

# PHILOSOPHY 4360/5360 – METAPHYSICS

## Handout

### Topic XI. Causation: Realist Versus Reductionist Views

#### Jonathan Schaffer: An Underdetermination Argument for Causal Realism

In his article “Causation and Laws of Nature”<sup>1</sup>, Jonathan Schaffer sets out arguments for and against certain reductionist claims concerning causation. One of the reductionist claims that he considers is the following:

**R3** Causation reduces to history plus laws.

Schaffer surveys three arguments for and against R3. With regard to the arguments against R3, the third argument that Schaffer considers – and the one that he thinks is the most important – is what I refer to as an “underdetermination” argument.

“The third main argument in the literature against R3 is that it is possible for worlds to differ in causation without differing in history or laws. To my mind this is the most serious argument against causal reduction.” (88)

Schaffer formulates this argument as follows:

“The argument from *causal differences* might be formulated as follows:

- (7) There are worlds that differ in causation without differing in history or laws.
- (8) If there are worlds that differ in causation without differing in history or laws, then causation does not reduce to history plus laws.
- (9) Causation does not reduce to history plus laws.” (88)

Schaffer illustrates this argument with a case where two wizards, Merlin and Morgana, each cast the same spell, of a type where spells of that sort have a 50% chance of success. If the change in question occurs, aren't there the following, three different possibilities, concerning what happened?

- (1) Merlin's spell caused the change, and Morgana's did not.
- (2) Morgana's spell caused the change, and Merlin's did not.
- (3) The change was causally overdetermined, since it was caused by Merlin's spell and also caused by Morgana's spell.

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<sup>1</sup> “Causation and Laws of Nature”, in *Contemporary Debates in Metaphysics*, edited by Theodore Sider, John Hawthorne, and Dean W. Zimmerman (Oxford, Blackwell Publishing, 2008): 82-107.

Schaffer's response to this argument is to accept (8) but reject (7):

"What I would deny is (7). Why believe that there are genuinely distinct possibilities here? To my mind there is only the one possibility (the one in which Merlin and Morgana both cast spells, and the prince transforms), confusingly described in three different ways. For in what respect are the alleged possibilities said to differ. The alleged causal difference seems to float on nothing – it seems a verbal difference without any genuine ontological difference." (89)

### Comments

1. Suppose that it is possible to offer a non-reductionist analysis of the concept of causation, and that given that analysis, each of statements (1), (2), and (3) is compatible with the relevant history and causal laws. Then since (1), (2), and (3) are all mutually incompatible statements, the difference in question cannot, when the concept of causation is thus analyzed, be "a verbal difference without any genuine ontological difference."
2. So Schaffer is in effect assuming at this point that it is not possible to give a non-reductionist analysis of the concept of causation, according to which each of statements (1), (2), and (3) is compatible with the relevant history and causal laws.
3. Schaffer no reason at all for thinking that it is impossible to offer such an analysis.
4. Nor does he even criticize any analysis of that sort that has been offered.

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Schaffer acknowledges, in footnote 21, that one can change the case so that the precise nature of the effect depends upon how many spells are cast. One might suppose, in particular, that things are as follows:

L<sub>1</sub>: When **one** spell of type S is cast, if that causally brings about an effect of type E, effect E does **not** involve property P.

L<sub>2</sub>: When **two** spells of type S are cast, if only one of the spells was causally efficacious, that causally brings about an effect of type E that does **not** involve property P, whereas if both spells are causally efficacious, so that the effect of type E is **causally overdetermined**, then effect E **does** involve property P.

Suppose then that Merlin and Morgana both cast spells, that effect E takes place, but that the effect does not involve property P. Then, by hypothesis, the effect was not overdetermined. So which caused the effect? Was it Merlin's spell or Morgana's spell?

Schaffer's response to this modified case is as follows:

"In such a case I would answer that one of the spells caused the prince to transform, though it is ontologically indeterminate as to which. In some cases there is simply no fact of the matter. That is OK. Fundamental reality remains perfectly determinate."

### Comments

1. Schaffer's response is thus that
  - (1) Either Merlin's spell caused the effect or Morgana's spell caused the effect.
  - (2) It is not ontologically determinate that Merlin's spell caused the effect, and it is not ontologically determinate that Morgana's spell caused the effect.

But surely the following things are the case:

(3) If it is true that Merlin's spell caused the effect, then it is not ontologically indeterminate that that Merlin's spell caused the effect.

(4) If it is true that Morgana's spell caused the effect, then it is not ontologically indeterminate that that Morgana's spell caused the effect.

But then (2) together with (3) and (4) give us

(5) It is not true that Merlin's spell caused the effect, and it is not true that Morgana's spell caused the effect.

But (1) and (5) are logically incompatible.

2. So what Schaffer describes as "OK" is in fact logically disastrous.

3. Schaffer should have considered a **very different response to the modified case**, namely, that

(2\*) When two or more spells of type S are cast, that causally brings it about that there is an occurrence of an effect of type E, which **sometimes does, and sometimes does not, involve property P**.

4. But that response can also be seen to be problematic. The simplest way of doing so is by returning to the original, unmodified case. There Schaffer's suggestion was, in effect, that while the non-reductionist was claiming that there was, in the Merlin and Morgana case, a **single** causal law – something along the lines of:

$L_0$ : When **a** spell of type S is cast, if that spell is causally efficacious, it causally brings about an effect of type E.

– the reductionist could instead postulate two causal laws:

$L_1$ : When **one** spell of type S is cast, if that spell is causally efficacious, it causally brings about an effect of type E.

$L_2$ : When **two or more** spells of type S are cast, if that is causally efficacious, it causally brings about an effect of type E, where the effect of type E is causally overdetermined.

But recall that in the original case, the causal law was **probabilistic**, and none of  $L_0$ ,  $L_1$ , or  $L_2$  specifies the relevant probabilities. What the non-reductionist (primitivist) will say is that there is a single, probabilistic law of the form:

$L_p$ : When a spell of type S is cast, there is a probability of 0.5 that an effect of type E will be brought about by **that** spell.

The non-reductionist will then say that when two spells are cast, there will be a **derived law** to the effect that

$L_p^2$ : When **two** spells of type S is cast, there is a probability of 0.75 that an effect of type E will be brought about by one or other of those two spells.

Similarly, the non-reductionist will say that when three spells are cast, there will be a **derived law** to the effect that

<sup>3</sup>  
 $L_p$ : When **three** spells of type S is cast, there is a probability of 0.875 that an effect of type E will be brought about by one or other of those three spells.

In general, the non-reductionist will say that when  $n$  spells are cast, there will be a **derived law** to the effect that

$L_p^n$ : When  $n$  spells of type S is cast, there is a probability of  $\left(1 - \frac{1}{2^n}\right)$  that an effect of type E will be brought about by one or other of those  $n$  spells.

The reductionist, by contrast, cannot make do with a single basic causal law in this case. The reductionist must, instead, postulate an **infinite** number of **basic** causal laws:

<sup>1</sup>  
 $R_p$ : When a **single** spell of type S is cast, there is a probability of 0.5 that an effect of type E will be brought about by **that** spell.

<sup>2</sup>  
 $R_p$ : When **two** spells of type S is cast, there is a probability of 0.75 that an effect of type E will be brought about by the conjunction of those two spells.

<sup>3</sup>  
 $R_p$ : When **three** spells of type S is cast, there is a probability of 0.875 that an effect of type E will be brought about by the conjunction of those three spells.

In general, the reductionist must say that, for any value of  $n$ , there is a **basic law** to the effect that

$R_p^n$ : When  $n$  spells of type S is cast, there is a probability of  $\left(1 - \frac{1}{2^n}\right)$  that an effect of type E will be brought about by the conjunction of those  $n$  spells.

The upshot is this. In the situation envisaged, the non-reductionist can explain everything, including the dependence of the probability of an effect of type E upon the number,  $n$ , of spells that are cast, in terms of a **single, basic** causal law. By contrast, the reductionist is forced to postulate an **infinite** number of **basic** causal laws. Moreover, the reductionist can offer no explanation of the fact that in each of that infinite set of laws, the probability of an effect of type E occurring when exactly  $n$  spells have been case is equal to  $\left(1 - \frac{1}{2^n}\right)$ . The reductionist must view that as simply an extraordinary cosmic accident.

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