How to Cause the Inevitable

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(1) Drinking poison caused Socrates’ death.

Socrates’ death was...

**inevitable, and had a cause**

How can contemporary analyses of causality account for this fact?
Plan

1. **Existing analyses of actual causation**
   - Counterfactual approaches
   - Probabilistic analyses of causation

2. **A different death?**
   - Previous responses to the problem of inevitable effects
   - Coreference

3. **How to cause the inevitable**
   - Beckers (2016)
   - A new definition of production

4. **Conclusion**
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Counterfactual approaches to causation

**Definition (Counterfactual dependence)**

Given events $C$ and $E$, we say $E$ counterfactually depends on $C$ iff if $C$ hadn’t occurred, $E$ wouldn’t have occurred.

**Popular commitment of counterfactual analyses of causation:**
If $C$ caused $E$, then there is a possible scenario where $E$ does not occur.

e.g. Lewis (1973), Yablo (2002), Halpern (2016), Beckers (2016), Gerstenberg et al. (2020)

**Effect contingency in counterfactual theories of causality**
If $C$ caused $E$, then $E$’s occurrence was not inevitable.

**Socrates’ death**
If Socrates’ death was inevitable, then nothing caused it to occur.
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Probabilistic analyses of causation

Popular commitment of probabilistic analyses of causation: Causality as \textit{probability raising} (and other conditions)

e.g. Reichenbach (1956), Suppes (1970), Cartwright (1979)

\textbf{Entailments of probability-raising analyses of causality}

\[ C \text{ caused } E \implies P(E \mid C) > P(E) \implies P(E) < 1 \]

Note: \( P(E \mid C) > P(E) \) is equivalent to \( P(E \mid C) > P(E \mid \neg C) \).

\textbf{Socrates’ death example, according to probabilistic approaches}

If \( P(\text{Socrates dies}) = 1 \) then nothing caused Socrates’ death.
The problem of inevitable effects

According to the two most prominent analyses of causation, it is impossible for any event to both be inevitable and have a cause.
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Paul & Lewis on inevitable effects

\[ E \text{ depends causally on } C \text{ iff } C \text{ occurs, } E \text{ occurs, and if } C \text{ had not occurred, then } E \text{ would not have occurred at all, or would have occurred later than the time that it actually did occur.} \]


Suppose it were alleged that since we are all mortal, there is no such thing as a cause of death. Without the hanging that allegedly caused the death of Ned Kelly, for instance, he would sooner or later have died anyway. Yes. But he would have died a different death, and the event that actually was Kelly’s death would never have occurred.

— David Lewis (2000, pp. 185)

The strategy: Deny that there really are inevitable effects

- Effects are specific
- It is not inevitable that Socrates dies in the way he actually did
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Coreference and identity


2. Indiscernibility of identicals: identical entities have the same properties.

(2) a. Milo picked up the book, which was a hardback.
   b. =Milo picked up the book. The book Milo picked up was a hardback.

A helpful, but loose distinction between two readings of events

- **General**  Whether or not the event occurred
- **Specific** The particular event that occurred, including the time/manner/... in which it occurred
Coreference and inevitable effects

An inevitable event can corefer with one that has a cause:

(3) a. Since Socrates was mortal, his death was inevitable. According to Plato’s *Phaedo*, it was caused by him drinking poison.

   b. Socrates drinking poison caused an event, his death, which was bound to happen eventually

1 The coreferring terms refer to identical entities
2 Identical entities have the same properties

Upshot

The same event can both be inevitable and have a cause.
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Beckers’ schema

Definition (Beckers 2016)

$C$ actually caused $E$ iff $C$ and $E$ actually occurred, and:

1. **Production**: $C$ produced $E$

2. **Difference making**: it is not the case that, if $C$ had not occurred, $\neg C$ would have produced $E$
How to invalidate effect contingency?

The problem: Beckers (2016) validates effect contingency

If $C$ caused $E$, $E$ was not inevitable.

- $C$ caused $E$
  - $C$ produced $E$
  - There is a chain of occurring events $C, D_1, \ldots, D_n, E$ such that for each $D_i$ on the chain, there is a set $L_i$ such that $L_i$ is not sufficient for $D_{i+1}$, but $L_i \cup \{D_i\}$ is sufficient for $D_{i+1}$
  - In particular, $L_n \setminus \{D_n\}$ is not sufficient for $E$
  - There is a scenario where $L_n$ occurs but $E$ does not occur
  - $E$ was not inevitable
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Production without effect contingency

\[ C \text{ caused } E \implies C \text{ produced } E \quad \not\implies E \text{ was not inevitable} \]

Strategy inspired by Paul (1998):
Consider counterfactual dependence in the time of the event

**Definition (Token event)**

A token event is a formula at a time.

- If \( C \) is a formula and \( t \) a time interval, then \( C_t \) is an event token.
- Define that “\( C_t \) occurred” is true just in case \( C \) is true at \( t \)
A new definition of production

- L. A. Paul (1998): consider counterfactual dependence in the time of the event
- Adapt L. A. Paul’s analysis: not about causation itself, but about production

**Definition (Production, new definition)**

*C* produced *E* just in case *C*’s occurrence is sufficient for the existence of some chain of token events from *C* to *E*, such that each event is counterfactually dependent on the previous events.
Socrates’ death in the new theory

Drinking poison caused Socrates’ death just in case

1. Drinking poison produced Socrates’ death, and
2. It is not the case that, if Socrates hadn’t drank poison, him not drinking poison would have produced his death

Production

- Socrates drinking poison is sufficient for the existence of a chain of token events from the token event of him drinking poison to the token event of his death, each counterfactually dependent on the previous events

Difference making

- It is possible that if Socrates hadn’t drunk poison, there would be no chain of token events from the token event of him not drinking poison to the token event of his death, with each counterfactually dependent on the previous events
Why Socrates drinking poison caused his death

1. **Production**: Socrates drinking poison produced his death

2. **Difference making**: It is not the case that not drinking poison would have also produced his death
Examined most prominent analyses of causation: counterfactual and probabilistic

These approaches predict that being inevitable and having a cause are incompatible

Evidence from coreference that being inevitable and having a cause are compatible after all:

(3)  a. Since Socrates was mortal, his death was inevitable. According to Plato’s *Phaedo*, it was caused by him drinking poison.

   b. Socrates drinking poison caused an event, his death, which was bound to happen eventually
Beckers (2016): actual causation $= \text{production} + \text{difference making}$

L. A. Paul (1998): causation involves counterfactual dependence in the time of the event

Modify Paul’s observation: concerns production, not causation

Conclusion

Unlike previous analyses of causation, the present approach – using a new definition of production – explains how the properties of being inevitable and having a cause are compatible.
That’s how to cause the inevitable

Thank you for listening!


