

Summary

The Insignificance of Manipulation

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Bayesian Nets

Much of Woodward's apparatus comes from the 'Bayesian Nets' tradition. This is inspired by econometric/sociometric/epidemiological . . . techniques for inferring causes from correlations.

Suppose private schooling (A), good exam results (B), and parental aspirations (C) are all correlated. Which causes which? Well, if C 'screens off' the A-B correlation, then it looks as if C is the common cause and A doesn't cause B.

(Why is it called 'Bayesian Nets'?? It's nothing to do with subjective probabilities or Bayesian statistical inference.)

I want to show that Jim Woodward's account of causation is not a manipulability theory, whatever its other virtues.

(Of course, we can all agree that causation is needed for manipulation—ie an action producing a desired result. But so is causation needed for earthquakes—ie plate friction producing surface movements. On its own, the truism that causation is involved in manipulation no more illuminates causation than any other truism about a special case of causation.)

A Reduction of Causation?

I don't see why this doesn't offer a reduction of causation. After all, it is agreed on all sides that, given rich enough correlational structures, the standard assumptions (the Causal Markov Condition) behind Bayesian Net reasoning will determine a unique causal structure.

If you want an explicit reduction, Dan Hausman offers a neat one:

A causes B iff A is correlated with B and everything correlated with A is correlated with B and something correlated with B is independent of A.

Reductive Doubts

Why is nobody (incl Woodward) interested in this reduction? Partly because because this stuff is all done by methodologists, and in practice no empirical study ever starts with correlations alone. Plus there are questions about the status of the 'correlations' in the reductive base.

Anyway, this strikes me as just as good a candidate for a 'third arrow' as any other.

Untangling Causal Influences

Even after we have a causal graph, does it tell us 'how much' A causes B? (How much difference do private schools (A) make to exam results (B) if aspirations (C) also influence them?)

To answer this, we need to switch to a different structure, one in which A is independent of B's other causes, but all the rest of the causal structure remains the same.

Passive Trees

Woodward clearly isn't thinking in third arrow terms. 'If we had been unable to manipulate nature-- . . . intelligent trees capable only of passive observation—then it is a reasonable conjecture that we would never have developed the notions of causation and explanation . . .' p 11.

But the Bayesian Net techniques imply that there would be manifest temporal asymmetries for the trees to observe.

Untangling Causal Influences

This will tell us how far variation in B is due to variation in A itself, as opposed to variation in other causes associated in A.

IE we can compare

$$P_A(B) = P(B/CA)P(C) + P(B/-CA)P(-C)$$

with $P(B)$ rather than

$$P(B/A) = P(B/CA)P(C/A) + P(B/-CA)P(-C/A)$$

The latter overinflates A's influence on B because of A's association with the other cause C.

Woodward on Causation

Woodward starts with the causal graphs, not correlational ones. But he does make something of the 'disentangling' aspect of the correlational structure.

He thinks of it in terms of an 'intervention'. This is any way of producing A which decorrelates A from the other causes of B.

Given this, he can then say:

A causes B iff there are interventions on A which leave us with a correlation between A and B.

Causal Correlations and Action

Moreover Woodward sees further virtues in his definition.

It shows that causal relationships are invariant, in the sense that they are the kind of correlations that don't disappear when we act. Here they contrast with 'spurious' correlations, which dissolve away when we try to act on them, so to speak. This makes these correlations good for acting on.

Woodward on Causation

Why does Woodward bother with this, given that in general he simply takes causal graphs as given? (Why not just see if there is a directed path from A to B?)

Well, his definition does have the virtue of a partial reduction—it doesn't specify that A causes B on the r.h.s.

Invariant Correlations

“ . . . the [spurious] correlation between I and L will not be stable or invariant under efforts to use I to control L” 32

“the distinction between information about correlations and information about relationships that will support manipulations . . .” 34

The Basic Objection

So Woodward thinks that we can identify causal connections with those correlations that are good to base our decisions on, because they remain in place when we are acting, as opposed to merely observing patterns.

This would be a very illuminating account of causation if it were true. Not only would it distinguish causes, it would also explain why they are good to act on.

But unfortunately it isn't true.

Woodward's Admission

Woodward is aware of this point

“To be sure, free actions often do have, or can be made to have, the characteristics IN [of an intervention], but the fact that they are free doesn't guarantee that this is so” 127

but seems to think it doesn't matter.

Actions are not Interventions

The basic point is that actions aren't interventions. Of course, in a sense they are. But not in the technical sense that Woodward takes from the Bayesian Net literature—namely, interventions as events that are decorrelated from the other causes of the relevant effects.

Think of all the parents who decide whether or not to send their children to private schools. These decisions clearly aren't independent of the other causes, eg aspirations. Nor are the motives behind the decisions, nor anything else obvious.

No Connection with Action

However, this admission undermines his claim that causes are those correlations that are invariant with respect to action. Not so. Plenty of spurious correlations are invariant in this sense. If he insists that causes are those correlations that remain when we act, he'll get the wrong connections.

And if he says that causes are those correlations that remain with respect to interventions, then this has nothing to do with action, and is just part of the relation between causes and correlations.

Evidential Decision Theory

Let's compare Woodward with people who are serious about showing that actions are 'interventions'--evidential decision theorists.

Remember how it goes. Evidentialists want to say do A in pursuit of B just in case $P(B/A) > P(B)$.

Spurious causation is then a problem.

Reference Classes and Tickers

But evidentialists try to deal with the spurious correlations in a different way.

They argue that we're looking at the wrong reference classes to find the probabilities appropriate to rational decisions, and that when we identify the right classes any remaining 'raw' $P(B/A)$ correlations will be non-spurious.

Thus 'tickle defences' etc—given that you can identify yourself as someone with high aspirations, you should look at the school-exam correlation among people like you.

Causal Decision Theory

Causalists take the obvious line that we should look at the 'corrected' probability

$$P_A(B) = P(B/CA)P(C) + P(B/-CA)P(-C)$$

rather than the 'spurious'

$$P(B/A) = P(B/CA)P(C/A) + P(B/-CA)P(-C/A)$$

Is Total Knowledge Enough?

So far that's reasonable enough—it's clearly right that we should act on the correlations in the reference class defined by our total knowledge of ourselves (Beebe and Papineau).

Even so, it is not obvious, to say the least, that total knowledge is enough to ensure that all correlations are non-spurious.

Why do evidentialists take on the challenge of showing this, given the availability of the natural causalist account of rational action?

Explaining why Causes are Good to Act on

Not, surely, because causation is too suspicious a notion to feature in an account of rationality . . .

A better motivation is that, if evidentialism is successful, then we can explain why causes are good to act on—causal connections are precisely those act-result correlations that are present among people like you, and to that extent the probability of B really will go up if you decide to do A.

Cf Woodward

This is just what Woodward was aiming for, except that as we saw he doesn't really make any effort to show causal connections coincide with act-result correlations (as opposed to intervention-result correlations) – and in fact they don't.

Note how the evidentialists are implicitly arguing that decisions are 'interventions', at least in the reference class of people of the kind you know yourself to be.

Actions are 'Interventions'

If raw correlations $P(A/B)$ are non-spurious, IE equal to $P_A(B)$, then it must be that A is independent of the other causes of B.

Compare

$$P(B/CA)P(C) + P(B/-CA)P(-C) \text{ with} \\ P(B/CA)P(C/A) + P(B/-CA)P(-C/A)$$

These will be equal iff $P(C) = P(C/A)$ —IE if A is independent of the other causes of B.

Evidentialism Doubtful

Actually, I don't think the evidentialist programme goes through—I don't think that there are enough tickles etc for actions always to be independent of other causes, even in reference classes defined by what you know about yourself.

So I don't think that we can equate causes with the correlations that remain in such reference classes (and thereby explain why it is good to act on causes).

Woodward not an Agency Theory

Still, I don't need to establish that here.

For present purposes, it is enough to observe that Woodward doesn't even try to show that causal connections coincide with action-result correlations, and so does nothing to explain causal connections in terms of actions. (All his notion of 'intervention' does is make certain aspects of causal structure salient.)