

gain the kingdom of Persia, he signalled both the difficulty and the value of gaining causal knowledge. It is arguably the acquisition of causal knowledge that is the primary goal of scientific enquiry; and within philosophy, causation has played a central role in recent theories of reference, **PERCEPTION**, decision-making, knowledge, intentional and other mental states, and the role of theoretical terms in scientific theories. Indeed, Samuel Alexander (1859–1938) suggested that causation was of the essence of existence itself, with his dictum that to be real is to have causal powers. Moreover, assumptions about the nature of causation structure a great deal of discussion elsewhere in philosophy. For example, debates over free will often take as their starting point the question of how we can be free if our **INTENTIONS** to act are themselves part of the causal order. Again, debates in the **METAPHYSICS** of mind often revolve around the claim that since every physical event has a physical cause, the mind must itself be in some sense physical in order to be the causal source of our actions qua physical events.

#### Fundamentalism, reductionism and projectivism

What then is causation? The framework for contemporary philosophy of causation originates with David **HUME** (1711–76). Hume's empiricism dictated that all evidence for cause and effect relations must be ultimately reducible to evidence from the senses. Since causal relations cannot themselves be directly experienced, however, they must be constructions from some other kind of experience. Hume's proposal was that the concept of causation was a construction from the experience of the regular succession of spatio-temporally contiguous events. Similarly, the seeming necessity by which we think causes are connected to their effects is simply a product of the habits of expectation produced in us by the regular succession of events in the world. By taking this account of causation as our starting point, we can see a number of respects in which theories of causation may differ, and thereby isolate issues that continue to be debated today.

First, for Hume, causation was not part of the fundamental furniture of the world; rather, it was a concept we possess in order to organise our experience of a world which is not itself causal. There are in fact at least three views which might be taken on this first issue, what we might call the metaphysical status of causation:

## CAUSATION

### Essentials of causation

When **DEMOCRITUS** (460–370 BCE) said that he would rather discover one true cause than

- *Fundamentalism.* Causation is a fundamental feature of the world.
- *Reductionism.* Causation can be reduced to or identified with some (more) fundamental feature(s) of the world.
- *Projectivism.* Causation is a projection on to the world.

Hume's view was closest to the third, so it is ironic that 'Humeanism' about causation is today generally used to refer to views of the second type.

Second, for Hume, any particular pair of (token) events was judged to be causally related only in virtue of being an instance of a general regularity among respective event types. The relationship between token and type causation (alternatively, singular and general causation) also permits a range of views: that token causation is primary; that type causation is primary; or that they are distinct kinds of causation, to be treated individually.

Third, for Hume, causation was a concept that related events. While this view remains popular, other proposals for the 'causal relation' are facts, property instances (tropes), states of affairs – and also that causation is a relation that is independent of such metaphysical disputes.

Finally, for Hume, the difference between cause and effect consisted simply in identifying the cause with the temporally prior event of any constantly conjoined event pair. However, stipulating by convention that the asymmetry of causation is coincident with temporal order has several undesirable consequences: the fact that causes can be used to manipulate their effects does not seem to be merely a convention; it seems at least conceptually possible that there might be cases of backwards in time causation; and it rules out the project of giving an account of the direction of time in terms of the direction of causation (see **TIME**).

Most contemporary discussion of causation has been concerned with the metaphysical status of causation, and in particular the viability of various **REDUCTIONIST** analyses. The motivation for seeking such an analysis is no longer the constraint of an empiricist view of knowledge, but rather that since causal concepts do not appear in fundamental physical theories, the question is raised of the relation between our everyday causal concepts and the world as described by those theories. Reductionist theories include regularity theories, which start from the Humean idea that

causes are regularly followed by their effects; and probabilistic theories, which start from the idea that causes raise the **PROBABILITY** of (but are not necessarily invariably followed by) their effects. **COUNTERFACTUAL** theories, originally proposed by David Lewis (1941–2001), start from the idea that, in general, if A causes B then it is true that if A had not occurred, B would not have occurred. Causal process theories have attempted to identify causation with various features of spatio-temporally continuous physical processes, such as the conservation of physical quantities, but have had problems accommodating intuitions about everyday cases of causation that seem independent of such features.

'Manipulationist' and 'agency' theories have started with the idea that causes can be used to manipulate their effects, and attempted to characterise causation in terms of facts about actual and hypothetical manipulations. These theories connect naturally with the Humean idea that consideration of how we acquire causal knowledge should play an important role in an account of causation, and it is an open question whether they can be developed in a reductionist way, or whether they lead to a form of projectivism.

A theory of causation should capture our intuitions about everyday cases of causation, explain how we come by this causal knowledge, why it is that causes tend to precede their effects and can be used to manipulate their effects, and show why causes can be used to explain their effects. It remains to be seen whether there is an account of causation that can satisfy all these criteria, and so it is an open question whether causation will turn out to be part of the fundamental furniture of the universe, or, as Hume thought, to be tied to our particular way of experiencing and interacting with the world.

Contributor: Brad Weslake