CH. 5 CAUSATION, INEXACT LAWS, AND STATISTICAL PROBABILITIES

KINO

D-N MODEL VS PRAGMATIC EXPLANATION

D-N Model

Explanation of event E is an argument about why E occurs:

1. Law about E
2. Why the law applies here

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3. Therefore, E occurs

Pragmatic theory of explanation

- "Why did E occur (as opposed to F)?"
- "because … [may include laws]."

- "Why did E occur (as opposed to G)?"
- "because … [differs from above]."

CAUSAL EXPLANATION

- Aristotle's 4 causes: material, formal, efficient, final
  - Re.: Max Hocutt, 1974, "Aristotle's Four Because", *Philosophy*, vol 49 (190)
- Efficient cause
  - Newton: force being transferred from one object to the next through contact.
  - By the way: "force" is a concept from Alchemy
  - "Mechanical philosophy": force is transmitted through contact. Descartes was a strong advocate of this and so got into nasty fights with Newton about force (action) at a distance.
- Final cause: "why did you get up?" "Because I want to go for a walk."

PROBLEMS WITH CAUSATION

1. Where is the source of causal "necessity"?
   - Kino: I think this criticism is unfair because the causation/correlation distinction is a modal distinction, so if you want to talk about causation of course you run into problems of modality.
2. The cause alone is not sufficient for the effect.
   - Kino: I *believe* (60% sure?) this is one of the reasons for Carnap's "semantic turn"

WOODWARD'S INTERVENTIONIST ACCOUNT OF CAUSATION

- C causes E just in case a change in C will lead to a change in E.
- Features:
  - Does not refer to laws.
  - Is not symmetric in problematic ways.
- Other features
  - Committed to counterfactual knowledge.
  - Is non-reductive: causal claims are not reducible to non-causal claims.
  - (Bottom of page 79) I have no idea what the authors are trying to say.

CETERIS PARIBUS LAWS

- "*Ceteris Paribus*": "all else being equal"
- Nancy Cartwright: ceteris paribus laws are not laws, because they are not general in the ways we think laws should be.
- Problem: ceteris paribus laws are not testable/falsifiable.

STATISTICAL LAWS

- Canonical example: smoking causes lung cancer, but not all smokers get lung cancer. Instead, smoking drastically increases the probability of getting lung cancer.
- (bottom of p.83) I don't understand what they're trying to say about background knowledge limitations.
- Re second law of thermodynamics: I'm pretty sure the second law is not probabilistic, it says "entropy always increases". Statistical mechanics has tried to give a probabilistic gloss of it, but my understanding is that one problem with statistical mechanics is precisely people didn't like the probabilistic version of the 2nd law.

"OBJECTIVE PROBABILITY"

- I don't know of any theory of probability that would "relativizes causal claims to our knowledge of background conditions" (p.83) except maybe extremely radical subjective Bayesian.
- The comments about "for each person, probability of them getting cancer is 1 or 0" seems to be a reference to the reference class problem of frequentism, which is an objective probability.
- Also, no one believes in propensity theory nowadays..

THEORIES OF PROBABILITY

- "Objective" theories
  - Frequentism – a major problem is the reference class problem (introduced by Reichenbach)
  - Propensity theory – problems: "propensities" are like "dormative virtues" (Sober), it's unclear where they're coming from. Also, it's unclear why they would obey the axioms of probability.
- "Subjective" theories
  - Subjective Bayesian: it's called "subjective" but doesn't have to be individualistic. It can be based on "all possible information". "Subjective" only refers to the fact that there's no restriction on prior.
  - Objective Bayesian: differs only in that it claims there are better/worse priors.

DISPOSITIONS

- The book claims: dispositional claims must rely on laws about the microstructures of objects.
- In fact:
  - Option 1: dispositions are "brute facts".
  - Option 2: dispositions are caused by microstructures but not in a law-like way.

UNIFICATIONIST ACCOUNT OF EXPLANATION

- (Philip Kitcher) An argument pattern is an ordered triple consisting of a schematic argument, a set of sets of filling instructions, one for each term of the schematic argument, and a classification of the schematic argument.
  - A schematic sentence is a sentence in which some of the nonlogical vocabulary has been replaced by dummy letters. E.g., "For all A, if A is B under C, then A is D." Schematic arguments are sequences of schematic sentences.
  - Filling instructions are directions that specify how to fill in the dummy letters in schematic sentences.
  - Classifications describe which sentences in schematic arguments are premises and conclusions and what rules of inference are used.
- Kitcher: unification = fewer patterns + many explanatory instances.

UNIFICATIONIST ACCOUNT OF EXPLANATION

- Like D-N, this is a distinctively non-causal account of explanation.
- Kitcher is convinced by Hume's skepticism over causation and so talks only about "causal claims". He thinks causal claims derive from explanatory claims.
- Problem with unificationism: how it gets some examples right seems to be by luck rather than by principle.
  - Flagpole explains shadow rather than vice versa because shadowless poles can only be accounted for by pole-to-shadow schema rather than shadow-to-pole schema.