and tests them against experience by observation and experiment.

I suggest that it is the task of the logic of scientific discovery, or the logic of knowledge, to give a logical analysis of this procedure; that is, to analyse the method of the empirical sciences.

But what are these ‘methods of the empirical sciences’? And what do we call ‘empirical science’?

1 THE PROBLEM OF INDUCTION

According to a widely accepted view—to be opposed in this book—the empirical sciences can be characterized by the fact that they use ‘inductive methods’, as they are called. According to this view, the logic of scientific discovery would be identical with inductive logic, i.e. with the logical analysis of these inductive methods.

It is usual to call an inference ‘inductive’ if it passes from singular
Prelude: induction v. deduction

- **Inductive inference** (pp. 3–4)
  From *singular* statements to *universal* statements
  - **Singular** = Observations, Experiments (empirics)
  - **Universal** = Hypotheses, Theories (predictions)

- **Logical deduction** (p. 9)
  From *new ideas* to *conclusions*
  - **New ideas** = Hypotheses (tentative, not yet justified)
  - **Conclusions** = Particular statements (empirical)

**N.B.** Note that those are *ideal types* – practical examples will contain both logics.
Important notions

- **Problem of induction** (pp. 5–6, p. 11)
  Regardless of the past, **future instances are unknown**
  Grounding truth in experience leads to **infinite regress**

- **Principle of falsification** (p. 10)
  A theory is scientific if it is **refutable by a singular statement**
  **Corollary** □ Scientific theories are **empirically testable**

- **Fundamental asymmetry** (p. 10)
  Verification requires infinite proofs
  Falsification requires one
Empirical refutability

I shall certainly admit a system as empirical or scientific only if it is capable of being tested by experience. It must be possible for an empirical scientific system to be refuted by experience.

- **Common enemies** · Marxism, most metaphysics
- **Common ingredients** · Logic, Empirics
- **Opposite principles** · Truth v. Falsehood
Problem of induction · ‘forward’ version

1. observe A
2. observe A
3. observe A

Prove statement $A$

$P(A)$

Logical empiricism

Hume, Popper

$A$ is verified by experience

obs. $4 = A$ ?

Solution is non-finite
Problem of induction · ‘backward’ version

Prove statement $A$

$P(A)$  \quad \text{inductive proof } A' \text{ of } A$

inductive proof $A''$ of $A'$

inductive proof $A'''$ of $A''$

\ldots

\text{induction leads to infinite regress}
I. Introduction: A Role for History

History, if viewed as a repository for more than anecdote or chronology, could produce a decisive transformation in the image of science by which we are now possessed. That image has previously been drawn, even by scientists themselves, mainly from the study of finished scientific achievements as these are recorded in the classics and, more recently, in the textbooks from which each new scientific generation learns to practice its trade. Inevitably, however, the aim of such books is persuasive and pedagogic; a concept of science drawn from them is no more likely to fit the enterprise that produced them than an image of a national culture drawn from a tourist brochure or a language text. This essay attempts to show that we have been misled by them in fundamental ways. Its aim is a sketch of the quite different concept of science that can emerge from the historical record of the research activity itself.

Even from history, however, that new concept will not be forthcoming if historical data continue to be sought and scrutinized mainly to answer questions posed by the unhistorical stereotype drawn from science texts. Those texts have, for example, often seemed to imply that the content of science is uniquely exemplified by the observations, laws, and theories described in their pages. Almost as regularly, the same books have been read as saying that scientific methods are simply the ones illustrated by the manipulative techniques used in gathering textbook data, together with the logical operations employed when relating those data to the textbook’s theoretical generalizations. The result has been a concept of science with profound implications about its nature and development.

If science is the constellation of facts, theories, and methods collected in current texts, then scientists are the men who, successfully or not, have striven to contribute one or another element to that particular constellation. Scientific development becomes the piecemeal process by which these items have been
Scientific change · pp. 2–3

Incremental ⇔ cumulative, accretive

Science is like **Minecraft**
All changes occur **‘one brick at a time’**

Revolutionary ⇔ radical, paradigmatic

‘Nothing works like before!’
‘Things will never be the same again!’

⇔ Pre- and post-revolutionary ideas are **incommensurable** to each other
Steps to revolution · pp. 5–6

unsolvable anomaly → recognition and defence of anomaly → community acceptance → alternative scientific imagination → ‘new normal’
Sociological processes · pp. 4–5, 8

↑ Hence, the role of history in understanding science

unsolvable anomaly

competition

recognition and defence of anomaly

community acceptance

consensus

alternative scientific imagination

‘new normal’

socialization
Paradigmatic change

‘old normal’ paradigm

anomaly

paradigmatic change

‘new normal’ paradigm

normal science
e.g. geocentric model
Ptolemy

extraordinary science
competition
consensus
socialization

incommensurability

normal science
e.g. heliocentric model
Copernicus, Kepler
Examples of uses

Policy Paradigms, Social Learning, and the State
The Case of Economic Policymaking in Britain

Peter A. Hall

Towards a paradigm shift in biology

The steady conversion of new techniques into purchasable kits and the accumulation of nucleotide sequence data in the electronic data banks leads one practitioner to cry, "Molecular biology is dead — Long live molecular biology!"

Animal Consciousness: Paradigm Change in the Life Sciences

To be read in your Public Policy course, Week 6
QUESTIONS
Homework

Tutorial 3 – Schütz
Tutorial 4 – White
Tutorial 5 – della Porta and Franklin
Tutorial 6 – Martin

Your instructor will be Gayatri Rathore

See you in a few weeks!
References


All references above are covered and/or cited in the previous slides. For additional – and always optional – readings, see my emails.
Tutorial 2 in Epistemology and Methodology of the Social Sciences

François Briatte
Fall 2017
Inductive inference does not provide a valid criterion of scientific demarcation (≠ Hempel, Vienna Circle)

Logical deduction can be coupled with an alternative one: the principle of falsification (≠ Metaphysics, Psychoanalysis)

Also by Popper

*The Open Society and its Enemies* – on Plato, Hegel and Marx

*The Poverty of Historicism* – on the scientific method of the social sciences
Popper in a nutshell

There can be no ultimate statements in science (p. 25)

↔ We are never assuredly free of error (Agassi 2014: 91)

↔ Cartesian doubt – use your own reason, but do not trust yourself (Descartes)

↔ The first principle is that you must not fool yourself—and you are the easiest person to fool (Richard P. Feynman)
Scientific change does not always happen incrementally: paradigmatic shifts can occur (e.g. Copernican Revolution)

Historicity (precise accounts of the history of science) is required to understand how scientific discoveries really play out

Also by Kuhn

The Copernican Revolution – an example paradigmatic shift
The Essential Tension – on the role of change and tradition in scientific progress
Kuhn and Popper’s critics

- **Normal science** implies that studying science requires to study **dogmas**
  \[\Rightarrow\] If science is not value-free, can it still be **objective**?

- **Paradigmatic shifts** imply that studying science requires to study **history**
  \[\Rightarrow\] If science is not linear, can it still make **progress**?
Themes for discussion

- **Science and values**
  Does the scientific method allow **value-free neutrality**, or does science contain **beliefs, dogmas, traditions**?

- **Science and history**
  How can we reconcile **scientific progress** with nonlinear, discontinuous ‘revolutionary’ scientific changes?

- **Scientific objectivity**
  If values and history carry **human subjectivity** with them, does that make science inherently subjective as well?
Introduction: A Dialogue
Matteo Motterlini

A dialogue is a discourse consisting of question and answer on some philosophical or political subject, with due regard to the characters of the persons introduced and the choice of diction. The dialectic is the art of discourse by which we either refute or establish some proposition by means of question and answer on the part of the interlocutors.

Diogenes Laertius

The following dialogue between Lakatos and Feyerabend is obviously nothing more than fiction, but over the years a real dialogue did take place between the two friends. It consisted in a genuine, lengthy, continuous, and outspoken exchange of letters and papers which shows the two men taking stands in the discussion for and against method. My fictitious reconstruction mirrors their own contributions, but paraphrases them for stylistic reasons. I refer to the original texts in the footnotes.

The rhetorical form of the dialogue is well described in the above fragment by Diogenes Laertius. The reason for adopting it here is given by the two imaginary interlocutors explicitly at the beginning of their discourse.

Paul Feyerabend: Rumour has it, dear Imre, that while one can freely discuss ideas in a loose way, in letters, phone calls, and at dinner, academics will always prefer an essay or a book. And any paper of this kind has a beginning, a middle, and an end. There is an exposition, a development, and a result. After that the idea is as clear and well-defined as a dead butterfly in a collector’s box.¹

Imre Lakatos: Plato thought that the gulf between ideas and life could be bridged by dialogue—not by a written dialogue, which he considered but a superficial account of past events, but by a real, spoken exchange between people of different backgrounds. I agree that a dialogue reveals more than an essay. It can show the effect of arguments on outsiders. It makes explicit the loose ends which an essay tries to conceal by showing the inconclusiveness of “conclusions”².

¹. See Feyerabend 1991, 163–64.
². Lakatos wrote his masterpiece in the philosophy of mathematics, Proofs and Refutations, in dialogue form; it started from a nonproblematical situation and gradually evolved into BETA’s final remark: “I had no problems at the beginning, and now I have nothing but problems!”
Arguments

Imre Lakatos

‘I have a solution that both Popper and Kuhn will like’

Paul Feyerabend

‘Stop looking for a solution, we do not actually need one’

N.B. Lakatos and Feyerabend were contemporaries who knew each other very well (see book preface)
Imre Lakatos

- **Research programmes** (p. 2)
  Ensembles of theories built around untestable ‘hard cores’
  Either **progress** or **degenerate** through time

- **Sophisticated falsification** (p. 3)
  Distinction between **rejection** and **falsification**
  □ Compatible with, yet critical of, Popper’s ‘naive’ principle

- **Rational scientific progress** (p. 3)
  Degenerating, ‘bad’ programmes are to be abandoned
  □ Compatible with Kuhn’s **historicised scientific change**
• **Rationality**

  *Some* aspects (‘hard cores’) of scientific thought *are* irrational. Yet (‘progressive’) scientific change is *ultimately*, rational.

• **Gradualism**

  Scientific change need not rely on ‘revolutionary’ episodes. Yet *some* historicism is required to understand it (pp. 17–8).

• **Relevance**

  Contemporary scientific thought, esp. in the social sciences, does *not* develop through incommensurable paradigms.
Paul Feyerabend

- **All research will eventually seem irrational** (p. 3)
  Any scientific methodology is bound to be rejected
  ‘Truth and Objectivity’ serve only as oppressors of Culture

- **Epistemological anarchism**
  The single consistent methodological guideline that history provides for scientific discovery is to reject existing views

- **Consequence** 'Anything goes'
  i.e. ‘epistemic free-for-all’ – do whatever you believe might ultimately generate new scientific knowledge
Any sufficiently advanced technology is indistinguishable from magic.

Arthur C. Clarke (science-fiction author)
References


All references above are covered and/or cited in the previous slides. For additional – and always optional – readings, see my emails.
Tutorial 3 in Epistemology and Methodology of the Social Sciences

François Briatte and Gayatri Rathore

Fall 2017
The title of my paper refers intentionally to that of a Symposium held in December, 1952, at the annual meeting of the American Philosophical Association. Ernest Nagel and Carl G. Hempel contributed highly stimulating comments on the problem involved, formulated in the careful and lucid way so characteristic of these scholars. Their topic is a controversy which for more than half a century has split not only logicians and methodologists but also social scientists into two schools of thought. One of these holds that the methods of the natural sciences which have brought about such magnificent results are the only scientific ones and that they alone, therefore, have to be applied in their entirety to the study of human affairs. Failure to do so, it has been maintained, prevented the social sciences from developing systems of explanatory theory comparable in precision to those offered by the natural sciences and makes debatable the empirical work of theories developed in restricted domains such as economics.

The other school of thought feels that there is a basic difference in the structure of the social world and the world of nature. This feeling led to the other extreme, namely the conclusion that the methods of the social sciences are toto coelo different from those of the natural sciences. In order to support this position a variety of arguments was proffered. It has been maintained that the social sciences are idiographic, characterized by individualizing conceptualization and seeking singular assertory propositions, whereas the natural sciences are nomothetic, characterized by generalizing conceptualization and seeking general apodictic propositions. The latter have to deal with constant relations of magnitude which can be measured and can perform experiments, whereas neither measurement nor experiment is practicable in the social sciences. In general, it is held that the natural sciences have to deal with material objects and processes, the social sciences, how-

---

## Reality as two worlds (p. 257)

<table>
<thead>
<tr>
<th>Physical reality</th>
<th>Social reality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material world (matter)</td>
<td>Mental world (psyche)</td>
</tr>
<tr>
<td>Physical elements</td>
<td>Human agents</td>
</tr>
<tr>
<td>... Respond to stimuli</td>
<td>... Respond to other agents</td>
</tr>
<tr>
<td>Functions</td>
<td>Intentions</td>
</tr>
<tr>
<td>Unicity of science</td>
<td>Social sciences</td>
</tr>
<tr>
<td>Nomothetic method</td>
<td>Idiographic method</td>
</tr>
</tbody>
</table>

⇒ Apodictic generalization

⇒ Singular assertions
Schütz · Inspirations and relevance / 1

- **Phenomenological approach** grounded in Husserl’s concept of the *Lebenswelt* (‘life world’)

  ⇔ Metaphysics · Psychology · Psychoanalysis

- Inspired **interpretative** studies of ‘everyday life’ in society, in line with Weber’s *Verstehende Soziologie*

  o **Methodological individualism** (≠ Durkheim, Parsons)
  o Social behaviour has its own distinct **meaningfulness**
  o Social actors share **intersubjective** knowledge
Also influenced

○ **Constructivism**, i.e. the study of how reality is socially represented (Berger and Luckmann)

○ **Ethnomethodology**, i.e. formalizations of everyday interactions (Garfinkel)

**Daily social life** is now routinely understood as crucial to sociological processes (Bourdieu, Giddens, Luhmann...)

Meaningful social action

- **Schemes of experience**
  - ‘In order to’ motives (forward-looking)
  - ‘Because of’ motives (backward-looking)

- Sharing mechanism: **communication**
  (i.e. interaction between two subjects)
  - Ego provides ‘in order to’ motives
  - Alter ego stores them as ‘because of’ motives

⇒ Result: **intersubjectivity** (i.e. shared understandings)
Theory formation via **ideal-types**
- Shared understandings that are **taken for granted**
- Separable in theory, **mixed together in practice**

Empirical basis: **common-sense knowledge** (p. 268-9)

- Mental **constructs** shared in everyday life
- ‘First-degree’ **understanding** (second: ideal-types)

Classical ideal-type example: **modes of domination**

Traditional · Charismatic · Legal-rational
Disagreements about **Weber** (p. 259)

- **Motives for action** are amenable to observation
  \[\Rightarrow\] Can we really study things that are *immanent*?
- **Emotions** and psychological states determine action
- **Social values** can be studied in a neutral fashion
  \[\Leftrightarrow\] **Value-neutral sociology**
QUESTIONS
“Kant’s whole ethics amounts to the idea that every person, in every action, must reflect on whether the maxim of his action can become a general law.”

(Hannah Arendt, interview with Joachim Fest, 1964)

⇒ Were Popper and the Vienna Circle neo-Kantians?

Possibly. Yet, ...
... yet Kant’s *Critique of Judgment* insists that we “think from the standpoint of everyone else”

[ ... which is why Arendt mentions Kant to Fest in the previous quote: she is discussing Adolf Eichmann’s lack of empathy. ]

⇒ From that viewpoint, Schütz is the true neo-Kantian here.
Tutorial 5 in Epistemology and Methodology of the Social Sciences

François Briatte
Fall 2017
Course announcements

- **Slides** for Tutorial 3 (Schütz) are now online
  
  Bonus slides for Tutorial 2 (Feyerabend, Lakatos) are coming up soon in my next email

- **Quiz grades** for Tutorials 1 and 2 are now online
  
  If you were absent, please justify it with admin and tell them to email me

- **Midterm is coming!**
  - November 8 – see Hyperplanning
  - All information to be provided in Janis’ lecture
Welcome to Part II. 
Methodological approaches
Comparative analysis holds a central place in social science research. There is a well-established view in the social sciences that it should be based on variables (see Héritier, ch. 4, and Schmitter, ch. 14). Yet much research — especially in political science, but also in some branches of sociology — is case-oriented: that is, it aims at rich descriptions of a few instances of a certain phenomenon. This chapter argues that both approaches are legitimate. Variable-oriented studies mainly aim at establishing generalized relationships between variables, while case-oriented research seeks to understand complex units. Some people would argue that case-based comparisons follow a different logic of research, while others insist that the rules are essentially the same.

The chapter starts by introducing the debate on comparative analysis, distinguishing the experimental, statistical and ‘comparative’ methods. We then single out two main strategies of research, presenting their origins in the methodological reflections by Durkheim and Weber, and focusing on the assumptions that are linked to the variable-oriented and case-oriented approaches, respectively. Advantages and disadvantages of each will be discussed on the basis of illustrations from social science works on democratization, political violence and political participation, looking at examples of large-N statistical research designs and contrasting them with small-N comparisons, especially in the tradition of historical sociology. The chapter also discusses recent attempts to bridge the gap between the two approaches, in particular with qualitative comparative analysis (QCA) and recent reflections on the case-oriented strategy. Conditions that might influence the choice of one logic or the other include environmental conditions (such as stages in a research cycle or types of data available) and researchers’ epistemological preferences as to approach and methodological skills. We then look at strategies

I am grateful to Marco Giugni, Michael Keating, Leonardo Morlino, Philippe Schmitter, Pascal Venesson and Claudia Wagemann for helpful comments on previous versions of this chapter.
## Comparison as variables and observations \( \cdot X, Y, N \)

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</table>
Comparison as 3 methods (p. 200)

Experimental methods
(Limited applications)
Quantifiable variables
Treatment(s) and controls

Statistical methods
(Many applications)
Quantifiable variables
Competing hypotheses

Comparative methods
a.k.a. case studies (‘small-N’)
(Many applications)
Mostly qualitative information
Many dimensions of analysis
⇒ ‘Many variables, small N’ problems (Lijphart)
⇒ Case-oriented logic ≠ Variable-oriented logic
Comparison as 2 logics (p. 203)

**Durkheimian logic**
(Tutorials 1–2, esp. van Evera)

- Specification
- **Statistical** methods
  - Concomitant variation
- **Functional** explanation
  - Effects of external causes

**Weberian logic**
(Tutorials 3–4, esp. Schütz)

- Ideal-typification
- **Narrative** method
  - Agreement and difference
- **Genetic** explanation
  - Internal causes of effects
**Step 1**

**Commensurate**

i.e. identify and measure comparable dimensions

---

**Example:**

*States and Social Revolutions* (Skocpol 1979)

**A COMPARATIVE ANALYSIS OF FRANCE, RUSSIA, AND CHINA**

### A. Conditions For Political Crises

<table>
<thead>
<tr>
<th></th>
<th>Monarchy/Dominant Class</th>
<th>Agrarian Economy</th>
<th>International Pressures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>France</strong></td>
<td>Landed-commercial dominant class has leverage within semibureaucratic absolutie monarchy.</td>
<td>Growing, but no breakthrough to capitalist agriculture.</td>
<td>Moderate. Repeated defeats in wars, especially due to competition from England.</td>
</tr>
<tr>
<td><strong>Russia</strong></td>
<td>Highly bureaucratic absolutist state; landed nobility has little political power.</td>
<td>Extensive growth; little development in core regions.</td>
<td>Extreme. Defeats in 1850s and 1905. Prolonged participation and defeat in WWI.</td>
</tr>
<tr>
<td><strong>China</strong></td>
<td>Landed-commercial dominant class has leverage within semibureaucratic absolutist state.</td>
<td>No developmental breakthrough; near limits of growth, given population and available land.</td>
<td>Strong. Defeats in wars and imperialist instrusions.</td>
</tr>
</tbody>
</table>
Example: 

**States and Social Revolutions** (Skocpol 1979)

A COMPARATIVE ANALYSIS OF FRANCE, RUSSIA, AND CHINA

Table 2. Outcomes of Social Revolutions in France, Russia, and China

<table>
<thead>
<tr>
<th>Similarities</th>
<th>Socioeconomic Legacies of the Old Regimes</th>
<th>International and World-Historical Circumstances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liberal stabilization impossible.</td>
<td>Society remains predominantly agrarian with peasants a major presence.</td>
<td>Nation intensively caught up in international competition during and after revolution.</td>
</tr>
<tr>
<td>Dominant classes vulnerable.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Popular groups available for political mobilization.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**France**

Liberal phases, but not stable.  
Organizational framework of royal line armies survives.  
Peasant revolts abolish seigneurial relations.

Agrarian-commercial economy of small and medium units; industry nonmechanized.  
No industrial proletariat.  
Petty-propertied peasantry.

France involved in Continental military competition as a potentially hegemonic power.  
State control of national economic development not yet a world-historical factor.
QUESTIONS
Comparison as 2 ‘system’ designs (p. 204)

**comparative statics**
⇔ ‘controls’

**causal factors**
⇔ ‘treatments’

**outcomes**
⇔ ‘results’ (responses)

### Comparative Statics Diagram

<table>
<thead>
<tr>
<th>Case 1</th>
<th>Case 2</th>
<th>Case n</th>
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<tr>
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<td>d</td>
<td>g</td>
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<tr>
<td>b</td>
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<td>h</td>
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<td>c</td>
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<td>i</td>
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<tr>
<td>x</td>
<td>x</td>
<td>x</td>
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</table>

### Causal Factors Diagram

<table>
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<th>Negative case(s)</th>
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<tbody>
<tr>
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<td>a</td>
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<tr>
<td>b</td>
<td>b</td>
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<td>c</td>
<td>c</td>
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<td>x</td>
<td>not x</td>
</tr>
<tr>
<td>y</td>
<td>not y</td>
</tr>
</tbody>
</table>
Mill’s **method of agreement**

<table>
<thead>
<tr>
<th>Case 1</th>
<th>Case 2</th>
<th>Case n</th>
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<td>y</td>
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- **overall differences**
- **crucial similarity**
Most Different Systems Design (MDSD)

<table>
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<tr>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>y</td>
<td>y</td>
<td>y</td>
</tr>
</tbody>
</table>

crucial similarity

different cases

similar outcomes
Mill’s **method of difference**

<table>
<thead>
<tr>
<th>Positive case(s)</th>
<th>Negative case(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>a</td>
</tr>
<tr>
<td>b</td>
<td>b</td>
</tr>
<tr>
<td>c</td>
<td>c</td>
</tr>
<tr>
<td>x</td>
<td>not x</td>
</tr>
<tr>
<td>y</td>
<td>not y</td>
</tr>
</tbody>
</table>

*overall similarities*

*crucial difference*
**Most Similar Systems Design (MSSD)**

<table>
<thead>
<tr>
<th>Positive case(s)</th>
<th>Negative case(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>a</td>
</tr>
<tr>
<td>b</td>
<td>b</td>
</tr>
<tr>
<td>c</td>
<td>c</td>
</tr>
<tr>
<td>x</td>
<td>not x</td>
</tr>
<tr>
<td>y</td>
<td>not y</td>
</tr>
</tbody>
</table>

- **similar cases**
- **crucial difference**
- **different outcomes**
Issues in case study methods

- ‘Same causes, same effects’ ≠ ‘Same effects, same causes’
  \[\iff \text{Issue} = \text{Causality}\]

- Generalizing from singular events, to singular events
  \[\iff \text{Issues} = \text{Comparability} + \text{Conceptualization}\]

- Which cases, and how many?
  \[\iff \text{Issue} = \text{Case selection} = \text{Research design}\]
Quantitative analysis

Mark Franklin

Quantification is one way of employing the scientific method to discover things about the world. In the social sciences we are trying to discover things about the social world, but the approach we use can still be regarded as scientific. The scientific approach attempts to abstract from the nuances and details of a story the salient features that can be built up into a theoretical statement (or statements) expected to hold true of any situation that can be defined in terms of the same abstractions. If such a theoretical statement does not hold true in some specific situation, this is presumed to be either because the theory was wrong or because it was not sufficiently elaborated. Elaborating social theories to bring in additional features of the world, found necessary for a full explanation, is an important feature of the scientific approach; but for elaboration to progress very far we need to employ quantitative analysis, as this chapter will try to show.

The transition from case studies to quantitative analysis is largely a matter of the number of cases. If you have one case, no causal inferences can be made. If you have two cases, you can rule out something as a necessary condition for something else. If you have three cases you can rule out two things, or you can start to make quantitative statements (for example, something might be found to pertain two-thirds of the time). As soon as you start saying things like ‘this happens two-thirds of the time’ you are doing quantitative analysis. But in order to make such statements you need to be able to abstract general features that are common to many cases, which tends to require a more elaborate theoretical basis for a quantitative study than for a case study. You also need a fairly large number of cases.

Exactly what constitutes ‘fairly large’ in the above statement is not at all clear, and in practice there is a large area of overlap in which one researcher would talk of a ‘multiple case study’ while another would talk of a ‘small-N study’ (the letter N in the quantitative tradition stands for ‘number of cases’; as soon as you see cases referred to in that way, you know you are reading something written in the quantitative tradition).
Terminology of quantitative research

- **Surveys**
  - Target populations ⇔ **Samples**
  - Randomization ⇔ **Representativeness**

- **Datasets**
  - Observations · Variables
  - Panel data and time series · $N, T$

- **Statistics**
  - Descriptive statistics · Statistical models
Example: $N = 1$ U.S. presidential election

Everything mattered: lessons from 2016's bizarre presidential election

WTF just happened?

Updated by David Roberts | @drvox | david@vox.com | Nov 30, 2016, 8:30am EST

A ‘bizarre’ election?
Example: $N = 15$ U.S. presidential elections

Curious about this? See the **bonus slides** at the end of this presentation.
Argument: Bread = income, Peace = War fatalities
Application to the 2016 presidential election

Implications of the Bread and Peace Model for the 2016 Presidential Election

Based on data available through 2016:q2; symbol sizes represent relative likelihoods

- Incumbent party share of two-party vote (%)
- Real income growth and US military fatalities combined

Combination of real income growth and US military fatalities weights each variable by its estimated coefficient.

Source: www.douglas-hibbs.com, 21 October 2016
QUESTIONS
Homework

Read Franklin if you have not already

Read Martin
Bonus slides

More about Douglas Hibbs’ ‘Bread and Peace’ model
1 Data: \( N = 15 \) U.S. presidential elections

\[ Y = \text{Incumbent two-party vote share} \]

\[ X = \text{Weighted average of per capita real income growth rates} \]

- ○ Election year
- ● Election year affected by war

Years: 1952 (Korea), 1968 (Vietnam), 2008 (Iraq)
2 Linear model: $Y = f(X)$, with $f = m \cdot X + b$
3 Visualization of the model

Y = Incumbent two-party vote share

X = Weighted average of per capita real income growth rates

- All years
- Excluding war-affected
4 Estimation of the model

```
.reg vote bread peace, beta
```

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>Number of obs = 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>417.215728</td>
<td>2</td>
<td>208.607864</td>
<td>F( 2, 12) = 46.49</td>
</tr>
<tr>
<td>Residual</td>
<td>53.843113</td>
<td>12</td>
<td>4.48692608</td>
<td>Prob &gt; F = 0.0000</td>
</tr>
<tr>
<td>Total</td>
<td>471.058841</td>
<td>14</td>
<td>33.6470601</td>
<td>R-squared = 0.8857</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Adj R-squared = 0.8666</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Root MSE = 2.1182</td>
</tr>
</tbody>
</table>

| vote      | Coef.       | Std. Err. | t    | P>|t|     | Beta      |
|-----------|-------------|------------|------|---------|-----------|
| bread     | 3.637368    | .414132    | 8.78 | 0.000   | .866537   |
| peace     | -.0504247   | .0096548   | -5.22| 0.000   | -.5152733 |
| _cons     | 45.72775    | 1.013267   | 45.13| 0.000   |           |
Tutorial 6 in
Epistemology and
Methodology of the Social Sciences

François Briatte
Fall 2017
Tutorials 5 and 6

- **Tutorial 5** was about **comparing**
  Experiments · Statistical Analysis · Case Studies
  Qualitative / Quantitative Methods

- **Tutorial 6** is about **modeling**
  Rational Choice Theory · Game Theory
  Formal Methods / Models

- **Tutorials 7 and 8** will be about **interpreting**
  Ethnomethodology · Discourse Analysis
Modeling (ir)rational decisions
States like [North Korea, Iran, Iraq], and their terrorist allies, constitute an **axis of evil**... They could provide [weapons of mass destruction] to terrorists... They could attack our allies or attempt to blackmail the United States. In any of these cases, **the price of indifference would be catastrophic**.

*George W. Bush* · SoU address, 2002

... there are also **unknown unknowns** – the ones we don't know we don't know. And if one looks throughout the history of our country and other free countries, it is the latter category that tend to be **the difficult ones**.

*Donald Rumsfeld* · DoD briefing, 2002
Rational choice and game theory

- “The *price of indifference* would be catastrophic”
  - Costs and benefits · *Utility* maximization
- “Known unknowns” and “unknown unknowns”
  - (Im)perfect and/or (in)complete *information*
- Decision *games*
  - Two-player v. multi-player
  - Repeated v. non-repeated
  - Optimal v. suboptimal *equilibrium*
Brinkmanship, according to Thomas Schelling, the Nobel Prize-winning economist who pioneered the theory of nuclear deterrence, is the art of “manipulating the shared risk of war.” In 1966, he envisaged a nuclear standoff as a pair of mountain climbers, tied together, fighting at the edge of a cliff. Each will move ever closer to the edge, so that the other begins to fear that he might slip and take both of them down. It is a matter of creating the right amount of fear without losing control. Schelling wrote, “However rational the adversaries, they may compete to appear the more irrational, impetuous, and stubborn.” But what if the adversaries are irrational, impetuous, and stubborn?

THE RISK OF NUCLEAR WAR WITH NORTH KOREA
Game-theoretic representations

Decision trees

Spatial analysis

Figure 8. The core of EU legislative procedures

Scharpf 1997, p. 185
Tsebelis 2004, p. 133
## Game-theoretic representations

### Payoff matrixes

<table>
<thead>
<tr>
<th>Mobilize</th>
<th>Don’t mobilize</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobilize</td>
<td>–10, –10</td>
</tr>
<tr>
<td>Don’t mobilize</td>
<td>–20, 10</td>
</tr>
</tbody>
</table>

### World War I dilemma

<table>
<thead>
<tr>
<th>Increase arms</th>
<th>Decrease arms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase arms</td>
<td>25, 25</td>
</tr>
<tr>
<td>Decrease arms</td>
<td>–100, 200</td>
</tr>
</tbody>
</table>

### A simple arms race

Niou and Ordeshook 2015, p. 183 and 189
**Prisoner’s Dilemma** (Sigmund 2010, p. 3)

This strange game is an example of a *Prisoner’s Dilemma*. This is an interaction between two players, player I and II, each having two options: to cooperate (play C) or to defect (play D). If both cooperate, each obtains a *Reward* $R$ that is higher than the *Punishment* $P$, which they obtain if both defect. But if one player defects and the other cooperates, then the defector obtains a payoff $T$ (the *Temptation*) that is even higher than the Reward, and the cooperator is left with a payoff $S$ (the *Sucker’s payoff*), which is lowest of all. Thus,

$$T > R > P > S. \quad (1.1)$$

As before, it is best to play D, no matter what the co-player is doing.

<table>
<thead>
<tr>
<th>Payoff for player I</th>
<th>if player I plays C</th>
<th>if player II plays C</th>
<th>if player II plays D</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$R$</td>
<td>$S$</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$T$</td>
<td>$P$</td>
<td></td>
</tr>
</tbody>
</table>
Prisoner’s Dilemma (Sigmund 2010, p. 4)

The young mathematicians who first investigated this game were employees of the Rand Corporation, which was a major think tank during the Cold War. They may have been inspired by the dilemma facing the two superpowers. Both the Soviet Union and the United States would have been better off with joint nuclear disarmament. But the temptation was to keep a few atomic bombs and wait for the others to destroy their nuclear arsenal. The outcome was a horrendously expensive arms race.

<table>
<thead>
<tr>
<th>Payoff for player I</th>
<th>if player I plays C</th>
<th>if player I plays D</th>
</tr>
</thead>
<tbody>
<tr>
<td>if player II plays C</td>
<td>$R$</td>
<td>$S$</td>
</tr>
<tr>
<td>if player II plays D</td>
<td>$T$</td>
<td>$P$</td>
</tr>
</tbody>
</table>
QUESTIONS
10 minute break
Interests, power, and multilateralism
Lisa L. Martin

Within the European Community (EC), member states increasingly accept the results of majoritarian voting procedures as constraints on their foreign policies, particularly on economic issues. At the same time, the United States is turning more frequently to bilateral negotiations to solve its international trade dilemmas. Some international organizations involve all members in important decisions through regularized, weighted voting mechanisms; others—for example, the United Nations (UN)—delegate some decision-making powers to a subset of actors (such as the UN Security Council). Some organizations have gained widespread monitoring powers and have developed dispute resolution mechanisms; others are primarily talking shops or negotiating arenas. This article considers the functional imperatives that contribute to such variance in patterns of international cooperation and uses the concept of multilateralism as a metric with which to characterize the patterns thus observed.

States can choose from a wide array of organizing forms on which to base their interactions; among these is multilateralism. A number of recent works have explored situations in which states have used varying degrees of multilateralism to structure their relations. This article argues that studies of

This article was originally prepared for the Ford Foundation West Coast Workshop on Multilateralism, organized by John Gerard Ruggie. The author gratefully acknowledges the Ford Foundation's financial support for this project. My thanks also to Robert Keohane and Stephen Krasner, as well as to the participants in this project, for their valuable comments on this research.


International Organization 46, 4, Autumn 1992
© 1992 by the World Peace Foundation and the Massachusetts Institute of Technology
Problem definition

- **Distributions of power**
  Hegemony · Bipolarism · Multilateralism (EU, UN)
- **Successful multilateralism**
  Indivisibility · Nondiscrimination (MFN) · Reciprocity
- **Cooperation problems**
  *Collaboration* and *Coordination* (symmetric preferences)
  *Suasion* (asymmetric preferences)
  *Assurance* (imperfect or incomplete information)
Collaboration problems

- **Repeated** Prisoner’s Dilemma strategies
  
  *Tit-for-tat · Trigger strategy*

  ➞ Specific reciprocity requires credible sanctions

- **Free riding** on multilateral norms

  Public goods (non-rival, non-excludable) · Free-riding

  ➞ Multilateralism risks a ‘tragedy of the commons’
Coordination problem

**Figure 2.** A coordination game with divergent interests (battle of the sexes)
Could Ireland credibly threaten to veto an EU-UK trade deal?

For years now, Ireland and the UK have been the best of friends. Very sadly, Brexit is placing the relationship under strain. The positions of the two governments on the Irish border could not be further apart. Ireland is very clear: no trade deal that involves a physical border is acceptable. That obviously implies that the United Kingdom should seek to remain within the European Economic Area, and form a new customs union with the EU. This would replicate its existing trade ties with the bloc, while respecting the vote to leave the EU, and avoid the need for a border within Ireland. The United Kingdom, on its part, is adamant that it must leave the customs union in order to strike separate trade deals with the United States and other countries overseas. To be sure, it pays lip service to the importance of avoiding a border between Northern Ireland and the Republic, but this appears to be nothing more than a cynical manoeuvre. On the one hand, the
Suasion and assurance games

**Figure 3. A suasion game**

- **Dominant strategy (A)**
- **Most favoured outcome (B)**

**Figure 4. An assurance game (stag hunt)**

- **Sole preferred outcome**
- **Suboptimal equilibrium**
QUESTIONS
Next sessions

Tutorial 7 – Scott
Tutorial 8 – Cohn

Your instructor will be Gayatri Rathore

Thank you for your attention, and see you next semester
References


All references above are covered and/or cited in the previous slides. For additional – and always optional – readings, see my emails.
**References**


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