

Philosophy 164/264

Lecture #1

Introduction & Overview

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A Bit About Me

- Recent PhD. in Philosophy of Science from the UW (visiting prof. here for next 6 months)
- My research involves the foundations of scientific inference (e.g., confirmation)
- Specifically, I'm interested in the foundations of probability & statistics (e.g., Bayesianism)
- I'm also interested in automated reasoning (using computers to reason about logic and math)
- Please call me "Branden"!

Syllabus Part I

- Instructor Information/Schedule
 - Office Location: Bulling 90, Room 92H
 - Office Phone: 725–0110
 - Office Hours: 4–6 TR, 2–4 W & by appt.
(available TWR afternoons + *some* Fridays)
 - `fitelson@facstaff.wisc.edu`
 - `philosophy.wisc.edu/fitelson`
 - Email is the best way to reach me
 - I'm *always* happy to talk (or email) philosophy!

Syllabus Part II

- Reading Materials (see syllabus for details + schedule)
 1. Skyrms' *Choice & Chance* (chs. 1, 2, 6, 8)
 2. Course Reader (almost all)
 3. Salmon's *Four Decades* (several chapters)
 4. Optional: Perhaps a couple of articles from Curd & Cover's *Philosophy of Science* collection
 5. Optional: Perhaps bits of Kukla's *Studies in Scientific Realism* (only if time permits!)
- You may want to return (or not buy in the first place) Kukla or Curd & Cover (they're on reserve in Tanner)

Syllabus Part III

- Course Web Site/Class Email List
 - philosophy.wisc.edu/fitelson/164
 - The website will be continually updated
 - Check it regularly for schedule information
 - Class roster page has student information (for those who submit information to be posted)
 - Lecture notes, paper topics, etc. posted there
 - Also, some useful and relevant links there
 - Class email list also used for announcements ...

Syllabus Part IV

- Papers, Exams, Grades, and all that ...
 - Three short papers (4K word max, 2-3K best)
 - Paper 1 (due 10/25, worth 25% of grade)
 - Paper 2 (due 11/29, worth 35% of grade)
 - Take-Home Final (due 12/14, worth 40%)
 - Emphasis on concise, precise analyses
 - Paper topics to be distributed every fortnight
 - Will discuss topics/papers with each student
 - Resubmissions of papers 1 and 2 OK (see me!)

Course Overview I

- Introductory Material
 - Skyrms' stuff on deductive inference, inductive inference, and probability theory
 - These will be our basic analytical tools
 - The literature on both confirmation and explanation presupposes these tools/methods
 - I will try to present a unified framework for thinking (abstractly) about logic & probability
 - Interpretive issues will be bracketed until later

Course Overview II

- Confirmation Theory I
 - After we've got the basic tools under our belt, we'll begin by reading about confirmation
 - Confirmation is a ternary relation between a theory, a “datum” (or data), and a context
 - Early accounts (Hempel) tried to understand confirmation in terms of *deductive* relations
 - Later accounts made use of inductive, probabilistic, and/or statistical relations

Course Overview III

- Confirmation Theory II
 - Deductive accounts faced various challenges
 - Hempel's Raven paradox
 - Goodman's Grue paradox
 - The Quine-Duhem Problem
 - Inductive accounts face their own problems
 - Problems involving relevance (for early accounts)
 - The problem of old evidence (both early and late)
 - Problems of subjectivity (prior probabilities)

Course Overview IV

- Scientific Explanation I
 - Explanation can also be seen as a relation between a theory, a “datum”, and a context
 - And, like confirmation, early accounts of explanation involved deductive relations
 - Later accounts of explanation involved inductive, statistical, and causal relations
 - Some think explanation is “pragmatic” and lacking the “objectivity” of confirmation

Course Overview V

- Scientific Explanation II
 - Others think explanation is more fundamental to “objective” science than confirmation
 - Lots of famous “test cases” for explanation
 - The flagpole case (asymmetry of explanation)
 - The Fred Fox case (relevance of explanans)
 - The syphilis/paresis case (low probability cases)
 - What role does causation play?
 - What makes an explanation a “good” one?

Course Overview VI

- Scientific Realism (time permitting)
 - Does science aim at true theories?
 - Does it aim at explanatory theories?
 - Does it aim at well-confirmed theories?
 - Are our best theories true?
 - How are explanation and confirmation *used* in the debate about scientific realism?
 - Realists typically take explanation as central; empiricists take confirmation as central

Deduction & Induction I

- Deductive Validity: Skyrms Chapter 1
 - p entails q iff $p \ \& \ \sim q$ is *impossible*
 - If p entails q then $p \ \& \ r$ entails q
 - $p \ \& \ \sim p$ entails q
 - q entails $p \ \vee \ \sim p$
 - If p entails q and q entails r , then p entails r
 - The argument $p \ \therefore \ q$ is *valid* iff p entails q

Deduction & Induction II

- Inductive Strength: Skyrms Chapter 2
 - Analogously, why not say the argument $p \therefore q$ is inductively strong iff $p \ \& \ \sim q$ is *improbable*?
 - Skyrms (chapter 2) says “NO!”
 - Two of my paper topics for this fortnight involve Skyrms’ argument for this denial
 - The key distinction here is between conditional and unconditional probability

Deduction & Induction III

- Probability Calculus: Skyrms Chapter 6
 - We all know propositional logic pretty well (!)
 - Probability calculus is almost as easy
 - I will present a unified framework for thinking about deductive and probabilistic relations
 - That is, I'm jumping to chapter 6 of Skyrms, before I talk about chapter 2 of Skyrms
 - So, this brings us to probability calculus ...