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REVIEW

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Getting Causes from Powers
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'Disposition' is a quintessentially causal concept. A disposition is something that confers on its bearer an impetus for certain kinds of behaviour: an impetus that is inherently causal. That said, disputes about the reality and ontology of dispositions rarely focus at great length on the precise nature of their connection to causation. *Getting Causes from Powers* is one of the best attempts in recent philosophy to remedy this situation. It is also one of the only such attempts (see, among others, Handfield [2009]), which should not be taken to render this praise faint, but rather to emphasize the importance of the work. This book aims to furnish a bold new theory of causation based on an ontology of dispositions, and in this it is successful. Admittedly, it is arguable that the core elements of this theory are not especially novel, taken individually, but taken together, they constitute a wonderfully comprehensive novel whole with impressive synthetic unity.

Before considering the elements themselves, it is worth noting the starting point of this endeavour, for there are a number of substantive assumptions *ab initio*. Foremost, it is assumed that dispositions (or causal powers, the two terms are used synonymously) are real (p. 4, p. 6); there is no argument here to oppose empiricist scepticism regarding their nature or existence (to be fair, one chapter argues that they are perceived, most clearly in proprioception (pp. 207–9), but I suspect that if ever there were a case of theory-laden observation, this is it). It is assumed that dispositions, rather than objects, events, or facts, are what 'do the work' of causation; other things participate in causation only insofar as they incorporate dispositions (pp. 1–2). Pandispositionalism,

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the thesis that all properties are simply clusters of causal powers, is also assumed (p. 3), as is the idea that 'causation is a feature of the world and not just our thinking about it' (p. 16). These assumptions suggest a rather specific audience. One might argue that sceptics could potentially be swayed by the tremendous philosophical work the authors aspire to do with dispositions, but this seems unlikely. The fact that dispositions can be used do so much work is itself a cause of scepticism among the sceptical, who often view powers as a *deus ex machina*. Consequently, this work is for those who already love them. If (and probably only if) your love is true, this book is for you.

The overarching aim of the work is to explicate a view of causation according to which a cause is 'something that disposes towards an effect' (p. 19). The result is not a reductive analysis of causation, since the very concept of a disposition is 'causally laden' (pp. 7–8). Rather, it is a theory of how one should think of various features of causation, given that there are dispositions in the world. The view is highly pluralistic, accepting not only the reality of what one might call sparse dispositions (like mass and charge) but also the existence of complex or abundant dispositions (like the disposition of chocolate to produce pleasure). It is also pluralistic in insisting that, independently of whether there is a fundamental level of ontology and whether physics describes or will describe this domain as causal, causation may occur in other higher-level domains. Indeed, the final chapter explores how the preceding metaphysical theorizing can be applied to yield an understanding of some examples of causation in biology. The metaphysics itself has three main elements: a finer-grained picture of realism about dispositions; a rejection of the notion of causal necessity; and a conception of causation in terms of processes. Let us consider these elements briefly, in turn.

Though realism about dispositions is assumed, arguments are provided for more specific claims regarding the proper nature of this realism. It is suggested, for example, that in cases where a disposition may be associated with components—for instance, a case in which more than one force acts on a body—the corresponding (component) dispositions exist in their own right, whereas others maintain that only a net resultant disposition exists (pp. 38–44). The reality of component forces in cases of so-called causal composition is famously denied by Cartwright ([1983], Chapter 3), and some have argued that such a denial is required in order to avoid worries about causal overdetermination. The discussion here is rendered somewhat obscure, however, by the conflation of the idea of component forces with the idea of component dispositions. It is unclear what to make of it, for independently of whether component forces exist in cases of causal composition, one might reasonably wonder what considering them can tell us about dispositions. Imagine a body that is impressed by two (or 'two') forces, one in a northerly direction, another in an easterly direction; the result is a north-easterly force

and subsequent motion in that direction. Presumably, a dispositional realist could hold that the disposition(s) of the body to move in *any number* of directions under the influence of *any number* of forces exist(s) quite independently of whether component forces do, so what gives?

The authors' concern here appears to stem from a commitment to the idea that dispositions combine in a way that admits of vectorial analysis, in the manner of forces. Perhaps, if dispositions are inherently vectorial, the analogy to component forces might seem pressing. This commitment to dispositions as vectors, however, is perplexing in light of a further proposal for how best to understand dispositional realism: 'compositional pluralism'; 'there is a plurality of ways in which powers compose to produce an effect' (p. 86). In some cases (*ex hypothesi*) they combine like vectors, but in others they 'interact and even affect each other's contribution'. In the latter cases, 'the powers involved often interact and alter in their nature as a result of those interactions' (pp. 87–8), which constitutes a form of 'emergentism'. But then, one might worry, what is dispositional 'interaction' apart from a label for cases in which the dispositions we know do not produce the manifestations we would otherwise predict on the basis of vectorial combination? There is a genuine problem of metaphysical underdetermination here: such cases might be explained in terms of dispositional interaction (whatever that could mean), or they might be explained simply in terms of different dispositions manifesting. The description of the former possibility is left here as a black box.

Turning now to the second major element of the account proposed, the longest chapter of the book argues against conceiving of causation as involving any sort of necessity, in the sense of there being sufficient conditions for an effect (as opposed to there being necessary conditions, which is kosher). The arguments rest on the arguably inescapable possibility of interference and prevention in the unfolding of causal phenomena, and are laid out against a dialectical backdrop of similar and related considerations from authors such as Mill, Russell, and Anscombe. One helpful observation here concerns the 'new essentialism', a position advocated by a number of recent authors and according to which, roughly speaking (among other slightly different formulations), properties have dispositional essences. The helpful observation is that this position does not by itself entail any sort of *causal* necessity, on pain of 'some sort of elision from properties having a causal essence to causes necessitating their effects' (p. 82).

This reflection concerning some recent and important work on the nature of properties is astute, and it survives a potential muddle, prevalent in the literature on dispositional essentialism, with respect to the following claim: '[s]aying that the causal role of a property is necessary to it is not at all to say that causes necessitate their effects' (p. 82). To many ears, the term 'role' suggests a part played, which itself suggests a manifestation rather than a disposition. If the

causal role of a property, in the sense of a manifesting behaviour, were essential to it, this would entail that various causal phenomena are necessary too. An alternative interpretation of 'role' promoted in the text, according to which it 'is one involving the disposing towards a manifestation' (p. 82), follows immediately from pandispositionalism, since on this view, properties are simply clusters of dispositions, and presumably, the role of a cluster of dispositions is to dispose. In any case, regardless of whether one is a pandispositionalist, this latter reading of 'role' seems essential to the new essentialism.

The last of the core elements of the metaphysics proposed is a process theory of causation, incorporating three main theses: causes and effects are simultaneous—they 'entirely coincide' (p. 112); causation is not a relation between distinct events; change over time can be explained 'in terms of the developing and unfolding of various natural process' (p. 117). (For some earlier and strikingly similar considerations against the view that causation is a relation between events, and in favour of the idea that it can be understood as a process in which dispositions are manifested instead, see Chakravartty ([2007], Chapter 4, and [2005]). As is perhaps immediately obvious, to restrict causation to simultaneous causes and effects is to do some significant violence to everyday expressions of causal knowledge. One commonly hears that smoking causes cancer, but, on the view proposed, unless the smoking and the cancer are simultaneous, this claim simply mistakes the facts of causation. Nevertheless, it may be defensible to view smoking and cancer as different stages in a causal process in which dispositions are manifested, leaving descriptions according to which specific durations are identified as 'cause' and 'effect' to the realm of pragmatics.

There is a fatal tension in the view proposed, however, in identifying causation with a process extended in time while insisting that causation is simultaneous. A process theorist (such as myself) might agree that it is a pragmatic matter how one identifies aspects of processes as causes and effects in everyday discourse, but this is entirely independent of the view that causes and effects are always and only simultaneous, which seems inherently problematic. Consider, for example, the dissolving of a solute in a solvent, like the sugar in one's tea (pp. 122–4). The authors claim that the cause—the disposition of solubility—is simultaneous with the effect—the dissolving. But if we take seriously the prescription that causes and effects must be simultaneous, then we must say that the solubility of the sugar at time t_1 is causally unrelated to its dissolving a moment later at t_2, since t_1 and t_2 are not simultaneous. Thus, on this view, it seems we must restrict causation to time slices: to avoid the mistaken attribution of causation *across* time slices, we are driven, ultimately, to admit causation only in cases where the cause and effect are jointly present in an instant—that is, in a time slice strictly defined, with no duration. But then the notion of causation is rendered incoherent because manifestations,

like dissolving, take time. There is no dissolving at an instant; there is only a distribution of molecules in solution.

There are many aspects of this rich work that I have not been able to discuss here. One chapter introduces vector diagrams with which to represent causal phenomena. Another concerns the ways in which the presence and absence of dispositions is important to explanation and prediction, and rejects the idea that causation can be analyzed in terms of counterfactual dependence. Another addresses the linguistic forms and syntax of causal claims and contends that causation is not always transitive. Having previously argued that causation involves no necessity, another chapter maintains that the modality of dispositionality is primitive and *sui generis*: irreducible to necessity or contingency, and somehow in between (p. 175). Anyone who believes in dispositions, or is interested in their connection to causation, should find herself well disposed to read this ambitious and provocative book, and to manifest a great deal of insight thereby.

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