Review: [Untitled]

Reviewed Work(s):

The Dappled World: A Study of the Boundaries of Science by Nancy Cartwright

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New Books

The Dappled World: a Study of the Boundaries of Science
By Nancy Cartwright
Cambridge University Press, 1999, £35.00, £12.95.

Cartwright's latest book brings together previously published and new material into a single volume. She offers an important and systematic perspective on the nature of natural laws that advances beyond her previous contributions. Her chief claim is that there is no pyramid of laws, with the laws of physics as basic and all others supervenient. Instead, the world is dappled, containing lots of different, localized domains in which there can be true laws capable of useful application. There can be no great scientific systematization of everything but this should not be a cause for disappointment. Her 'bottom up' perspective is more practical and there is no reason why we should not find beauty in variety. She quotes Gerard Manley Hopkins:

> GLORY be to God for dappled things-
> For skies of couple-colour as a brindled cow;
> For rose-moles all in stipple upon trout that swim;
> Fresh-firecoal chestnut-falls; finches' wings;

and so on (p. 19).

As with her *How the Laws of Physics Lie* and *Nature's Capacities and Their Measurement*, the approach is markedly interdisciplinary. As well as philosophy, much of the book is concerned with case studies from physics and economics. The philosophical commitment that drives this is Cartwright's empiricism where pure *a priori* metaphysics is not in general approved of. If we want to know how science works it is primarily science itself that should be consulted, not some detached philosophy that begins from *a priori* principles.

The pure philosopher will find much to frustrate, therefore, and also much that will have to be taken on authority unless, like Cartwright, their background is interdisciplinary.

In this review, however, I will focus on the philosophical merits of the book, both because I favour the 'philosophy first' way of thinking and because it is most likely to be what interests readers of this journal.

The main philosophical themes are: against fundamentalism; allowing that laws come from limited models that cannot apply to the real world without *ceteris paribus* clauses, and in favour of capacities or natures in the understanding of laws. I shall discuss each of these and their relation.

The title of the book summarizes Cartwright's view of the world or, more accurately, how the different sciences relate: 'The laws that describe this world are a patchwork, not a pyramid. They do not take after the simple, elegant and abstract structure of a system of axioms and theorems' (p. 1). Rather, science is apportioned into different disciplines, governing different sets of properties at different levels of abstraction.

Cartwright is thus arguing against any form of supervenience of other laws on a limited set of fundamental ones. The reason she avows for rejecting the supervenience claim is one which is philosophically unsatisfactory, however. Against fundamentalism for physics and economics, she says 'My belief in the dappled world is based in large part on the failures of these two disciplines to succeed in their aspirations. The disorder of nature is apparent' (p. 1). Clearly this is not an argument that settles the question one way or the other. It claims that, as a matter of fact, the supervenience thesis is not proven empirically but those who hold the supervenience view will agree. Why decide one way or the other, then? Cartwright thinks that the evidence we have thus far favours the dappled view and that belief in fundamentalism can have negative funding consequences. Both claims are moot. The disorder of current science is empirically consistent with unknown fundamental laws. The benefits of knowing such fundamental laws, if they exist, could well justify the resources currently allocated to such projects, despite their lack of success hitherto. I suspect, therefore, that what is Cartwright's most important motivation is her view of where laws come from, but before leaving her direct argument we ought to consider its alternative. Cartwright sets out the issue that might concern us: 'The view that there are macro-properties that do not supervene on micro-features studied by physics is sometimes labelled *emergentism*. The suggestion is that, where there is no supervenience, macro-properties must miraculously come out of nowhere' (pp. 32–3). The concern is real indeed and it is not assuaged by Cartwright's response that immediately follows: 'But why? There is nothing of the newly landed about these properties. They have been in the world all along, standing right beside the properties of microphysics'. This is no answer to the fear of emergentism at all. We are not denying that macro-properties were there all along but this is not the concern of emergentism. Our concern is how there are these macro-features in the world if they do not supervene on the micro-features. The properties are newly landed, not in a temporal sense, but in an ascended-level-of-description sense. Cartwright's direct discussion of fundamentalism versus the patchwork view of laws is philosophically unresolved, therefore.

There is a less direct argument for the patchwork view, however: it is an implication of Cartwright's view of where laws of nature come from. She now says she is a realist (she was perceived to be attacking realism in *How the Laws of Physics Lie*) but a *local* realist, by which she means that any particular law is true only within the limitations of the 'nomological machine': the well-controlled experimental set up that spawned it. When we try to apply such laws to the real world, their truth can be only *ceteris paribus*. This could offer some support to the patchwork view. If laws are nothing more than products of some limited nomological machine, then fundamentalism faces the difficulty of trying to defend some laws which are true absolutely and across domains. However, Cartwright's case seems again philosophically underdetermined. Her approach is to offer a view and then try to persuade us through examples. This is her empiricist emphasis on how the sciences actually are, but it is not an argument as

such. It will not, therefore, affect the stance of someone who favours fundamentalism on non-empirical, metaphysical grounds. They could accept the difficulty of applying laws to the real world or to other domains without feeling forced into the patchwork view. It might be, instead, that we do not yet know the laws or that the actual result of various laws operating is very complicated and difficult to predict. Non-local realist explanations remain available, in the examples Cartwright describes, so the answer to this issue remains open.

The third key theme of the book is one I find far more agreeable, though I have one comment and two reservations to register. Cartwright defends the importance of capacities or Aristotelian natures for laws. Laws are about, or at least made true by, what the capacities or natures of things are and the ideal conditions of the nomological machine are those in which we are best able to discern such capacities or natures. Cartwright emphasizes that these are *capacities* in which we are interested, not dispositions. I find that the latter term serves just as well as her reason for favouring the term 'capacity' is that 'Disposition terms, as they are usually understood, are tied one-to-one to law-like regularities. But capacities, as I use the term, are not restricted to any single kind of manifestation' (p. 59). There is no need to be limited so stubbornly to the term 'capacity' as the notion of a multiply manifested disposition is quite familiar, such as everyday elasticity which can manifest itself in different ways in different circumstances (Cartwright mentions Ryle's own 'generic dispositions', on p. 64, which are the same). There is, thus, nothing particularly special about the capacities Cartwright invokes. But this leads on to the more important reservations I have, which are about the metaphysical picture this view leaves us with. Cartwright dedicates the chapter in question to Rom Harré, who taught that 'it is all right to believe in powers' (p. 73). But we still need some convincing that powers are so unproblematic. What makes claims about capacities true? Cartwright answers that they are made true by irreducible facts about capacities (p. 72). But despite much attention that has been given to this issue lately, there remains something deeply metaphysically unsettling about such facts and Cartwright's short metaphysical aside offers little to ease any such worries the reader may have.

My second, and most serious, reservation, however, is that a realism about natures and capacities, of the sort Cartwright advocates, undermines the second main philosophical commitment of her book, that laws are creations of nomological machines and true only within restricted situations. A key point in any realism about dispositions is that such dispositions are there whether or not they are tested and whether or not they manifest themselves. The same must apply to Cartwright's realism about natures and capacities. However, the nomological machine is a set up of ideal conditions for such natures and capacities to *manifest* themselves, free from interference. If the laws are about the natures themselves, then they can be true regardless of any experimental situation that tests for their manifestations and her claim that laws come from the nomological machine is undermined. If the laws are about the manifestations created by the nomological machine, on the other hand, then Cartwright is not being the realist she

professes to be about these natures. I cannot see any way to resolve these two key themes of the book and Cartwright must give up either her realism about natures or her local realism, I think she should give up the latter, but then she would be giving up a key motivation for the dappled view. This would confirm, for me, that she offers no pressing philosophical argument against fundamentalism.

There is a wealth of material in Cartwright's book which I do not have the space to discuss though I have outlined the most important philosophical claims. Despite my critical comments, I would still regard this as profitable reading for anyone working on natural laws, no matter what their perspective.

Stephen Mumford

From Pluralist to Patriotic Politics: Putting Practice First
By Charles Blattberg
Oxford: Oxford University Press, xiii + 294pp., £50

The politics of modern states is increasingly taken up with the claims of various *soi disant* cultural groups or other so-called 'communities' of people united in some aspect of their lifestyle or attitudes. The aim of politics in such supposedly 'plural' societies is to arrive at a fair and reasonable compromise between these frequently conflicting claims. Blattberg's book is an attack on the political philosophy of pluralism which underlies this often unquestioning approach. In its place Blattberg proposes to install what he unselfconsciously calls a 'patriotic politics', though this turns out to be less alarming than it may initially seem to those with Johnsonian reservations about patriotism. What, however, are the crucial differences between pluralist and patriotic politics and why is the latter preferable?

In answering the former question Blattberg first finds an affinity between the pluralist and the patriot that sets them apart from those 'neutralists' who, like at least the earlier John Rawls, construct a political theory to systematize social practices in such a way as to arrive at objective judgments on which are right and which are not—which are right, that is to say, independently of the disparate conceptions of the good life that different groups engaged in them may entertain. A neutralist approach of this sort stems, Blattberg argues, from adopting a theory of language as principally representational, so that Rawls's conception of the right can supposedly be made to accord with all reasonable political systems just because it is couched in terms that represent a political reality which underlies them. In stark contrast Blattberg recommends an expressivist theory of language that refuses to allow the distinction which representationalism requires between signifier and signified, social practices thus being fused with the symbolism they employ in such a way that no shared reality between radically different political systems is detectable.

Within this expressivist paradigm pluralism and patriotism differ in the accounts they give of practical reason, although for both, unlike for neutralism, such reasoning cannot be disengaged from the particular social