

# Foundations of Scientific Enquiry

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## **Introduction**

This course will examine many of the methodological and conceptual issues that one faces when trying to take a scientific approach to questions about humans and their social interactions.

We will start by asking about the nature of theories in the social sciences and about what is required in order to have good reasons for believing that a theory is true. This will lead us to questions about how the methods of the social sciences differ from the methods of the physical sciences and about how theories within different disciplines relate to one another. We will be giving particular attention to the notions of *causation* and *explanation*.

## **Assessment**

The final grade will be determined on the basis of two factors:

1. 35% will be based on attendance and participation in class, which includes demonstration of having read the assigned literature;
2. 65% will be based on short biweekly essays with a maximum of 700 words each. Each week a number of statements are given that can be used to write an essay in favour or against, or you can come up with your own topic based on the literature for the two weeks involved. Every even week, Friday at 5 pm, an essay is due by email to both lecturers of the course.

## Course schedule

### Week Topic

#### *Theory and observation*

- 1 **Introduction: theories, models, hypotheses** Jos Elkink & Christopher Mole  
Geoff Cooper, “Conceptualising social life” and Nigel Gilbert, “Research, theory and method”, in: Nigel Gilbert (ed.), *Researching social life*, 3<sup>rd</sup> edition, 2008.
- 2 **Kuhn and Popper** Christopher Mole  
Susan Haack (2003) “Nail Soup” Chapter Two of *Defending Science: Within Reason* Prometheus Books  
Thomas Kuhn (1962) “The Priority of Paradigms” and “Anomaly and The Emergence of Scientific Discoveries” - Chapters V and VI of *The Structure of Scientific Revolutions*, University of Chicago Press  
Possible statements for essays:
  - Popper’s refutation-based picture of the logic of scientific discovery is unable to account for scientific progress.
  - Kuhn’s picture of scientific progress threatens the view that our current scientific theories are probably close to the truth.
- 3 **Evidence and observation** Christopher Mole  
Paul Churchland (1988) “Perceptual Plasticity and Theory Neutrality: A Reply to Jerry Fodor” *Philosophy of Science* 55: 167-187  
Jerry Fodor (1991) “The Dogma that Didn’t Bark (A Fragment of a Naturalized Epistemology)” *Mind* 100 (2): 201-220  
Possible statements for essays:
  - ‘An instrumental understanding of [scientific] theories’ (Fodor p. 202) is entirely implausible.
- 4 **Conceptualisation and measurement** Jos Elkink  
John Gerring (2001) *Social science methodology: a critical framework*. Cambridge University Press, chapters 3-4.  
Possible statements for essays:
  - Social science should avoid using terms in common usage outside academia, to avoid the many connotations such terms have.
- 5 **Social constructs** Christopher Mole  
Ian Hacking (2000) Chapter 1 of *The Social Construction of What?* Harvard University Press.  
Possible statements for essays:

- Claims about ‘social construction’ are a dishonest way of passing off political opinion as scientific discovery.

### ***Probabilities and causality***

#### **6 Probabilities and propensities**

Jos Elkind

*Readings to be announced*

Possible statements for essays:

- Bertrand’s Paradox shows the notion of probability to be intellectual suspect.

#### **7 Causation and counterfactuals**

Jos Elkind & Christopher Mole

David Lewis (2000) ‘Causation as Influence’ *The Journal of Philosophy* 97 (4):182-197

Possible statements for essays:

- The notion of causation that is employed in the social sciences has nothing to do with the notion of causation employed in lower-level sciences, such as physics.

### **(Bank holiday)**

#### **8 Causal inference**

Jos Elkind

John Gerring (2001) *Social science methodology: a critical framework*. Cambridge University Press, chapters 5 and 7.

Possible statements for essays:

- Searching for causes of effects instead of effects of causes is a hopeless approach to (social) science research.

#### **9 Causation and explanation**

Christopher Mole

Wesley Salmon (with Merilee Salmon) ‘Alternative Models of Scientific Explanation’ Chapter 21 of W. Salmon *Causality and Explanation* (1998) Oxford University Press

Possible statements for essays:

- Because there are no laws of nature operating at the social level, the theories produced by social scientists are unable to explain anything.

### ***Broader perspectives***

#### **10 Complex systems**

Jos Elkind

Tamas Vicsek (2002), ‘Complexity: the bigger picture’, *Nature*, 418: 131.

Nigel Gilbert (2004), ‘Agent-based social simulation: dealing with complexity’, Centre for Research on Social Simulation, University of Surrey, Guildford, UK.

John H. Miller and Scott E. Page (2004), ‘The standing ovation problem’.

Possible statements for essays:

- Agent-based modeling leads to models that are by their nature too unrealistic to be of any value to empirical social science.
- The unpredictable nature of complex systems makes their understanding of less value to the social scientific endeavour.

## 11 **Holism and reductionism**

Christopher Mole

Jerry Fodor (1974) 'Special Sciences (or, The Disunity of Science as a Working Hypothesis)' *Synthese* 28: 97-115

R. Keith Sawyer (2001) 'Emergence in Sociology: Contemporary Philosophy of Mind and Some Implications for Sociological Theory' *The American Journal of Sociology*, 107(3): 551-585

Possible statements for essays:

- 'Reductionism' is an imprecise term that is used as by social scientists as a generic term of abuse.