Review and Response

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Two Quotations

- “I wasted five years of my life getting a Ph.D in philosophy.”
  - Peter Spirtes
- (Said on reading a paper by a statistician)

“No one trained in philosophy would make a mistake so stupid as that.”

  - Peter Spirtes

Philosophy of Science contributes to science…

- **Usually, nothing whatsoever**
- **Sometimes unwise injunctions**
- **Sometimes…something a bit good.**
- **Rarely….quite a lot.**

Some Philosophical and Scientific Contributions by Philosophers

- C.S. Pierce's introduction of randomized treatment assignment in experiments.
- Ramsey's development of a behavioral foundation for subjective probability and decision theory.
- The introduction of computerized heuristic search by Simon, Buchanan and others
- The introduction of Computational Learning Theory by Putnam and its development by others.
- Daniel Dennett's suggestion of the "false belief" task paradigm in cognitive psychology.
- Occasional novel results in foundations of physics.
- The Suppes-Zannoti Theorem
- Various Debunking exercises, ETC.

Philosophers Reject the Development of Philosophical Contributions to Science: Not Philosophy

- After Pierce, experimental design handed over to statistics
- After Ramsey, development of applications of subjective probability handed over to statistics
- Heuristic search routinely denounced
- Computational learning theory despised
- Follow-up on Dennett's idea left entirely to developmental psychologists
- Latent variable analysis response to Suppes-Zannoti left to psychometricians. Etc.

Why Not Separation of Labor? Philosophers Propose, Let Hacks and Sooty Empirics Do the Dirty Work

- Separated from the information and discipline of practice, philosophical commentaries and criticisms quickly become, well…often just useless.
- Separated from a broader analytical perspective, new scientific frameworks often quickly slip into blinkers, or substitute style for substance: Neyman-Pearson statistics; some contemporary Bayesian statistics.
- Example: Psychometrics failure to satisfactorily engage (until very recently) issues or reliable inference to latent structure.

Why Is Philosophy of Science So Useless?

- Defensive Retraction:
  - Philosophy of science ceded methodology to statistics and computer science
  - Eschewed mathematics (outside of baby logic, baby probability theory, and non-baby mathematical physics)
  - Reflexive, self-absorbed literature
  - The abandonment of discovery as a *goal* of philosophical inquiry.

Why Is Philosophy of Science So Useless to Science?

- Historicism
  - Promulgation of historical case studies in aid of vague developmental claims
  - Different axes to grind yield different histories
  - Little straightforward connection (save for general sensibilities) with contemporary problems

The Platonic Paradigm vs the Euclidean Paradigm

- Platonic
  - S knows that P if and only if R &S & Q
  - V is a virtue if and only if W & X & Y
- Euclidian
  - The Elements
  - Newton's Principia
  - Frege's Logic
  - Kolmogorov's Probability

The Cartesian Argument:

- Anything true must be true necessarily.
- If Philosopher X can imagine that ~p then p is not true necessarily.
- Philosopher X can imagine a chicken with lips or a factory that violates the Markov condition.

Hostility and Approximation

- Philosophical hostility to appropriations of philosophical ideas for technical projects (e.g., the history of artificial intelligence).
- Insistence on the perfect case—little interest in investigating consequences of assumptions that may only be approximately true, or have exceptions.

Bayesian Epistemology and Philosophy of Science Is

1. Evasive; Are you really willing to tell the citizens and taxpayers that the science they are funding is just about promoting agreement, not about discovering anything true or useful or about removing error?
2. Conservative: It endorses "reconstructions" of present and historical practice as normative.

Reliabilist “Reconstructions”

Relevant Evidence:

Evidence of kind E is Relevant to a discovery problem P if P can be reliably solved with E, but not without E.

Evidence of kind E is Relevant-M to a discovery problem P if method M can reliably solve P but not if E is eliminated from the data.

Reliabilist “Reconstructions”

Confirmation

Datum dk confirms H after data d1,…,dk-1, according to method M if for some possible dk+1:

M(d1,…,dk-1, dk+1)≠ H, but

M(d1, …., dk-1, dk, dk+1) = H

Relativism, Conceptual Change and Theory Laden Data

1. Uninteresting version: whatever you believe, is true. (Kuhn at lunch)
2. More interesting version: the data you receive, or experience, depends on your beliefs or on your "conceptual scheme"
    1. (Kuhn, on reflection)

- How can there be a theory of reliable inference when 2 is true?

Relativism Reconstructed

- Conceptual schemes, C = {c1…cn}
- Possible data, D = {di}i
- World-in-itself, W (ding an sich)
- Infinite sequences of members of D (streams of experience in some conceptual scheme)

  World-in-itself determines a function from

  C to sets of infinite sequences of D.
- Hypothesis H, which is true in some conceptual schemes false in others.
- A Learner, who can conjecture H or ~ H on any string of data, and who can change conceptual schemes at any time.

Relativism Reconstructed

There are many different senses of success in reliable relativism, e.g.,

The Learner eventually settles on a conceptual scheme, ci, and on H or ~H, accordingly as H or ~H is true in ci, and stays with that conjecture ever after.

The Learner never settles on a single conceptual sceme, but there comes a time in which, after each change of conceptual scheme, the Learner always conjectures H or ~H according to which is true in the new conceptual scheme.

Etc.

The K-G Theorem

There is a kind of learner that succeeds (in either sense) in every relativistic discovery problem for which any learner succeeds.

(I have long since forgotten how it works. See Kelly and Glymour, 1992.)

Some References

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