

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).