

## Lecture 3: Causes and regularities

### The phenomenon of causation

There are different ways we encounter causation as a phenomenon in our lives.

1. **Rational:** What motivates people to do something (“Mr. Baldwin's speech causes adjournment of House.”)  
What is caused is the free and intentional action of a conscious and responsible agent; to cause such an agent to do something means affording the agent a *reason* for doing it
2. **Practical:** What enables an intervention in the course of nature (“Ronald Ross discovered that mosquito bites cause malaria.”)  
What is caused is some (natural) event or state, and its cause is an event or state that allows us to *intervene* and produce or prevent the caused event
3. **Theoretical:** What determines the course of nature independently of human freedom or intervention (“The gust of wind caused the fire to light up.”)  
What is caused is some (natural) event or state, and its cause is another event or state on which what is caused depends: one thing's happening brings about some other thing's happening

### Aristotle's four kinds of explanation

In the most general sense, to give the cause of something is to say *why* it is the way it is. When we ask, in the most general terms, why things are the way they are, we are asking about the causes of things. Aristotle (*Metaphysics* v.2) distinguished between four ways in which something can be said to be a cause. About a particular sculpture, we might ask: *Why is this particular sculpture the way it is?*

1. The **material** cause: because it is made out of red wax
2. The **formal** cause: because it has the form of a dancer (or image of a dancer)
3. The **efficient** cause: because Edgar Degas made it
4. The **final** cause: because it is needed to serve as a model for a bronze statue

We see explanations as answers to why-questions, so it might be more natural to talk of four kinds of *explanation* here, rather than four causes. Since the 18th century, discussions of causation tend to be about what Aristotle called ‘efficient causation’.

### A relation between events

There are different kinds of beings: *Objects* (a dog, Aristotle, the sun); *Events* (a brawl, the sinking of Titanic); *Properties [Qualities]* (crimson, heaviness, being bald); *Relations* (being a sister of..., sharing a room with...). Objects and events are both particular, whereas properties and relations are universals. Events are spatio-temporal particulars with temporal parts.

It is standard to take causation exclusively to be a relation between events. This is not obvious, as it is natural to say things like: “Aristotle pushed Theophrastus off the stage.”; “I fainted because of *the high temperature of the room*”. However, many philosophers think we should ultimately reduce such statements to statements about event causation. The following argument supports this:

1. For any cause-effect pair, cause and effect must follow one another in time
2. Only events can be followed by something in time, and only events can follow something in time
3. Therefore, for any cause-effect pair, cause and effect must be events

The currently standard view takes causation to be an asymmetrical relation between events, where the relata are distinct events that follow one another in time, and where the number of events is 2: i.e. the cause, and the effect. (A limiting case is perhaps simultaneous causation, but this is controversial)

### More than temporal succession

Mere temporal succession may be necessary for causation, it is not sufficient. Imagine: we know that there's a fire in a house, and we know that a man was smoking a cigarette inside. The mere fact that he smoked *before* the fire broke out is not enough to establish it as the cause. Clearly, the cause must be what 'produced' or 'brought about' the effect, but these seem just synonyms for 'caused'. What more is needed?

The natural answer is: 'necessitation'. If the cause happened, then (in some sense) the effect *must* happen. ('The cause is a *sufficient condition* for its effect') But what kind of necessity is this?

It does not seem to be logical necessity. Even if we assume the smoking caused the fire, there is no contradiction in asserting both that the smoking took place and that there is no fire.

Is it natural (nomological) necessity? ('necessary, given the laws of nature?') But what are laws of nature other than causal laws?

### David Hume on our idea of causation

Hume thought that our ordinary *idea* of causation seems to involve the idea of necessary connection. It is important to distinguish between our idea of causation and causation itself.

All events seem entirely loose and separate. One event follows another; but we never can observe any tie between them. They seem conjoined, but never connected. (*Enquiry*, Part II)

Hume's conclusion is that this idea is confused: it is the product of impressions of constant conjunctions of temporally successive events, together with our (legitimate) expectation that the future will resemble the past (see Hume on induction). The alleged 'natural necessity' is no more than an empty metaphysical dogma that has no basis in experience. In fact:

'A cause is an object precedent and contiguous to another, and so united with it, that the idea of the one determines the mind to form the idea of the other, and the impression of the one to form a more lively idea of the other.' (*Treatise*, I.iii.14)

So the Humean approach defines causation in terms of two ideas: (a) temporal succession and (b) constant conjunction. This is a *regularity theory* of causation: causation is understood as a kind of regularity relation.

Note, 'constant conjunction' only applies to *kinds* of events: we can't say that individual events are constantly conjoined (we can't say that the 2016 EU referendum is constantly conjoined with the triggering of Article 50!). We have to say that events of *kind* A are conjoined with events of *kind* B. Hume himself introduces the notion of resemblance—a way of grouping together similar events.

### Causation as regular connection

The regularity view explains what it is for a particular event to cause another in terms of truths about other events. The causal relation is not a purely local relation relating this cause *c* and this effect *e*: rather the fact that this relation holds implies that relations hold between all sorts of other events of the same kinds.

However, the existence of a regularity between an event *e* of kind A and an event *f* of kind B is not sufficient for *e* to be a cause of *f*. Your trips to the countryside (kind A) may invariably be followed by rain (kind B). But this does not mean that a particular trip *e* is the cause of a particular rain shower *f*.

We might try and escape this by distinguishing between those regularities which are laws of nature and those which are not (so-called 'accidental' regularities). So the kinds in question must be kinds which figure in laws of nature: kinds like 'having a mass of *n* grams'. Regularity views are accordingly sometimes called 'nomological' views of causation. But this poses a problem. Consider:

1. I strike a match (A) and fire lights up (B)
2. I visit the countryside (C) and it starts raining (D)

On the nomological theory, there's nothing about the local relations between A,B,C and D that explains why A is a cause of B while C is not a cause of D; Instead, what makes A a cause of B is that their relation is an instance of a law.

But why is the **A-B** connection an instance of a law but the **C-D** connection is not? It seems that the **A-B** connection is an instance of a law because of how the *particular* event **A** is involved in bringing about **B**. In other words, it is because **A** is more than just temporally prior to **B**! If this is right, then we haven't really explained the difference between Case 1 and Case 2

### **Mackie's 'Causes and Conditions'**

J.L. Mackie defends a regularity theory by characterising in more detail how a particular cause is related to its particular effects in terms of a combination of necessary and sufficient conditions. Mackie argues that a cause is not sufficient for its effects, and nor is it necessary. His example: a short circuit in a house causes a fire. The short circuit is *not sufficient* because without the presence of inflammable material and oxygen (etc.) the short circuit would not have brought about the fire. But *nor is it necessary*, Mackie says, since something other than the short circuit could have caused the fire.

The innovation he proposes is to think of causes as INUS conditions: Insufficient but Necessary parts of conditions which are itself Unnecessary (for some effect) but Sufficient.

A is an INUS condition for P if for some X and Y, (AX or Y) is a necessary and sufficient condition for P, but A is not sufficient for P and X is not sufficient for P

The short circuit is an INUS condition in this sense. It is not itself a sufficient condition, but it is a necessary part of the overall situation that, in this case, was sufficient for the fire.

We can simplify Mackie's analysis. Is the cause sufficient? Mackie says: yes, given the other conditions or circumstances. Is the cause necessary? Yes, given the other conditions or circumstances. Illustration: given the oxygen, the inflammable material (etc.) the short circuit is sufficient for the fire; given the oxygen, the inflammable material (etc.), the short circuit is necessary for the fire. So maybe we can just say: the cause is necessary and sufficient in the circumstances for its effects.

Notice, this shows that the idea of logical necessity does seem to be the driving force behind a regularity analysis of causation.

This gives an answer to the question what distinguishes cause-effect relations from events that are merely regularly connected. My visit to the countryside is not an INUS for the rain, because it is not a necessary part of whatever condition was sufficient the rain to start.

### **Problems with Mackie's approach**

Here are three main problems with Mackie's analysis, though each of them allows for further discussion.

1. **Deterministic.** Assuming that a cause is sufficient for its effects commits you to the conclusion that all causation is deterministic. But according to modern physics (e.g. quantum mechanics) not all causation is deterministic (some of it is probabilistic or 'chancy'). So the idea that a cause is conditionally sufficient (sufficient given circumstances) is perhaps still too strong.
2. **Necessary parts?** What is it for a *particular* event to be 'necessary in the circumstances' for its effects? How should we understand this? The most natural thing to say is that my visit to the countryside was not a necessary part of the overall cause of the rain because if I hadn't visited the countryside, it would have rained anyway. This is a counterfactual explanation of what it is for a condition to be a necessary part or not. But we'll see next week that as soon as we help ourselves to counterfactual truths, an arguably more powerful analysis of causation becomes available.
3. **Many causes.** One obvious consequence of Mackie's analysis is that every event has many causes. The presence of oxygen was just as much an INUS condition as the short circuit was. So when we say that 'a short circuit was the cause of the fire', we say something false. This leads to an 'error theory' about our causal ascriptions. Perhaps not entirely by coincidence, Mackie is famous for his error theory about ethical ascriptions.  
Perhaps we can avoid the error theory in this case. When we talk about 'the cause of the fire', this is best regarded as loose talk. The short circuit is a cause among many other causes. It is perhaps salient to us because we might have been able to prevent its occurrence (as opposed to preventing the oxygen to flow).