# David Lewis
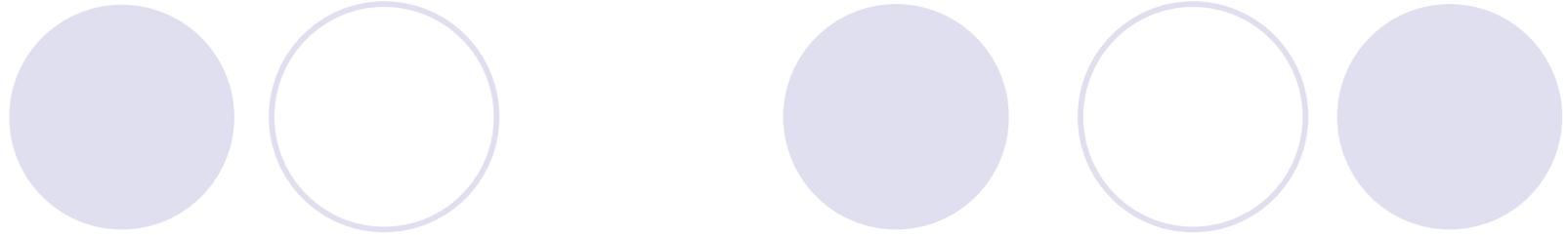
Causation

Conceptual Analysis of 'Causation'

___ Even if Hume is wrong and we do sometimes perceive causation, what we observe are always *singular causal relation* – not *the* causal relation. How do we pick up a *general* concept of causation, applicable to all different kinds of causation, and applicable even to kinds of causation never found in our own world?

*Q*: **What do these causal relations have in common? How do we define** *causation***?**

Causal relation 1	Causal relation 2	Causal relation 3	Causal relation 4	Causal relation n
The first ball's movement ↓ The second ball's movement	low carbohydrate diet ↓ low blood sugar	the congressman's praising Kenneth Starr ↓ his own defeat in election	My not watering the plant ↓ the plant's withering	Merlin's casting a spell ↓ the frog's turning into a prince
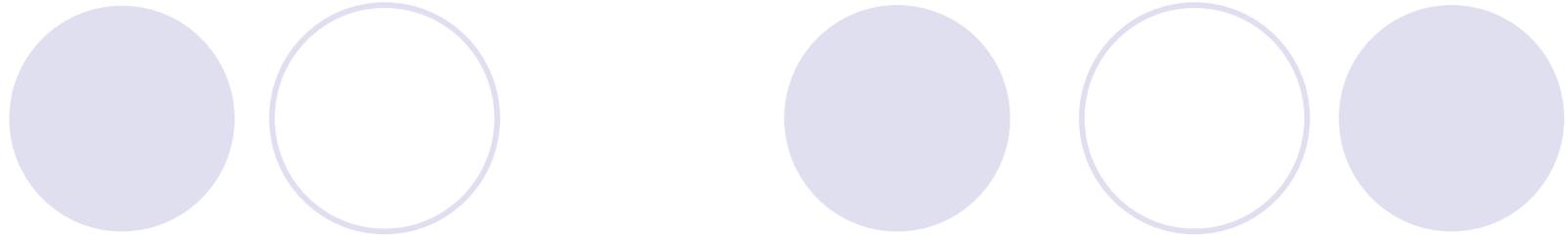
- We are not perceptually acquainted with each and every one of all these different actual and possible causal relations.

- ____ To give a conceptual analysis of 'causation', we need to reveal <u>what it is that all the actual and possible varieties of causation have in common</u>.

- Lewis: The common factor could only be found in a counterfactual analysis.
- Other theories face more difficulties.
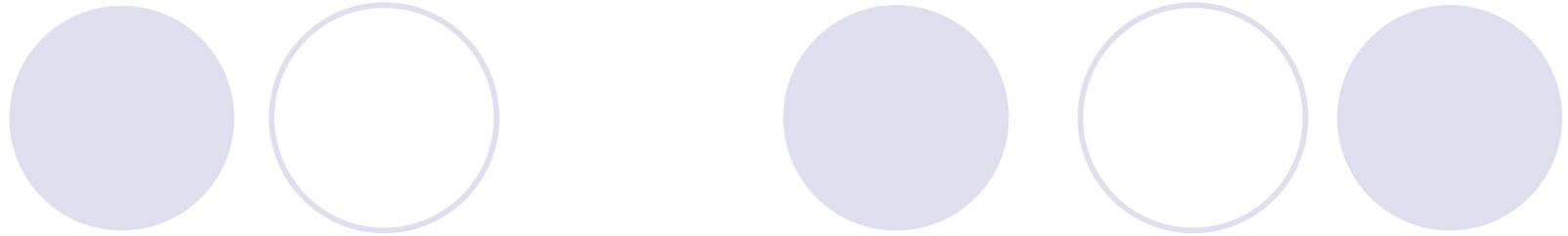
The Regularity Theory of Causation (derived from Hume)

___ Two causal events (cause and effect) are subsumed under regularity by means of descriptions they satisfy.

Let C be the proposition that *c occurs*.

Let E be the proposition that *e occurs*.

***c* causes *e*, iff**

C and E are true;

For some nonempty set Ψ of true <u>law-propositions</u> and some set $\mathfrak{I}$ of true <u>propositions of particular fact</u>, Ψ and $\mathfrak{I}$ jointly imply $C \supset E$, although Ψ and $\mathfrak{I}$ jointly do not imply E, and $\mathfrak{I}$ alone does not imply $C \supset E$.

(Without the causal law <u>covering</u> the particular causal statement, that particular causal statement does not hold.)

Problems with the regularity account:

- (i) the problem of effect

  when c and e are correlated, it might be:
  e causes c, rather than c causes e

- (ii) the problem of epiphenomenon

  $$c \longrightarrow \textbf{causes} \longrightarrow f \dashrightarrow [e\,]$$

- (iii) the problem of preemption

  ___ c: the gun shot, e: the death, d: the heart attack

- ___ the heart attack (d) causes the death (e), while c is preempted

- **Where C and E are actual events, to say that E is *causally dependent* on C is just to say that if C had not occurred, then E would not have occurred.**

# *Counterfactuals and Possible Worlds*

- **[Closest Possible Worlds]:**

  ___ Events typically have many effects, but rarely have many causes. Given this fact, if a causal statement p is false in our world, the closest worlds in which p is true will always be worlds that differ from ours with respect to the future, rather than with respect to the past.

One world is *closer to actuality* more than another if the first resembles our actual world more than the other does, taking account of all the respects of similarity and difference and balancing them off one against another.
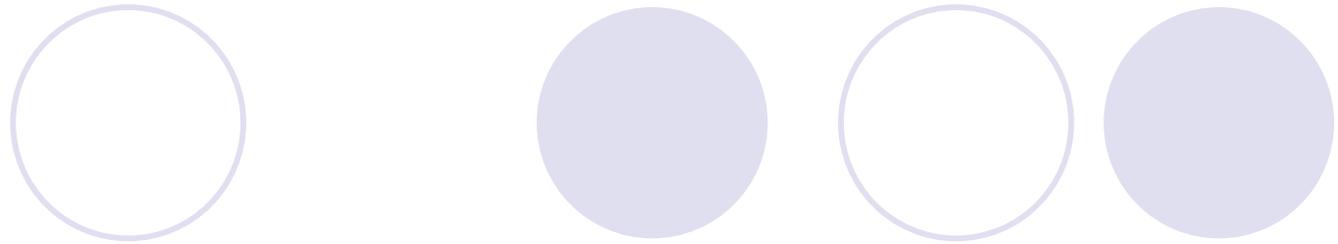
. If Hitler had not started the Holocaust…,
If Japan had not attacked Pearle Harbor…,

W_0

W_2

W_1
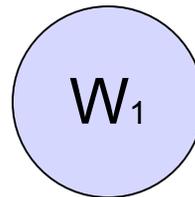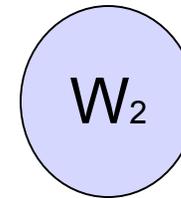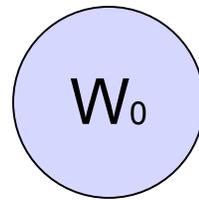
Lewis's Theory of Causal Dependence (among Actual Events)

- ___ Counterfactual dependence among events is simply counterfactual dependence among the corresponding propositions.

- Let *c* and *e* be two distinct possible particular events.
- Then *e depends causally* on *c* (whether *e* occurs depends on whether *c* occurs) if the following counterfactuals are true:

  - O(c) □→ O(e) [If *c* had occurred, then *e* would have occurred.] ⇐ when *c* and *e* do not actually occur.

  - ~ O(c) □→ ~ O(e) [If *c* had not been, then *e* never had existed.] ⇐ when *c* and *e* are actual events.
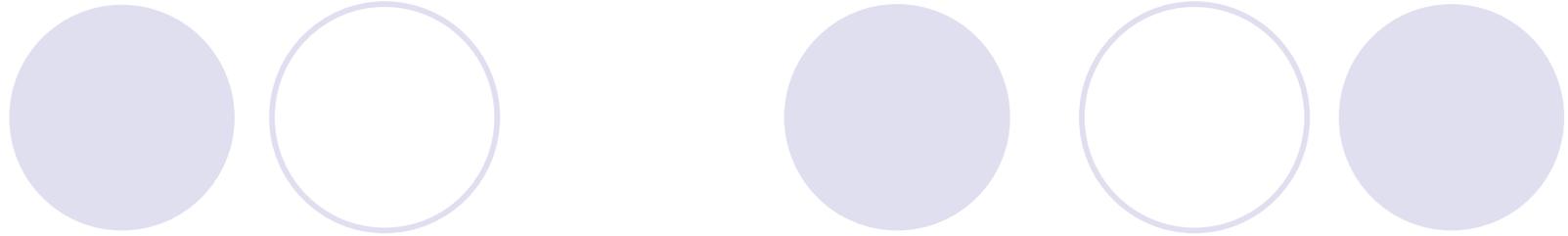
JeeLoo Liu:

- *Q*: **Why does he need these two versions? Must they *both* hold for the causal relation to exist between *c* and *e*?**

- *A*: The first version may be used in cases of preemption

Summary of Lewis's Theory of Causation

➤ **A counterfactual analysis:**

___ **If *c* and *e* are two actual events such that *e* would not have occurred without *c* (OR: when e *depends causally on c*), then *c* is a cause of *e*.**

➤ **Causal dependence implies causation.**

___ **Causal dependence → causation**

___ **But ~ (causation → causal dependence): there can be causation without causal dependence.**

Summary of Lewis's Theory of Causation

➢ **Causation is *transitive*: If *c* causes *e* and *e* causes *f*, then *c* causes *f* too.**

➢ **If all events are causally dependent on one other, then a *causal chain* is formed.**

➢ **One event is a *cause* of another iff there exists a causal chain leading from the first to the second.**

§ Q: *How does the counterfactual account avoid the three problems for the causal law (the regularity) theory?*

1.   the problem of effects

✦Solution: If c had not been, e would not have been;

✦but if e had not been, c could still have been.

✦So, c is not causally dependent on e.

c $\longrightarrow$ e
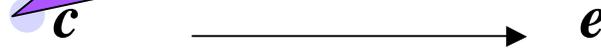
the problem of epiphenomenon

- (Suppose that *c* causes *f* necessarily and *c* has an epiphenomenon *e* necessarily. We then have the situation that if *e* had not been, then *f* would not have been either – but *e* does not cause f.)

Solution:

Let's reject the counterfactual. It is not the case that if e had not been, then f would not have been either. We could hold c and f fixed, while considering the counterfactual absence of e. (To get rid of an actual event e with the least overall departure from actuality, it will normally be best not to diverge at all from the actual course of events until just before the time of e.)
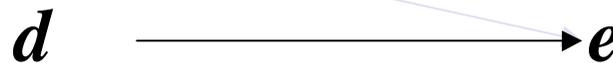
e (epiphenomenon)

c

f
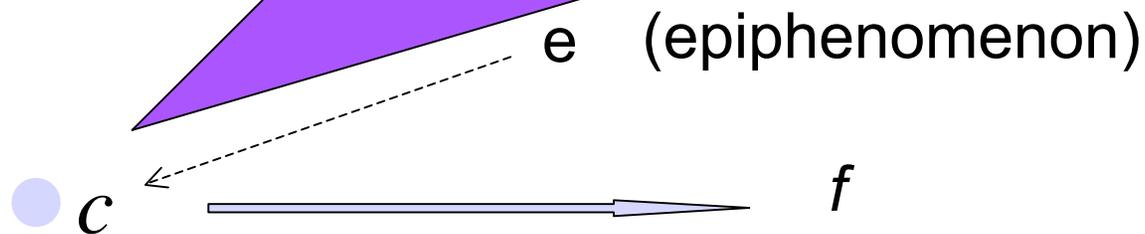
The problem of preemption

One potential cause is preempted by another cause. Had it not been preempted, it would be sufficient to cause the (same?) effect.

Solution: The real cause is linked to the effect through a causal chain, while the preempted cause is not. So the counterfactual analysis can tell them apart.

c **(preempted)**

d $\longrightarrow$ *e*

causes