Morgenbesser's coin, counterfactuals and independence

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In assessing counterfactuals, should we consider circumstances which match the actual circumstances in all probablistically independent fact or all causally independent fact? Jonathan Schaffer argues the latter and claims that the former approach, advanced by me, cannot deal with the case of Morgenbesser's coin. More generally, he argues that, where there is a difference between the two, his account yields our intuitive verdicts about the truth of counterfactuals where mine does not (Schaffer 2004: 307, n. 16). In this brief note, I explain how my approach deals with the case of Morgenbesser's coin and argue that the situation is, in fact, the reverse. To keep things brief, I rely upon Schaffer's paper for general explanation of the context of our debate.

In Morgenbesser's case, the world is indeterministic, Lucky bets heads when the coin is in mid-air, the coin comes up tails and we are invited to consider the following intuitively true counterfactual.

(1)   If Lucky had bet tails, he would have won.

My suggestion was that we should bring forward facts which are probabilistically independent of the antecedent. Schaffer objects that while I am right that the outcome of the flip – tails – is probabilistically independent of Lucky betting, so is the outcome of the bet. It is 50-50 whether Lucky wins or loses (Schaffer 2004: 307). Let's see whether that's right. I substitute this case into the definition I gave of probabilistic independence.

(PD1)   If Lucky had bet tails, it would be the case that at t, p(Lucky won) is generally around x.

(PD2)   If Lucky had not bet tails, it would be the case that at t, p(Lucky won) is generally around y.

(PD3)   For any time of assessment t, $x = y$.

Schaffer assumes that if Lucky had not bet tails he would have bet heads rather than not betting at all. Since not betting at all is one way that Lucky may not bet heads, it is not true that y would generally have the value 0.5. Moreover, since the coin coming up tails is one of the facts that one must bring across, since it is probabilistically independent by anybody's lights, then Lucky's winning is no longer probabilistically independent of Lucky's betting. p(Lucky won) in circumstances in which the coin turned up tails is 1, p(Lucky losing) is 0. I was quite explicit in my original article

that this must be taken into account. I wrote 'As before, we would begin by taking these counterfactuals to be assessed by Lewis's similarity weighting and reiterate this procedure for the *preliminary* judgements concerning what is probabilistically independent' (Noordhof 2004: 193).

Schaffer appeals to the idea of facts causally independent of whether or not the antecedent holds (Schaffer 2004: 305). I take it that this idea is to be understood as follows. Schaffer's phrasing is a little inexplicit. He writes:

> if outcome o causally depends upon p or $\sim p$, then o should be expected to vary with p or $\sim p$. (Schaffer 2004: 305)

I take it that the thought is

> Y is causally dependent on X iff (i) if X, X would cause Y and (ii) if not-X, then not-X would cause not-Y.
> Y is causally independent on X iff neither (i) nor (ii).

Let X and Y be facts. You might think it problematic to talk of not-X being a cause of not-Y, but, since Schaffer talks of causal independence of antecedents some of which are negative, this is his assumption, not mine. If the negative clause is dropped it is even easier to construct the kind of counter-examples I detail below. I gave one in the original paper. Similarly if causal independence is just taken to be the denial of causal dependence.

The difficulty for Shaffer's proposal concerns indeterministic cases. Here is one case adapted for Schaffer's account of causal dependence from the case I gave in the original paper. Suppose that Fred takes his hat 90% of the time when it rains but only 50% when the weather is fine. He takes his hat and it is raining. Now consider

> (2) If it had not been raining, he would have taken his hat.

Intuitively this counterfactual is false. Can Schaffer obtain this verdict? Suppose that, as things turned out, the causal chain from its raining to Fred taking his hat did not complete. In fact, Fred just took his hat anyway. Although Fred was oblivious to the rain, he might not have been oblivious to its not raining. There is a chance that he notices that and, if he does, then he may decide not to take his hat. Clause (i) of the account of causal dependence is not satisfied because the fact of its raining did not cause him to take his hat. Clause (ii) of the account of causal dependence is not satisfied because, even though he might have noticed that it wasn't raining, he might not and hence it is not the case that its not raining *would have caused him* not to take his hat. Thus Schaffer must conclude that (2) is true. By contrast, quite independently of whether causation in fact took place, the consequent is not probabilistically independent of the anteced-

ent, as the statistics quoted at the outset of the case reveal. Hence, my account proclaims it should not be brought across, and hence (2) is false.

The problem infects Schaffer's resolution of one of the cases he considers. Nixon does not press the nuclear button and no nuclear holocaust occurs. Consider

(3) If Nixon had pressed the button, there might have been a nuclear holocaust.
(4) If Nixon had pressed the button, there would not have been a nuclear holocaust.

Intuitively, (3) is true and (4) is false. Can Schaffer obtain these verdicts? Suppose that as things happened, there had been a small spontaneous power surge in the wire which would have caused the firing of the nuclear warheads if it had not then fizzled out. I take it that, in those circumstances, Nixon's failure to push the button was not a cause of there being no nuclear holocaust. Hence clause (ii) of the account of causal dependence is not satisfied. Since the wire is indeterministic, it is not the case that, if Nixon had pressed the button, he would have caused a nuclear holocaust. The signal might have fizzled out. Hence clause (i) of the account is not satisfied. Thus Schaffer must conclude that (3) is false and (4) is true. Once more, my proposal in terms of probabilistic independence has no difficulty with this case. There being a nuclear holocaust is not probabilistically independent of pressing the button because, although the signal may fizzle out, there will be a time or times at which Nixon's pressing of the button raised the chance of the nuclear holocaust.

I conclude that, where Schaffer's account diverges from my own, our linguistic intuitions track probabilistic independence. Moreover, my account is not burdened with relying upon causal relations between negative facts.[1]

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References

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