

# Causality

Causality is an epistemological concept that formalises the very basis of any scientific approach, which consists in organising systematically empirical facts and giving them a sense. This constructivist definition of epistemology is opposed to the notion of causality conceived as a metaphysical postulate, according to which human Reason is able to grasp essence and *raison d'être* of things. Inside the scientific domain, causality is thus the link built between a cause (or a set of causes) and a consequence.

The purest version of causality is called linear (A, then B, with possibly intermediary causal steps); it supposes some - even minuscule - anteriority of cause with regard to effect. It has therefore links with historicity and is easily moulded into the linear modes of writing precisely based on succession. When the link between cause and effect is necessary, unavoidable, we are in determinism (term generally interpreted in geography as a link between a cause of natural order and a consequence of social type). Causal constructions may remain linear while introducing multiple causalities (A and/or A', then B) ; but most of the time multiplicity of causes introduces retro-active effects.

It is indeed very rare to be able to isolate purely linear causalities, without effects reacting on turn on some element of the causal chains. It is, in an immediately obvious way, the case with analysis of facts of society - but it is not the only case. The built scientific ordering is then called circular causality (A, then B, then A', then B', etc). Whenever the set of links may be sufficiently isolated from the context, be thought as a system, formalisation of the causal ensemble may take the form of a model. However, even if it is not common use, a strictly linear and clearly formalised causality is also modelling.

The shift in vocabulary from causality to modelling rather covers a move from insistence on search for anterior causes (with the ideal of an initial cause, of a first instance) to emphasis on processes. This may appear as paradoxical, as far as this second perspective goes along with a greater requirement for explanation, whereas the historicist context is more easily satisfied with the fuzzy links of comprehension. It is indeed true that in many cases, formalisation of a complex causality is impossible, and, unless any rational approach is abandoned, only a less formalised but richer interpretation of reality, a hermeneutics, may be considered; but then, causality is difficult to isolate and the specificity of the scientific approach might well get diluted.

An essential difficulty in any enlightenment on causality relationships resides in the distinction between cause(s) and context(s), contingency(s). When a set of causalities may occur and reproduce itself in a quite autonomous way with regard to the field of contingences, it is a self-organisation logic. But the terms contingent causality (Cournot) are used when determined causal sets, obeying own laws, come into reciprocal interference without forming a new determined causal set of upper level, but link to each other in - at least partly - random processes. So, in such complex systems, a minor cause (a fluctuation) may determine complex chain relationships that deeply modify the whole set (a " catastrophe "). The transition to a new set of systems is then a [bifurcation](#).

## Bibliographie