

Chapter 2

CONTEMPORARY APPROACHES TO CAUSATION

The attempt to "analyze" causation seems to have reached an impasse; the proposals on hand seem so widely divergent that one wonders whether they are all analyses of one and the same concept. (J. Kim 1995, 112)

This chapter consists of two parts. In the first section, I will give a general outline of the current approaches to causation. In the second, I will discuss a number of pertinent problems the current approaches are afflicted with.

1. THE CONTEMPORARY DEBATE

The following approaches have been prominent in contemporary discussions of causation:¹ (1) the approach that analyzes causation in terms of necessary and/or sufficient conditions, (2) the counterfactual approach, (3) the instrumental approach, and (4) the probabilistic approach. Moreover, (5) there is the so-called singularist approach to causation, which is a minority view.

1.1 Necessary and/or sufficient conditions

The necessary and/or sufficient conditions approach is by far the most favored line of enquiry into the nature of causation. It may be traced to the philosophy of David Hume and John Stuart Mill. At the heart of their approach, there is the view that causation is a matter of regularity and that

causally related events instantiate a general regularity between like kinds of events. Thus, *a* is the cause of *b*, if and only if there are kinds of events, *X* and *Y*, such that *a* is of kind *X*, *b* is of kind *Y*, and events of kind *X* are regularly followed by events of kind *Y*.

The position, held by most contemporary philosophers, that regularity (or constant conjunction) is a necessary condition of causation, is not without problems. Indeed, the concept of constant conjunction implies a relationship between *kinds* of causes and *kinds* of effects. Causation, however, is first and foremost a relationship between an *individual* cause and an *individual* effect. Hence, an adequate analysis of causation requires an answer to the question, What is it about this particular *A* that makes it the cause of this particular effect *B*? What is it about this particular gene that makes it the cause of this particular malignant tumor in this particular person?

But if regularity should be a necessary condition of causation, it certainly is not a sufficient condition. No gene can by itself be the cause of cancer. All kinds of biological conditions must be met before a gene can function at all. And there probably are also many other conditions that must be met before the gene can produce cancer. Therefore, most contemporary philosophers make a distinction between the 'causes' and the 'causal circumstances' under which a given change occurs. Moreover, they distinguish causally relevant from causally irrelevant conditions.

1.1.1 Causes as necessary conditions

Let some of the (positive and negative) conditions of a given fire be: (a) a short circuit, (b) the presence of inflammable material, (c) the absence of a suitably placed sprinkler, (d) the presence of a bird watching the event, and (e) a storm raging violently some hundred miles away. Obviously, a), b), and c) are causally relevant to the fire, while d) and e) are not. But that in itself does not explain *why* the first three factors are relevant, while the last two are not. For each event there may be an indefinite amount of immensely complex conditions, but only some of them are causally relevant in the sense that, in their absence, the event would not have occurred.

In the light of this many recent philosophers (for example, Collingwood 1938; Hart and Honoré 1959; Nagel 1961; Hartshorne 1970), have regarded causally relevant conditions as those that are in some sense *necessary* for the occurrence of an event. Thus, *A is a necessary condition for B if, under the circumstances, in the absence of A, B would not have occurred.* According to the majority view - Ernest Sosa (1980) being a notable exception - the kind of necessity involved here is not logical necessity. There is no *logical* contradiction between the proposition 'the burning match touches gasoline' and the proposition 'the gasoline touched by the burning match does not burn.'

According to the *necessary condition analysis*, causes may be defined in one of the two following ways:

Ia. A *causal condition* of an event is any *sine qua non* condition under which that event occurred. Had the condition in question not obtained, the effect would not have occurred. *The cause* of the event is the totality of necessary conditions.²

Ib. A is the *cause* of B if and only if A and B have obtained, and A was, under the circumstances, necessary for B. Thus, the cause of an event is just one of its necessary conditions.³

Whereas the first definition is philosophically simpler and more useful for the understanding of causal connections, the second reflects ordinary usage better. According to definition Ia, an ordinary causal statement such as 'the short circuit caused the fire' would be incomplete because the short circuit was only one of the many necessary conditions, such as the presence of oxygen and inflammable material. According to definition Ib, there is nothing wrong with saying that the short circuit was the cause of the fire. For all the other causally relevant conditions may be regarded as standing conditions, which are covered by the expression 'under the circumstances.' (For reasons of convenience, I will call these other causally relevant conditions from now on the complex condition C.) The short circuit rather than any of the other causally relevant conditions is called the 'cause' of the fire, because it is the one conspicuous factor in the set of standing conditions.

As Mill had already emphasized, the difference between Ia and Ib is more of a practical than of a philosophical concern. From a logical point of view it makes no difference whether the term 'cause' is used to refer to the one conspicuous condition rather than to the whole set of necessary conditions.

In deference to ordinary usage most contemporary philosophers prefer the expression 'the cause' for some causal condition that is novel or conspicuous, (or, particularly, one that is within one's control⁴). Thus, for example, Hart and Honoré concluded that ...

[t]he notion, that a cause is essentially something which interferes with or intervenes in the course of events which would normally take place, is central to the common-sense concept of a cause, and at least as essential as the notions of invariable or constant sequence so much stressed by Mill and Hume. (Hart and Honoré 1959, 29)



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