

Research Design

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PRELIMINARY

Course Structure

1. Causality

1. Causes of effects and effects of causes.
2. Experiments and observational studies.
 1. Potential outcomes.
 2. DAGS.
 3. Instrumental variables.
 4. Sample selection models.

2. Measurement

1. Validity, reliability.
2. Scales and indices.
3. Item construction and question wording.

Do storks deliver human babies?



$R = 0.62, t = 3.06, p = 0.008$

Matthews, R. (2000) 'Storks deliver babies ($p=0.008$)', *Teaching Statistics*, 22, 2, 36-38.

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What is there?

(Set aside – the non human physical universe & things that don't exist in space & time e.g. real numbers.)

1. People, human beings, social actors, agents.
2. Actions, forbearances, goals, objectives.
3. Social relations/relationships:
 1. Mother, father, son, daughter, grandparent, teacher, pupil, employer, employee, friend, acquaintance, buyer, seller, patron, client.
 2. Social roles, social norms.
4. Institutions, organizations.
5. States of affairs, processes, events, dispositions.

Observable or Unobservable?

1. The thing in and of itself; what we see, hear, smell, feel, taste; measure, classify, record.
2. Some things more directly accessible than others.
3. Don't have to be directly observable to be useful:
 1. Can have observable consequences.
4. Some 'things' merely useful shorthand for collections of other things.
5. Some shorthand is metaphor.
 1. Useful/fruitful metaphor versus fruitless metaphor.

Metaphors

When for instance, we say that someone's eyes swept the horizon, the ancient model of vision as the action of antennae from the eye is preserved in our speech as a metaphor; but when we talk of light travelling our figure of speech is more than a metaphor. Consequently, when people say that to talk of light travelling in some sense reflects the nature of the world in a way in which to talk of eyes sweeping the horizon does not, they have some justification. For to say the 'Light travels' reflects the nature of reality, in a way in which 'His eyes swept the horizon' does not, is to point to the fact that the latter remains at best a metaphor. The optical theory from which it came is dead. Questions like 'What sort of broom do eyes sweep with?' and 'What are the antennae made of?' can be asked only frivolously. The former does more: it can both take its place at the heart of a fruitful theory and suggest to us further questions, many of which can be given a sense in a way in which the question suggested by 'His eyes swept the horizon' never could.

Stephen Toulmin, *The Philosophy of Science*, pp 35-36.

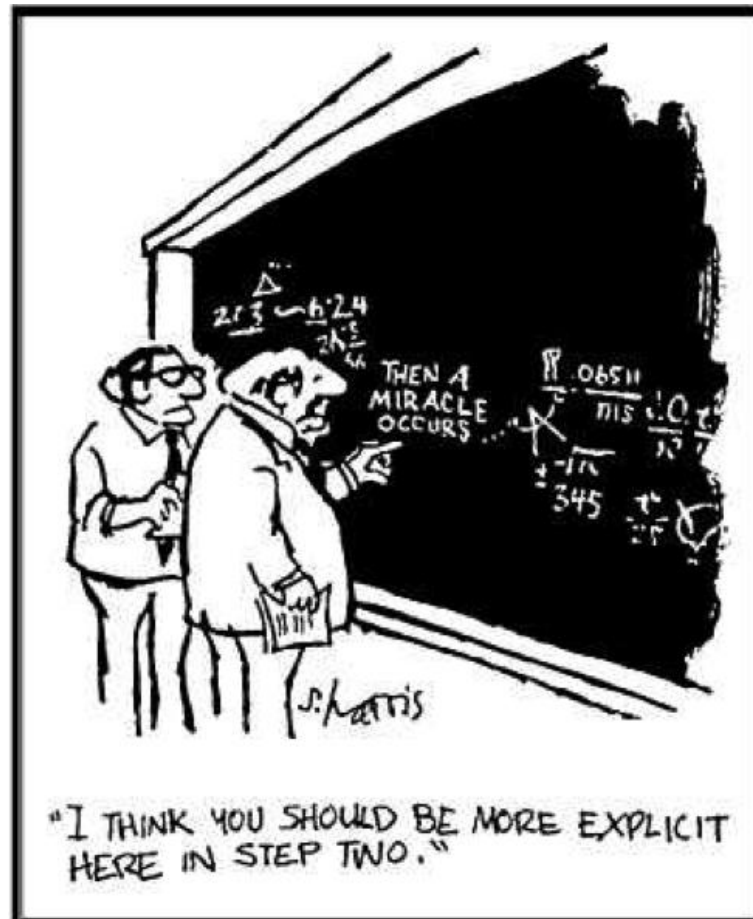
Metaphors

1. Consider Bourdieu's concept of cultural 'capital'.
2. How did she use her cultural capital as collateral for a bank loan?
Similar to: what sort of broom do eyes sweep with?
3. You can't use intangible cultural resources as security against a loan because they aren't capital in a sense that any financial institution would understand.
4. Valuable as they are to you, your cultural resources (unless they are physical objects like paintings, sculptures, opera houses) are not in themselves transferable to others.
5. Cultural 'capital' is a metaphor with nowhere to go because it doesn't, as Toulmin puts it, "take its place at the heart of a fruitful theory".
6. It is, at best, a piece of seductive rhetoric.

How do we choose our research problems?

1. Personal interest in a question.
2. Moral commitment.
3. Concern about a policy problem.
4. Meta-theory/ research programmes.
 1. Globalisation; intimacy; network society; Third-way; social capital.
 2. Puzzles, problems, inconsistencies, replications.
5. Funding opportunity.

Empirical Investigation



Empirical Investigation

1. Inductive not deductive reasoning.
 1. From particular to general.
2. Uncertainty not certainty.
3. Persuasion not proof.
4. Falsification not verification?
 1. Do we know the sun will rise tomorrow?
 2. Are all swans white?
5. Provisional not final.
6. Public not private.
 1. Has to pass the “show me” test.

Use of empirical evidence

1. Proof of existence; there is at least one case of X in the world; here is an example of X.
2. Showing, prevalence, frequency, rate, size, extent, proportion, probability in some well defined population (not necessarily finite).
3. Providing test of some sort of theoretical proposition:
 1. Confirmation – if T is true then under conditions a, b, c, d... X should be observed. Look, X is observed!
 2. Falsification – if T is true then under conditions a, b, c, d... X should never be observed (observed with very low probability). Look X has been observed!

A general template

1. Identify a puzzle/regularity that is worth explaining.
 1. Why do some ethnic minorities do less well in school than others?
2. Establish the “stylised” facts .
3. Construct explanations/models of the hypothesised mechanisms.
4. Distinguish the observable implications of the explanations/models.
5. Test the predictions of the explanations/models against observations.
6. Compare explanations/models for plausibility and fit to facts.
7. Iterate.

Causes of Cases and Causes of Incidence

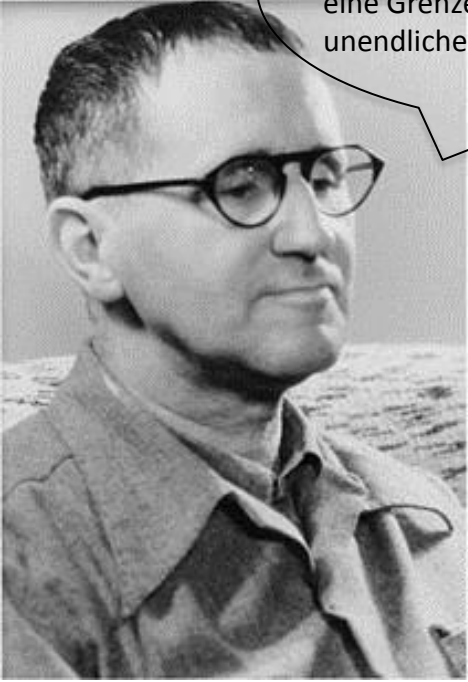
1. Importance of figuring out what you want to explain
2. Relevant causes of a disease in a single patient may be quite different from the causes of diseases incidence in the population.
3. Consider a population where everyone smoked. The most noticeable causal effects on lung-cancer are likely to be genetic factors that affect susceptibility, not smoking per se.
4. What explains differences between population means can be quite different from what explains variation around a population mean.

Inference

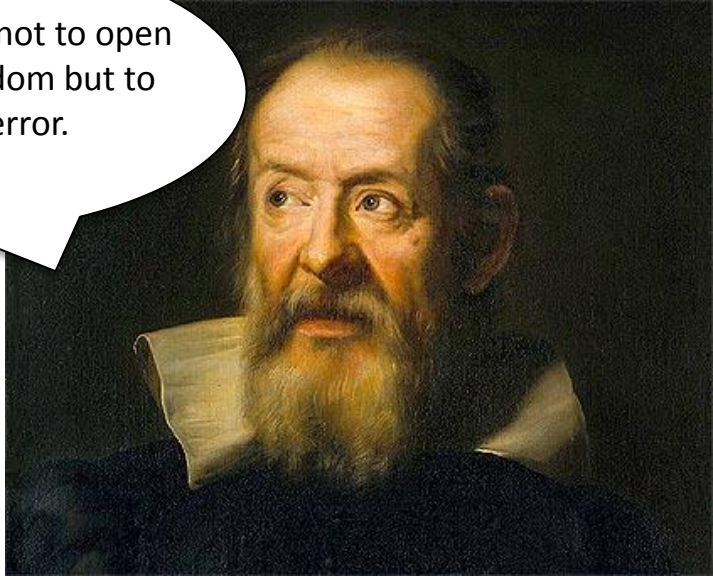
1. Several stages involve the use of **inductive inference**.
 1. Drawing conclusions about the universe of interest from evidence about just a part of that universe - estimation.
 1. Establishing the relevant facts.
 2. Comparing model predictions with the facts.
 3. Comparing the relative performance of models.

Inference

1. Inference has to be accompanied by estimates of uncertainty/degree of ignorance.



Es ist nicht ihr Ziel, der unendlichen Weisheit eine Tür zu öffnen, sondern eine Grenze zu setzen dem unendlichen Irrtum.



The aim of science is not to open a door to infinite wisdom but to set a limit to infinite error.

Types of inference - descriptive

1. What proportion of UK CEOs were paid more than £1000000 last year?
2. What proportion of organisations in the UK have recognised a trade union last year?
3. What proportion of firms in the UK fail within seven years of start up?
4. Is occupational sex segregation greater in the UK than in the US?
5. Are Japanese employees more committed to their organizations than American employees?
6. Which schools add the most value?
 1. League tables

Types of inference - causal

1. x leads (or tends to lead) to y, which under conditions (a,b,c) leads or tends to lead) to z.
2. where x, y or z are linked by some sort of causal mechanism or storyline.
 1. Firms with 'high commitment' HRM practices perform better.
 2. Incentive pay leads to more employee effort and better quality output.
3. NB different sorts of research design will have important implications for the strengths of the claims you can make about causality.

Inference and Explanation

1. What sort of explanatory mechanism you put forward is logically independent of the inferential procedure you use to test it.
 1. In as far as they are concerned with empirical issues rational choice explanations and symbolic interactionist explanations should use the same model(s) of inference.
2. The disagreement is about the explanatory mechanism not about how to establish the facts or adjudicate between rival explanations.

Implications

1. Squabbles about “qualitative” and “quantitative” approaches to social science are often misconceived.
 1. Fundamental distinction between desire to describe exhaustively a case or set of cases and a desire to use a set of cases to make an inference about a wider universe.
 2. This cuts across the qualitative/quantitative distinction.
 3. What matters for inference is how the cases are chosen.
2. Quantitative/qualitative more fruitfully seen as a strategic choice about measurement (broadly conceived) not about a philosophy of science.

Theory Construction



Theory construction

1. Theory = mechanisms that produce outputs.
2. Theory = stories about how things happen.
3. No rules for making good theories.
 1. Whatever works is best.
4. The provenance is irrelevant for the evaluation.
 1. Bath tub philosophy is as good as 3 years in the library reading *Marx's Theories of Surplus Value*.
5. Theories should have observable implications (the more the better).

Types of questions/claims I

1. Metaphysical

1. *Why are we here? Is there a purpose? Where are we going? What is The Good?*

1. Meaningless – logical positivists.
2. Nonsensical but meaningful to some language community – Wittgenstein II.
3. Unscientific – Popper.

2. Definitional

1. *Bureaucracy is best defined as...; What is the nature of...?*

1. Best for what? Proof of the pudding is in the empirical eating.
2. Must be non-contradictory.
3. Empirical consequences of a definition must be compatible with other beliefs/empirical evidence.

Types of questions/claims II

1. Non-falsifiable

1. *All history is the history of class struggle; Dreams are manifestations of unconscious desires; We live in a post-modern world.*

1. Look like empirical claims – but it is not clear that they are.
2. What would count as counter evidence?

2. Empirical but not social scientific

1. *Napoleon lost the battle of Waterloo; Napoleon's defeat was due to Blücher's intervention; Wittgenstein threatened Popper with a poker.*

1. What kind of inference is involved?
2. Does the evidence exist?

“Doable” problems

“If politics is the art of the possible, research is surely the art of the soluble...the spectacle of the scientist locked in combat with the forces of ignorance is not an inspiring one, if in the outcome, the scientist is routed.”

Peter Medawar *The Art of the Soluble*

Examples of doable problems

1. Does the establishment of quality circles in organisations increase organisational commitment?
2. Do government training programs for the unemployed increase the likelihood of getting a job?
3. Does the provision of financial aid to ex-prisoners decrease recidivism rates?
4. Does work commitment decrease with age?

Examples of problems that are probably “undoable” (in a social scientific sense)

1. What will interest rates be in 3 year time?
2. Why do revolutions happen?
3. Why was JFK shot in Dallas?

From Topic to Question: the ladder of abstraction

1. Topics
 1. Globalisation; the State; Intimacy; Identity; Social Representation; Risk; Network Society.
2. The impact of globalisation on state autonomy.
3. Has globalisation constrained the decision making powers of democratic states?
4. Is there a relationship between degree of trade openness and the quantity of state transfers in the OECD countries between 1990-2018?
5. Ceteris paribus what is the sign of the slope coefficient in the regression of state transfers as a % of GDP and \$ value of (exports+imports)/GDP?