Metascience
DOI 10.1007/s11016-009-9280-z © Springer 2009

REVIEW

CONCEPTIONS OF CAUSALITY

P. Machamer and G. Wolters (eds), *Thinking about Causes: From Greek Philosophy to Modern Physics*. Pittsburgh: University of Pittsburgh Press, 2007. Pp. 318. £71.50 HB.

By Samuel Schindler

This collection comprises sixteen essays presented at the Seventh Pittsburgh–Konstanz Colloquium in May 2005, all of which revolve around the (very broadly construed) topic of causation. According to the rather brief introduction by the editors Machamer and Wolters, it was the aim of the conference to 'review current theories of causality, and see how causality works in the individual sciences', without neglecting the 'history of causality'. The contributions to this volume exhibit a chequered quality and address a wide range of different topics which are only very loosely connected by the common theme of 'causation'. Only in three instances do the contributions directly refer to each other. In this review I shall discuss those essays, which allow me to tell the most coherent story in the spirit of the above aims.

In the first – rather cryptic – paper, Jürgen Mittelstrass tracks the 'Concept of Causality in Greek Thought', which, he claims, "has little to do with modern conceptions of causality" (pp. 1–2). Mittelstrass starts his historical analysis with Pre-Socratic philosophy, where causal explanation "oversteps itself" and "still follows mystical thinking" (p. 3), and moves on to Platonic causes, which no longer seek to connect happenings in the world but rather become autonomous entities in abstract thought. Within this history, "[t]he empirical has to wait – for Aristotle" (p. 5). Aristotle's four causes, according to Mittelstrass, are expressions of different 'perspectives' from which we analyse the world, although we need to take into account all of them if we want to give a causal analysis that is complete. Mittelstrass contends that Aristotle's notion of effect is really not at all like ours but rather something like 'that

Published online: 12 May 2009

for which causes are causes' (original emphasis). But even if this were so and even if that were different from 'our' view (which I fail to see), Mittelstrass does not come even close to making a convincing case. And if the concept of causation is really that different from 'our' notion, how can it be that "the concept of causality is always present in Greek thought" but merely does not "find terminological or conceptual clarity" (p. 11)?

In his rather prolix contribution, Brad Inwood explores whether one can find any plausibility in the view of the Stoics that our knowledge of the causes of nature is sufficient not only for making us happy but also for making us act morally. Granting the former, Inwood makes efforts to try to find any meaningful justification for the latter by considering various options. If nature is the expression of God's will and acting in accordance to nature is obeying the word of God, this will not do as a justification for virtuous behaviour because we would act out of fear and not because we chose to. If it were the intellectually appealing order of nature that induced us to act morally, this would not do the job either because it would introduce a sort of subjectivity that is at odds with moral standards of universal validity. Lastly, nature causing happiness in us cannot justify our moral standards either: moral standards may be everything *but* happiness-inducing.

Emidio Spinelli is more positive than Inwood on the above question. In assessing the Stoic doctrine, he cautions, we should not apply measures that were foreign to it. More specifically, Spinelli contends, it would be a mistake to presuppose our notion of virtues, which allegedly is very much determined by the "agent's point of view", her "ethical self-government, or even independence in acting" (p. 41). Rather, we would have to immerse ourselves in the Stoic belief in a universal reason (*logos*) in order to appreciate the point that "knowing causes means and implies acting in the proper way, since inside the general and providential plan designed by the divine logos we have a precise, unique part" (p. 43). But this really seems to beg the question against Inwood. After all, he does appreciate all this but resists – rightly so I think – to accept it as "brute fact" (p. 22).

The essays by Campaner and Galavotti, and Hitchcock discuss 'Plurality in Causation' and causal pluralism, respectively. Although the former essay lacks coherence, in the first ten pages it does provide a very useful overview of the causation/mechanism debate in the last

twenty years with a particular emphasis on Salmon's (evolving) account, Machamer, Darden and Craver's influential paper on mechanisms, and Woodward's more recent, Lakatos Award winning, manipulability theory of causation. The next four to five pages tell the story of the invasive therapeutic technique of electrical 'deep brain stimulation' (DBS), which often allows a reduction of the severity of symptoms in Parkinson's Disease. Even though dopamine deficiency is strongly correlated with the disease, it is thought not to be the only cause. On the basis of this example Campaner and Galavotti all too hastily and with little justification dismiss Salmon's latest causal theory of conserved quantities (very much inspired by Dowe) as not being able to discern "the causally relevant processes and interactions" in favour of the manipulative approach "which seems to fit the situation better" (p. 193). And yet, I do not think their example suffices to repudiate Salmon's account. After all, they themselves suggest construing the 'complex interplay of factors' that gives rise to the disease as a sort of mechanism. And although this mechanism is unknown to us, we believe we can intervene with it by means of DBS. And why should this mechanism, which we may not know now but perhaps will at some point, not be amenable to Salmon's analysis? In any case, Campaner and Galavotti end their contribution on a conciliatory note, vaguely suggesting that mechanistic and manipulative accounts of causation may complement each other in an analysis of cases like the one they discuss.

On a more abstract level of analysis, Hitchcock's contribution presents us with a classification of views which 'might plausibly be considered species of causal pluralism' and seeks to determine whether any of these views truly deserves the label 'causal pluralism', the central tenet of which he takes to be the stipulation of different senses of 'cause'. Accordingly, the sentence 'C causes E' is true or false, depending on which concept of cause will be plugged in. The most noteworthy views amongst the ones Hitchcock considers are, what he calls, "Intramural" and "Extramural Pluralism" (pp. 207–214). The former he defines as the view that there are different concepts of cause, which can nevertheless be accommodated within a single philosophical framework, whereas in extramural pluralism these different concepts of cause 'are separated by the walls between different theoretical treatments'. In order to illustrate intramural pluralism, Hitchcock cites an interesting case: both birth control pills and pregnancy can cause thrombosis. Since pregnancy implies a higher risk of

thrombosis than birth control pills and since pregnancy is prevented by birth control pills, "it might seem reasonable to say that birth control pills do not cause thrombosis at all, but rather prevent it" (p. 208). But then, the sentence 'Birth control pills cause thrombosis' is genuinely ambiguous, and the criterion of causal pluralism is thus satisfied. Yet Hitchcock believes this to be 'consistent with a monism about the underlying nature of causation', because one can describe the above example in terms of a single philosophical account of causation (e.g. causation as manipulation). In 'Extramural Pluralism', Hitchcock discerns two broad categories of the concept of 'cause' in the philosophical literature: some views stress that 'effects depend on their causes', whereas others emphasise the 'spatiotemporal aspects of causation'. Although Hitchcock (perhaps all too readily) concedes that 'these two dimensions of causation are difficult to bring together', he nevertheless is positive that they can (somehow) be accommodated within one philosophical account. Overall, Hitchcock concludes that none of the causal views he considers is genuinely pluralistic, apart from one which is probably not a causal account in the first place: van Fraassen's pragmatic view of explanation.

While the three previous authors reflect upon the plurality of causes in science, Norton contemplates the absence of causation in modern physics. He defends a form of anti-fundamentalism against recent suggestions that modern physical theories after all *are* amenable to causal analysis. Although Norton admits that there are principles in modern physics that *appear* to be causal, he holds that they can be reduced to the two assertions that space–time has a light-cone structure and that there is no propagation outside the light cone. Now, if we were to take these two assertions to constitute the fundamental principle of causality, this would of course render the theories employing the principle causal. But, Norton reasons, we would thereby also render all theories that do not employ this principle non-causal, which is of course undesirable. Yet, this is only a true dilemma when one presupposes a single notion of causation, which a causal pluralist may want to repudiate. And although Hitchcock's assessment of pluralist accounts denies that there is a viable *current* account, this does not mean that there can't be one in principle.

This collection represents a welcome attempt to bring together analyses of the concept of causation in the historical and contemporary philosophical literature. But given the poor quality of many

of its contributions and its lack of coherence, it leaves the reader wondering whether some of the thinking might not have been a bit deeper.

Department of Philosophy
University of Birmingham
Birmingham UK