Lewis on Causation

29 November, 2006

Already: Russell against causation

Next: Positive theories of causation

Three kinds of theories

1. Regularity
2. Realist
3. Counterfactual

Lewis' counterfactual theory

c is a cause of e

if and only if

if c had not occurred then e would not have occurred

Lewis' counterfactual theory

c is a cause of e

if and only if

if c had not occurred then e would not have occurred

(The basic version. c and e are events.)

Lewis' counterfactual theory

Example:

her receiving the gift is a cause of her being surprised

Lewis' counterfactual theory

Example:

her receiving the gift is a cause of her being surprised

if and only if

if she had not received the gift then she would not have been surprised

David Lewis (1941-2001)

Convention (1969)

Counterfactuals (1973)

On the plurality of worlds (1986)

Three kinds of theories

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Regularity theory

Same cause, same effect

cause + facts of world + laws of nature –> effect

What is the regularity theory?

c is a cause of e

if and only if

c is “any member of any minimal set of actual conditions that are jointly sufficient, given the laws, for the existence of the effect” e.

Example

c : He threw the ball.

e : The window broke.

Conditions: he threw the ball, the ball weighed 3 pounds, the wind was blowing west at 10mph, the window was made of glass, he was located 30 feet east of the window ...

Laws: laws of nature

What is the regularity theory?

"More precisely, let C be the proposition that c exists (or occurs) and let E be the proposition that e exists. Then c causes e, according to a typical regularity analysis, iff (1) C and E are true; and (2) for some nonempty set L of true law-propositions and some set F of true propositions of particular fact, L and F jointly imply $C \supset E$, although L and F jointly do not imply E and F alone does not imply $C \supset E$".

What is regularity theory?

Causation analyzed logically

He threw the ball + facts + laws

entails

The window broke

Causation as logical relation

c exists + facts + laws

entails

e exists

(Just the rough idea.)

What's wrong with regularity theory?

"It remains to be seen whether any regularity analysis can succeed in distinguishing genuine causes from effects, epiphenomena, and preempted potential causes— and whether it can succeed without falling victim to worse problems, without piling on the epicycles, and without departing from the fundamental idea that causation is instantiation of regularities." (160)

What’s wrong with regularity theory?

“I have no proof that regularity analyses are beyond repair, nor any space to review the repairs that have been tried. Suffice it to say that the prospects look dark. I think it is time to give up and try something else." (160)

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3 problems

distinguishing genuine causes from effects

epiphenomena

preempted potential causes

Example of problem 1

distinguishing genuine causes from effects

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(sometimes effect + facts + laws entails cause)

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The barometer rose.

The air pressure increased.

Example of problem 1

distinguishing genuine causes from effects (sometimes effect + facts + laws entails cause)

The barometer rose.

The air pressure increased.

Air pressure increase caused barometer rise.

Barometer rise caused air pressure increase.

Example of problem 1

distinguishing genuine causes from effects (sometimes effect + facts + laws entails cause)

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Air pressure increase caused barometer rise.

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Example of problem 2

epiphenomena

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epiphenomena
(c causes f and c causes e but f not a cause of e)

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epiphenomena
(c causes f and c causes e but f not a cause of e)

The burning wood caused smoke to get in my eyes.

The burning wood caused the room to get hot.

The smoke in my eyes is not a cause of the room getting hot.

Example of problem 3

preempted potential causes

Example of problem 3

preempted potential causes
(p did not cause e, but would have caused e if c had not occurred)

Example of problem 3

preempted potential causes
(p did not cause e, but would have caused e if c had not occurred)

Jack’s stone throw caused the window to break.

Bill threw one moment after Jack did.

Bill’s stone throw did not cause the window to break.

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Realism: Analogy

The paper is glued to the wall.

Realism: Analogy

The paper is glued to the wall.

the paper — the glue — the wall

Realism about causation

Causes are connected to their effects.

Realism about causation

Causes are physically connected to their effects.

Realism about causation

Causes are physically connected to their effects.

the cause — the causal "glue" — the effect

3 problems

epiphenomena

preempted potential causes

distinguishing genuine causes from effects

3 problems

epiphenomena
no glue between epiphenomenon and effect

preempted potential causes
no glue between preempted cause and effect

distinguishing genuine causes from effects
one way glue?

Some questions about realism

How do we know about causation? Do we see a connection between cause and effect?

How is the causal “glue” physically realized? Are all connections between cause and effect the same? Is what physically connects fire and cooked food the same as what connects giving a gift and being surprised?

How can an omission be physically connected to an effect?

Three theories of causation

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David Hume (1711-1776)

"... we may define a cause to be an object followed by another, and where all the objects, similar to the first, are followed by objects similar to the second. Or, in other words, where, if the first object had not been, the second never had existed." (Enquiry Concerning Human Understanding, VII)

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