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Natural-born determinists – causal judgment in a probabilistic world

1) Introduction

Central claim: our judgments of causation are essentially deterministic.

Arguments why:

- this yields new solutions to standard probabilistic problem cases
- … while avoiding the need to claim that the *world* is deterministic
- … and also embracing the ubiquity of probabilistic causal claims in science

Operationalization: when judging causation, the relevant probabilities are *ex post*.
I.e. p(E) must be evaluated when **E** occurs (or would have occurred), not when C does.
Let:

- C and E be actual events
- $p_C(E)$ = the chance of E occurring in the actual world
- $p_{\sim C}(E)$ = the chance of E occurring in the nearest ~C-world

This paper's proposal: **C causes E iff *ex post* $p_C(E) > $ *ex post* $p_{\sim C}(E)$**
Typically, this ex post formula yields 1, 0 or -1 – thus 'natural-born determinists'

2) Initial illustration: Indeterministic Bomb

An atom is placed in a box (C). It will decay with probability 0.5, in which case a bomb will explode (E). Suppose both C and E do indeed occur, i.e. the atom does decay.

Ex ante: $p_C(E) - p_{\sim C}(E) = 0.5 - 0 = 0.5$
Ex post: $p_C(E) - p_{\sim C}(E) = 1 - 0 = 1$

Ex post yields a no-cause result if atom does not decay, and 1 rather than 0.5 if it does.

3) Chance-lowering cause: Golf Ball

A golfer slices her chip way to the right (C), but by good fortune her ball hits a tree and deflects into the hole (E). C causes E.

Ex ante: $p_C(E) - p_{\sim C}(E) = 0.001 - 0.05$ (say) < 0
Ex post: $p_C(E) - p_{\sim C}(E) = 1 - 0.05 > 0$

4) Chance-raising non-cause: Two Bullets

Gunman 1 fires at a bottle. Simultaneously, so does Gunman 2 (C). Each bullet has an independent probability 0.5 of hitting the bottle (E). Suppose that, in fact, the first gunman's bullet hits the bottle, but the second's one flies wide. So C is not a cause of E.

Ex ante: $p_C(E) - p_{\sim C}(E) = 0.75 - 0.5 > 0$
Ex post: $p_C(E) - p_{\sim C}(E) = 1 - 1 = 0$

5) Type and epistemic probabilities
-- *type* probabilities are ex ante, and central to science and prediction
-- for $p_{\sim C}(E)$, we were forced to go ex ante in Golf Ball but not in Two Bullets
-- the difference: information, i.e. the constraint is *epistemic*

Lesson: causation is perceived to be all-or-nothing.
Natural thought: probabilistic judgments of it (as with type and ex ante) are merely symptoms of epistemic uncertainty regarding a deterministic fact.

Notes:
1) The claim here is only that causal judgment is deterministic, not that the world is
2) Temporal extrinsicness: whether C is a cause may only be revealed *after* C occurs
3) Our account is reconciled with the ubiquity and usefulness of type probabilities.
'Smoking causes cancer' = (elliptically) 'smoking *sometimes* causes cancer.'

6) A problem for (some) realists about probabilistic causation
Do we perceive causation directly? No – Hume et al. Yes – Anscombe et al.
According to the latter view, our causal perception justifies causal realism since general theoretical considerations are insufficient for rejecting those perceptions as illusory.

But now: we perceive causation only deterministically.
So by parallel reasoning, i.e. that privileging perception over general theory, should this not argue against realism regarding *probabilistic* causation?

7) Causation versus causal judgment
If this paper's view is right, it seems we are left with two options:

1) While indeterministic processes may well exist in nature, nevertheless *causation* remains a strictly deterministic affair. Properly speaking, probabilistic causation does not exist; rather, it is always merely an illusory symptom of epistemic uncertainty.
   -- for classical Humeans
2) Only our causal *judgment* is essentially deterministic, not causation itself. The two diverge radically in probabilistic environments, and hence typical philosophical examples are useless as test cases.
   -- other positions need a philosophical methodology not based on thought-examples, e.g. maybe one based instead on analysis of scientific practice