Probabilistic theories and levels of causality

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Levels of causality

Generic causality : relation between properties, e.g. being exposed to asbestos and developing cancer.

Singular causality : relation between possessions of properties, e.g. Pete's being regularly exposed to asbestos at work and his developing lung cancer.

Question 1 : How do levels of causality relate ?

Probabilistic theories of causality

Seminal idea : A cause may be characterized by its making its effects more probable.

Refined idea (roughly) : A cause may be characterized by its making its effects more probable once the independent causes of these effects have been taken into account.

Question 2 : Can causality be given a probabilistic analysis (both at the generic level and at the singular level) ?

My question

In general : How do answers to question 1 and answers to question 2 relate ?

More precisely :

- ▶ 2 basic conceptions : Generalization and the Humean conception (HC).
- ▶ one appealing position (**P**) : generic causality, but not singular causality, can be given a probabilistic analysis.

Claim : **P** is not compatible with any of the basic conceptions of the relationship between levels of causality.

The talk

Aim : To show that, assuming HC, singular causality can be given a probabilistic analysis if generic causality can.

Outline :

1. focus on a special case that, arguably, is particularly tough for my claim

2. construct a general argument.

Last preliminary remark

Assumptions :

- ► Generic causality between properties *as typically possessed by one and the same individual*.
- ► Singular causality between possessions of properties *by one and the same individual*.

Arguably harmless.

1. Particular case

Presentation of the case

The scenario : Holmes, Moriarty, and Watson.

Status : Very often described as a case involving a singular cause-effect relation that cannot be given a probabilistic analysis.

Claim : this description is untenable under HC + a probabilistic analysis of generic causality.

Question : what does this description presuppose ?

A singular cause-effect relation

Assuming HC, this description requires to consider Watson's act as a possession of a property *C* and Holmes's death as a possession of a property *E* with *C* generically causing *E*.

Natural reading :

- *C* : standing down a cliff from the top of which a boulder is pushed
- *E* : being dead.

Probability-lowering

This description requires that one takes into account

- the fact that the boulder is pushed *by a friend of Holmes*.
- the presence of an enemy of Holmes at the top of the cliff.

Watson's act has to be considered as a possession of property :

C' : standing down a cliff from the top of which a boulder is pushed by a friend

Further analysis

As a possession of C by Holmes, Watson's act raises the probability of Holmes's death.

As a possession of C' by Holmes, Watson's act does not cause Holmes's death :

- Let :
  C'' : standing down a cliff from the top of which an enemy stands near a loose boulder.
- C'' is a cause of E that is not caused by C'
- Hence, under a probabilistic analysis, C' is not a generic cause of E.

Conclusion on the particular case

Watson's act as a possession of	singular cause-effect relation	probability-lowering
C	yes	no
C'	no	yes

Assuming a uniform description (+ HC and a probabilistic theory of generic causality), the case is *not* one of singular causality that cannot be given a probabilistic analysis.

2. General argument

Two coherence requirements

To refer to properties not only when defining the *relata* of singular causality, but also when evaluating the probability of these *relata*.

To tackle the question of the causality / probability relationship for ordered pairs of properties that are *identical* on both sides.

The point

Assuming HC + the coherence requirements, the causality / probability relationship that holds at the generic level also holds at the singular level.

In particular : if generic causes raise the probability of their effects once independent causes have been taken into account, then singular causes do too.

Therefore : if generic causality can be given a probabilistic analysis, then singular causality can too.

Conclusion

Assuming HC, singular causality can be given a probabilistic analysis if generic causality can.

P is not compatible with neither HC, nor Generalization.

Open possibilities :

- ▶ giving up **P**
- ▶ developing a sophisticated theory of the relationship between levels of causality.