26:010:557 / 26:620:557
Social Science Research Methods

Dr. Peter R. Gillett

Associate Professor

Department of Accounting & Information Systems

Rutgers Business School – Newark & New Brunswick

Overview

- Scientific Laws
- Some Key Themes of Contemporary Philosophy of Science
- Some Questions to Ponder
- Causes and Conditions
- Methodology in Science
- The Reduction of Sciences
- Philosophy of Social Science
- Questions
- Necessary Truths
- Accounting Research
- Theories, Hypotheses and Models

Key Themes of Contemporary Philosophy of Science

- Positivism
- Falsifiability (Popper)
- Paradigm Shifts (Kuhn)
- Theory-ladenness of Observations
- Under-determination of Theory by Data: Duhem-Quine Thesis
- Incommensurability of Theories

Some Questions to Ponder

- What is a scientific law?
- What makes it a *law*?
- Who or what should obey scientific laws, and why?
- Does social science have scientific laws too?
- Is “Time pressure causes auditors to make more mistaken decisions” a *law*?
- What is a cause?

Causes and Conditions

- A cause is a necessary and sufficient preceding condition
  - What does this mean?
  - Why is it inadequate?
- What are:
  - Singular causal statements
  - General causal statements

Causes and Conditions

- INUS Conditions
  - *I*nsufficient but *n*ecessary parts of *u*nnecessary but sufficient conditions
  - A is an INUS condition for P iff, for some X and Y, (AX or Y) is necessary and sufficient for P, A is not sufficient for P and X is not sufficient for P
  - Note that this does not say that A cannot be necessary (or unique)

Causes and Conditions

- INUS conditions
  - A is *at least* an INUS condition iff A is an INUS condition, or AX is a minimal sufficient condition, or A is a minimal sufficient condition (and so is necessary and sufficient)

Causes and Conditions

- ‘A caused P’ implies:
  - A is at least an INUS condition for P
  - A happened
  - X (if any) happened
  - No Y not containing A happened

Causes and Conditions

- Causal fields
  - Region of application of a causal statement
- ‘A caused P’ expands to ‘A caused P in relation to field F’ and the implications above are predicated upon the presence of whatever features characterize F
- Use of causal fields avoids infinitely complex sets of conditions

Causes and Conditions

- The analysis of general causal statements is more complex
  - Some are similar to singular statements, but we leave the details of X or Y unspecified
  - Some are implicit statements of functional dependency (stronger than necessary and sufficient conditions)
  - Some pick out necessary conditions (yellow fever virus) – ‘the cause’

Causes and Conditions

- Necessity and Sufficiency
  - S is a necessary and sufficient condition for T
  - Universal propositions
    - All T are S
    - All S are T
  - Not much use for singular causal statements
    - Counterfactual conditions
    - Factual conditions
    - Telescoped arguments

Causes and Conditions

- The Direction of Causation
  - Needed to distinguish A causing P from P causing A
  - Causal priority
  - Not identical with temporal priority
  - Linked with controllability?
  - Direction of explanation?

Causes and Conditions

- Some alternatives to “Necessary & Sufficient” approach
  - No laws
  - Agency
  - Probability
  - Counterfactuals
  - Causation is real and does not require a reductionist analysis

Causes and Conditions

- Some alternatives to “Necessary & Sufficient” approach
  - Causes are fundamental
  - Causes are directly perceived
  - Salmon’s causal forks
    - Conjunctive – common cause of multiple effects
    - Interactive – direct inter-temporal intersections of processes
    - Perfect – limiting case – both conjunctive or interactive
- So:
  - Which is more basic: causal laws or causal relations
  - Are causes reducible?

Question

On page 212 in Losee: "*Given its initial motion, the probability that the cue ball will rebound at a 45 degree angle is linked to the probability that the eight ball will move in a certain way. If C is the motion of the cue ball before collision, A is its motion after collision, and B is the motion of the eight ball after collision, then P[(A&B)/C] > [P(A/C) X P(B/C)]"* Why the eight ball? How can we say that the cue ball's specific movement is linked to the eight ball's movement? Is this example appropriate to describe the formula?

Methodology in Science

- A review of by now familiar ideas
- The Problem of Induction
  - Inductive support is circular
  - Probability does not solve this on its own
  - Falsification as an alternative
    - Has its own shortcomings
  - Induction is rational by definition?
  - Reliabilist defense?
    - Truth preserving but not necessarily truth preserving

Methodology in Science

- The Problem of Induction
  - Goodman's New Problem
    - Projectible predicates
      - Entrenched in our inductive practices

Methodology in Science

- Laws of Nature
  - Humean analysis: only constant conjunction
  - Laws are projected into counterfactual situations
  - Laws are wide-ranging generalizations
  - Laws are inductively supported by their instances
  - Systematization: laws as systematized general truths
  - Non-Humean alternative
    - Necessitating relationships
    - Metaphysical necessity v. epistemological *a prioricity*

Methodology in Science

- Instrumentalism v. realism
- Under-determination of Theory by Data
- The Pessimistic Meta-Induction
- Confirmation and Probability
  - The Raven Paradox
  - The Tacking Paradox

Methodology in Science

- Explanation
  - The Covering Law Model
  - Are Explanations and Predictions different?
  - The Direction of Causation
  - Are all *explanations* of singular events causal?

Question

A high percentage of individuals with colds recover within a week after administration of vitamin C.

Jones had a cold and took vitamin C.

Jones recovered from his cold within one week after taking vitamin C.

Why is this argument non-explanatory?

Question

For causal relationships, it is argued by Hempel that indicator laws are not the value of the premises in the explanatory arguments, they just represent some property features of the arguments. Salmon also says that what is important in statistical explanation about high probability is not explanatory reason, but about statistical relevance. Therefore, can we say that statistical relevance is not so important to the explanation, since if it is causal relationship, even with little probability or statistical relevance, it is still a good explanation?

Question

- I am still confused about Bayesians v. frequentists - can you give us some more examples of the differences in class?

The Reduction of Sciences

Physics →

Chemistry →

Biology →?

Psychology →?

Social Sciences

What is ‘special’ about people?

The Philosophy of Social Science

Alex Rosenberg

- Do social sciences, and should they, use the same methods as natural sciences?
- Naturalism
  - Yes!
  - But the task is to explain human action
  - So we need a causal law to the effect that we always do what we believe will efficiently lead to what we desire
  - Intentionality: unobservable ‘aboutness’ of beliefs and desires
  - Intentional circle: no way independent of observing an action to establish that its causes obtain, and vice versa

The Philosophy of Social Science

- Anti-naturalism
  - Rules link beliefs and desires with actions
  - Rules should not be confused with regularities
  - Folk psychology: account of action and its sources implicit in everyday beliefs
- Eliminativism
  - Aggregate generalizations about large-scale processes, agnostic on their psychological foundations
- Methodological Individualism v. Holism
- Teleology and function legitimated again
- Reflexive knowledge: self-fulfilling or self-refuting predictions

The Philosophy of Social Science

- Historicism
  - Unlike natural laws
    - Social process develop in a temporal order
    - Social laws change over time
- Value
  - Well-confirmed theories help us ameliorate or worsen human life
  - Well-confirmed theories help us control and manipulate human behavior
  - When is it permissible to test human subjects?
  - Are some inquiries best left unmade?
  - Is objectivity possible?

The Philosophy of Social Science

Martin Hollis

- Explanation v. understanding
- Holism v. individualism
- Explanation
  - ‘Constant’ laws lead to Determinism
  - Hypothetico-deductive method & covering law model
  - Even reliable predictive explanations do not tell us *why*
    - Too sketchy
    - No causes identified
    - Not interpretive – do not understand the situation from within

The Philosophy of Social Science

- Understanding
  - Interpretive – understanding episodes by seeing life as a whole
  - Double hermeneutic – interpreting twice
    - Identifying behavior
    - Ascribing its meaning as action
  - Identifying intentions
    - Empathy – identifies intentions directly
    - Explanatory understanding
    - Public meaning
      - Games
    - Moral conduct
    - Human freedom

The Philosophy of Social Science

- Explanation and Understanding
  - Rationality
    - Complete consistent preferences
    - Perfect information
    - Perfect powers of computation
    - Utility
  - Coordination
  - Cooperation
  - Rationality and Relativism
    - Truth becomes unobtainable, or a matter of conformity

The Philosophy of Social Science

David-Hillel Ruben

- Different concepts used in social science – available also in general discourse (‘class’ v. ‘quark’)
- Different generalizations – apparent extensions of general knowledge (transparency of society to social agents)
- Individualism v. holism
  - Conceptual
  - Metaphysical
  - Explanatory
  - (Ethical)
  - Related but not equivalent

The Philosophy of Social Science

- Conceptual individualism
  - All social concepts can be translated without remainder into psychological concepts
- Metaphysical individualism
  - Social phenomena are merely (sets of) individuals in certain psychological states
    - Mereology
- Explanatory individualism
  - Every explanatory chain containing a social fact at some point (backwards) becomes social-fact free and remains so

The Philosophy of Social Science

- Causal and non-causal explanations
  - Do they apply equally to social science?
  - Functional explanation (asymmetric)
  - Structural explanation (based on sets of relations)
- Action
  - Austere theories
  - Prolific theories
- Are basic actions transparent?

The Philosophy of Social Science

- Action explanations
  - What kind of explanations are they?
    - Causal
    - Interpretive / hermeneutic
    - 'Weakness of will'?
- Norms, rules, conventions, tradition
- Rationality: individual v. social
- Social relativism: many varieties
- Methodology: paradigms and programmes
- Values in social science

The Philosophy of Social Science

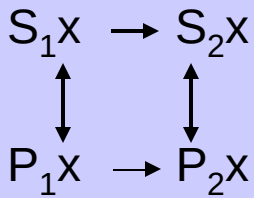
- Special Sciences
  - Are special sciences fully reducible?
  - What is ‘the unity of science’ and how can we account for it? How is it related to the generality of physics?
  - Bridge laws and physical laws
  - “There are special sciences not because of the nature of our epistemic relation to the world, but because of the way the world is put together: not all the kinds (not all the classes of things and events about which there are important, counterfactual supporting generalizations to make) are, or correspond to, physical kinds.” (Jerry Fodor)

The Philosophy of Social Science

- Special Sciences
  - Saying that *physics is basic science* and saying that *theories in the special sciences must reduce to physical theories* are often taken to be the same thing
  - However, according to Fodor, the 'unity of science' is a much stronger, and much less plausible, thesis than the generality of physics
  - Token physicalism: all the events that sciences talk about are physical events
  - Type physicalism: all the properties that sciences talk about are physical properties
  - Reductionism → token physicalism → generality of science
  - Fodor argues that reductionism is too strong a constraint on the unity of science, and that token physicalism suffices (and still implies the generality of physics)

The Philosophy of Social Science

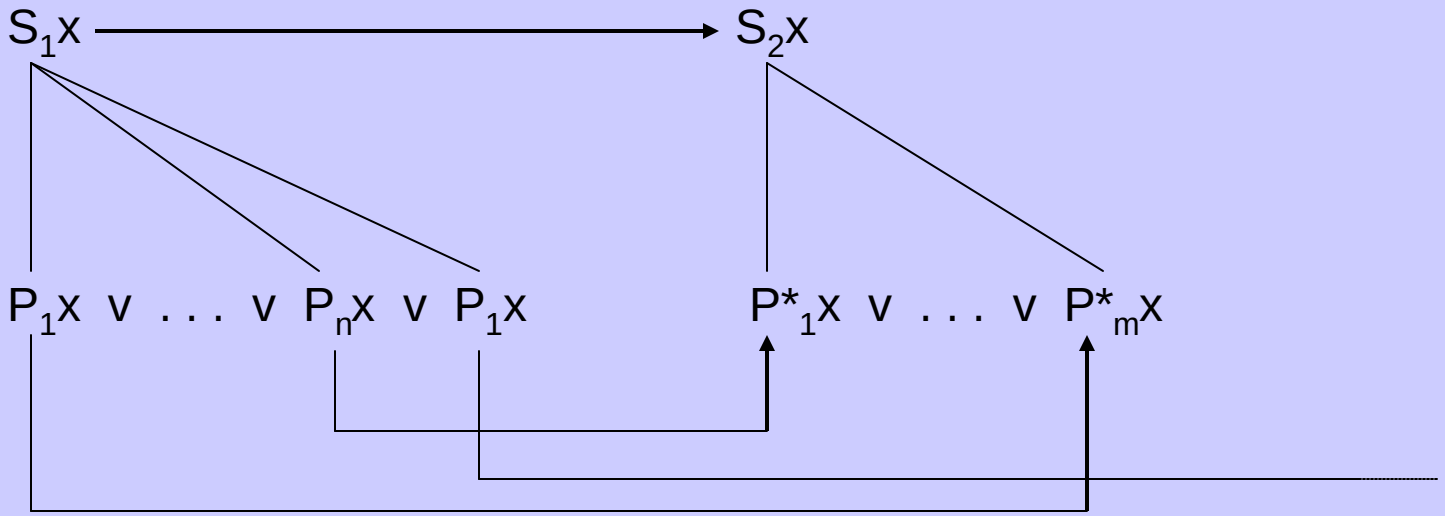
- Special Sciences
  - Classical reductionism:



    - where S_1, S_2, P_1 & P_2 are predicates picking out natural 'kinds' in their respective sciences
    - and the 'bridge laws' expressed by $\leftrightarrow$ are *event identities* (i.e, S_1x and P_1x are descriptions in their respective sciences of the *same* event, etc.)
  - Fodor rejects the idea of coextensive 'kinds' and the possibility of such bridge laws, and thus rejects classical reductionism

The Philosophy of Social Science

- Special Sciences
  - Fodor's reduction scheme:



    - The generalizations expressed by ------ are not *laws* as the disjunctive predicates do not identify natural physical kinds

The Philosophy of Social Science

- Special Sciences
  - Fodor's reduction scheme:
    - 'Laws' in the special sciences can now have exceptions
    - Physical laws, however, are still exceptionless
    - As the bridge statements are still token event identities, this model does still imply token physicalism (and thus the generality of physics)
    - The value of special sciences consist of their being able to express true generalizations (possibly with exceptions) that could only be expressed as vast open disjunctions under complicated conditions using the 'kinds' available in physics

Business Research

- Is the primary goal of Business Research explanation or prediction?
- Are these the only two important choices?
  - If so, why?
  - If not, what alternatives matter?