

In a paper entitled *Empiricism must, but cannot, presuppose real causation*, Hans Radder makes a case against *a.* empiricism as a general philosophical stance, but more particularly *b.* empiricism as the epistemological foundation of science. It is focused on the notion of causation, to which the empiricist tradition denies a real ontology. The argument goes as follows.

*i.* Experimentation involves the *material realization* of a process. The idea underlying the generation of empirical knowledge is that the realization of an interaction between a certain object (*O*) and an apparatus (*A*) concludes at a final state where correlations between *O* and *A* are made apparent.

*ii.* When evaluating the information revealed by the final state of *A*, we have to take into account interactions between the (*O* + *A*)-system and its environment. In general, great care is taken into suppressing any influence from external, environmental factors into the system. This is required in order to make interpretations of the final state epistemologically sound, and the material realization of such state reproducible.

*iii.* The epistemic requirement in *ii.* shows that the notion of real causation (in the form of a disturbance) plays an important role in the production of empirical knowledge.

Note that the argument is made at three different levels. Scientific inquiry can only succeed if *a.* we ascribe a real *ontology* to causation, in the sense that we assume that there may be real external events that causally disturb the material realization of the final state; *b.* if we succeed *epistemologically* at knowing what this events are; and *c.* if we realize the *methodological* achievement of suppressing their influence.

However, it is not entirely clear that a real ontology is being ascribed to causation even by an agent that behaves *as if* causation were real. The empiricist's claim is that we cannot *ascertain* that causation exists because *the necessity* of the cause-effect relationship is unobservable and unprovable. And yet, I am quite certain every single empiricist lives or has lived as if causation is real —a disposition to which he is compelled by entirely practical reasons: namely, that it is impossible to sustain any form of life otherwise. The case is similar to every behavioral disposition which assumes the existence of that which is not observed —from an object in another room to a country on the opposite pole—: their existence is simply *a.* more likely than alternative explanations, according to that vague form of evidence which every-day life conforms, and *b.* indispensable to the material continuation of our lives.

The pragmatist would claim that there is nothing but a linguistic difference between the propositions: *I behave as if causation were real* and *I believe causation is real*. But this is not entirely true. Imagine a traveler that, walking towards, say, Mandawa, finds himself at a crossroads. On each side, two broken and incomplete signs read: *To Man\*\*wa* and *To \*an\*\*wa*, respectively. There is more evidence to say the first road takes to Mandawa (one letter more of evidence, or one free variable less, to be precise), so he would do well in taking it. But if this were all the information he had, can he be *sure* that that is the correct road? What is his belief: that the road takes to Mandawa, or that it is more likely that the road takes to Mandawa? His behavior fits them both, but they are inequivalent.

Going back to our case, then, there is nothing in behaving *as if* causation were real that contradicts the epistemological apprehension about ascertaining its reality. Furthermore, for every observable correct prediction of science, the evidence in favor of it increases —and with it, so does that in favor of the consistency of its assumptions. In short, while it is true that science behaves *as if* causation is real —which every single one of us do—, this fits entirely with the inferential basis of empiricism, so long as the existence of causation is the best explanation to observed phenomena —even when the *necessity* of the cause-effect relation is unprovable and unobservable. In short, empiricism, far from outright denying causation, holds it as the most plausible *hypothesis*. And in this non of us are any different from science, insofar as it is impossible to live as if causation were not real and at the same time impossible to prove that it is.

In short, I do not believe the point sustained by Radder is particularly strong. I find myself to be more worried about different matters when it comes to science and causation. For example, how exactly does a given evidence provide support for a hypothesis? What exactly does it mean to say that causation is *the most likely* explanation, even when we can not prove reasonably prove it nor empirically observe necessity? These, and more like these, are the problems of philosophy with regards to science. But I cannot dwell upon them here, for this entry pertained to Radder's paper and, besides, I have no satisfactory answers to give.