

Lecture: Some of Some Theors - Intro (Background) 20 Oct 2016

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① email list, my sprel, what to expect, what I expect;
background required (some formal logic would be useful)

② what is a theory?

- pragmatically / conceptually / practically: ^{more or less formal} structure / rel's among principles / ideas we use to construct reps of physical world and reason about (not just predictions, also characterization of 'experience' broadly construed - understanding)
- ϕ -debates:
 - linguistic / axiomatic
 - models
 - tool for inference / rep / reason
 - neo-Kantianism for possibility of knowledge

③ Why Does It Matter?

- connection w/ experiment (ultimate ground of all empirical knowledge): structures data, allows for contact of abstract principles, ideas w/ real world (possibility of development and confirmation of sci knowl), theory of measurement; reduces empirical content to those abstract principles / ideas / concepts
- ramifies into virtually every important issue in ϕ sci:
 - nature of sci reasoning
 - epist, nature of scientific knowledge, its warrant
 - confirmation
 - evidence
 - ontology / metaphysics (real vs anti-real)
 - nature / development of concepts
 - induction
 - factual vs conceptual truths, ^{the} a priori

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[transfers into all ϕ sci, cont.]

- rep in general
- role of maths in rep
- theoretical terms
- reduction of emergence
- models
- sci revs & incommensurability
- modality / c-factors
- principled understanding of nature of our general experience (Kantian sense) of physical world
- laws of nature
- causality
- and so on

④ What Is It to Give Sense / Structure of Theories?

how theories acquire empirical/cognitive content, make substantive contact w/ the world (whether real or anti-real), how articulation of structure makes that possible

- formal vs informal
- pragmatics / purposes vs metaphysics / ontology
- proper individuation, criterion of equiv
- account for development of knowledge, new theories

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(5) History

- Newton vs Leibniz/Huygens: turned on what each took a sci^c theory to possibly be
- Kant: systematic analysis of rel'n between rep^k capacities and possibility of knowledge
- Helmholtz: role of theory in measurement, how possibility thereof shapes conception of theory
- Maxwell: elaboration on Newton's view
- Peirce: pragmatic conception of theories, grounded in (st) use of modern formal logic (with topology) in analysis of theories themselves
- Hertz: role of rep
- Poincaré: conventionalism / structuralism
- Duhem: instrumentalism
- Russell / Ramsey: initiated modern debates, all largely structuralist accounts (Ramsey sentence; Russell's analysis of their's sense and perceptual sense, their rel's)
- Reichenbach: near Kant
- Log Emp: syntactic "Received" view
- Suppes, et al: "semantic" view, inspired by Tarski
- 'Munich School' (Sneed, Stegmüller): structuralism of dyn of theories

(6) Sketch Syllabus