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Microphysicalism, dottism and reduction

PHILIP PETTIT

1. A new challenge for physicalists

Challenged by Crane and Mellor [2] to formulate physicalism so that it is non-vacuous and not obviously false, I described a theory under which everything in the empirical world is, in a sense I tried to articulate, composed out of microphysical materials and controlled by microphysical laws [4]. I noted, in passing, that under this picture the macrophysical way things are contingently supervenes on the microphysical: this, in parallel to more standard formulations of physicalism.

Tim Crane [1] responded, *inter alia*, that contingent supervenience is to be explained by contingent micro-macro laws; that micro-macro laws are not microphysical laws; and that given the need for such laws, my physicalism – my microphysicalism, as we might call it – had to be false: indeed, as he saw things, had to be obviously false.

In response to this I showed that contingent supervenience does not require contingent micro-macro laws, making the point by way of analogy [6]. Consider a two-dimensional world in which certain dots constitute shapes of various kinds, and in which no other shape-makers appear, in particular no continuous lines; the theory according to which this is how things are in that world may be called 'dottism'. Under the assumption of dottism, most of us will agree that the shape-configuration of the world in question supervenes on the dot-configuration and does so contingently: duplicate the dot-configuration and, under the contingency that no continuous lines make an appearance, you will duplicate the shape-configuration too. Yet this contingent supervenience – this supervenience, under a contingency – does not involve any contingent dot-shape laws; it is not as if dottism postulates contingent laws relating various arrays of

dots to shapes. I suggested that as dottism involves contingent supervenience without contingent laws, so microphysicalism can involve contingent supervenience without such laws.

In commenting on this argument Chris Daly ([3], this issue) remarks, among other things, that even if my argument shows that contingent supervenience does not require contingent laws, and therefore that Crane's argument fails, it reveals a further, parallel problem for microphysicalism.

In order to deserve characterization as microphysicalist a theory must give life to claims like the following: that given microphysical facts, other facts come for free; that non-microphysical facts are nothing over and above microphysical facts; that non-microphysical facts are asymmetrically dependent on microphysical; and so on. In order to count as microphysicalist – or, indeed, just as physicalist – a theory, in a word, has to be suitably reductive. If it is not reductive in the rough sense indicated, then it will certainly fail to meet Crane and Mellor's ([2], p. 186) constraint that according to any physicalist doctrine the empirical world 'contains just what a true complete physics would say it contains'; and this, even if 'would say' is interpreted, as I claim it has to be interpreted ([6], p. 253, fn.1), in a generous sense.

Daly assumes that if microphysicalism is to be suitably reductive – the word is mine, however, not his – then the contingent supervenience that it alleges must not presuppose any non-microphysical fact. The point does not apply just to microphysicalism. Equally, if a doctrine like dottism is to be suitably reductive, then the contingent supervenience that it alleges in regard to shapes and dots must not presuppose any non-dotty fact. Daly leaves open the possibility that the supervenience may not presuppose a contingent micro-macro law in either case – Crane, as I argued, may have been wrong about that – but he claims that nonetheless it must still presuppose, in the one case a non-microphysical fact, in the other a non-dotty fact.

Let us focus, for simplicity, on the dots and shapes case and let us assume that there are no contingent dot-shape laws. The fact which the supervenience of the shapes on the dots must still presuppose is this: 'that there are necessary facts of the form: if certain facts about configurations of dots obtain, then certain facts about configurations of shapes obtain' ([3], p.135). According to Crane – if we may extrapolate from his position on physicalism – dottism presupposes that there are certain contingent laws; according to Daly, it must at least presuppose something parallel: that there are certain necessary facts. Although he does not address the issue directly (and says he doesn't), Daly assumes – reasonably enough, I concede – that the fact assumed by dottism is not itself dotty. And so he

concludes, as I would put it, that the shapes do not reduce to the dots. 'There are facts about dots, shapes, microphysics, minds, and much else besides, and there is no creditable sense in which any of these facts just are facts of another sort' ([3], p. 140).

2. *Three points in reply.*

This challenge is interesting but not, I think, overwhelming. I mention three considerations in reply.

First point. The fact that there are certain necessary facts is itself a necessary fact. And nothing comes as free as a necessary fact, for it is there to be found in every possible world. So how does the observation Daly makes bear on the reductive status of dottism? Given the dots and only the dots, and given a fact that is as free as anything ever gets to be, the shapes come for free. That sounds awfully like saying: given the dots and only the dots, the shapes come for free. And in my language that means that the shapes reduce to the dots.

Second point. If Daly's argument is accepted, then it means that 'reduction' is so defined – talk of coming for free, and the like, is so understood – that nothing is ever going to be reducible to anything else. Consider any set of facts, B, such that the reductivist says that given those facts, certain other facts, F, come for free. By Daly's argument, the reductivist claim is going to presuppose, at the least, that it is a necessary fact – a necessary fact, not a contingent law – that if those B-facts obtain, then the F-facts obtain. On the assumption that that fact is not itself a B-fact – an assumption that Daly's approach to dots and shapes appears to license – the reductivist's claim has to be false. When the reductivist says 'Look, I can get those F-facts, given these B-facts', Daly will be there to cry: 'No, wait: you also need the extra fact that it is a necessary fact that if the B-facts obtain, then the F-facts obtain'. Can the would-be reductivist say: 'Well, I can at least get the F-facts, given the B-facts plus that extra fact: given the C-facts, as we can call the new set'? No, not if we allow that of necessity the argument succeeds at the first stage. For Daly will be able to respond 'No, you are still rushing things; you also need the extra fact – the extra non-C fact – that it is a necessary fact that if the C-facts obtain, then the F-facts obtain'.

It should be clear that Daly is making it impossible for facts of any one kind to be reduced to facts of any another, in a way that is reminiscent of how Lewis Carroll's Tortoise makes it impossible for any conclusion to be deduced from any finite set of premisses. He is assuming an account of what is required for reduction which makes it a priori demonstrable, and demonstrable in the easiest of ways, that all would-be reductive doctrines are false or non-reductive. No need, then, to look at any

particular reductive theories. No need to examine the particular claims of any microphysicalism, or physicalism, or even dottism. Daly's assumption about what is required for reducing any F-facts to any B-facts – that the exercise should not presuppose any non-B facts, even any necessary non-B facts – ensures that all reductionist programmes are bound to fail.

Third point. A doctrine like microphysicalism, as I presented it in my original paper [4], is a doctrine about how things are constituted and controlled in the empirical world. It asserts that while the macro is perfectly real, there is a sort of dependence of the macro on the microphysical which gives life to the reductive metaphor of the macro coming for free, once the microphysical is in position. What it asserts, intuitively, is that things stand between the two realms as they stand, according to dottism, between the shapes and the dots in my imagined world; the dots compose the shapes, and it may be presumed that the laws of dot-behaviour control shape-behaviour, in just the way that the microphysicalist thinks of the microphysical composing and controlling the macro. Daly's line on my imagined world offers us a sense in which the shapes do not come for free, given the dots. But that line is not one that anti-physicalists should grasp too readily. For by my intuitions the shapes-dots dependence robustly illustrates – illustrates independently of further glosses – the sort of dependence that, according to the microphysicalist, the mental and other aspects of the macroworld display in relation to the physical. A strategy that saves shapes from dots does not offer minds the sort of salvation that ought to appeal to anti-physicalists, or even to those who think that there is no question of physicalism.

3. A comment on the notion of dependence

There is an important difference about the notion of dependence that comes up in this exchange and I end by drawing attention to it. Let D be the sentence describing the dot-array of the world in question, and stipulating that there are no lines about, and let S be the sentence describing the world's shape-configuration. Dottism says two things about the relation of dots to shapes. First, it says that the dots compose and control the shapes: that particular shapes are made up of dots and that the laws of dot-behaviour dictate the behaviour of those shapes (see [4]). And second, dottism notes that since the shapes are composed of the dots, and controlled by dot-laws, D entails S.

Call the first assertion the composition-cum-control claim, the second the entailment claim. I hold that the composition-cum-control claim is a basic theme highlighted in the assertion that the shapes reduce to the dots and so depend asymmetrically upon them. I do so, because entailment on

its own does not require what most of us would think of as ontological dependence. Mathematical truths are entailed by contingent truths and supervene upon them: any two worlds alike in having philosophers, for example, will be alike in making 2 plus 2 equal 4. But this entailment and supervenience does not reflect any dependence; all it reflects is the necessity of the mathematical truths (see Pettit [5], p. 151). What establishes the dependence of the shapes on the dots in the sense that I think is relevant is not just the fact that D entails S – though that is certainly part of it – but the fact that this entailment is explained, not by the necessary truth of D, or by anything of that kind, but by the nature of the relationship between the dots and the shapes: by the fact, as I put it, that the dots compose and control the shapes.

Daly argues that if D entails S, equally not S entails not D, so that ‘there are such conditionals running both ways between dot-facts and shape-facts’ and ‘the claim that there is an asymmetric dependency ... is false’ ([3], p. 138). This shows that by his lights, it is the bare entailment claim, and only that claim, that is relevant to the dependence of shapes on dots. I need not be impressed, however, by the fact that not S entails not D. For by my lights that entailment, like the entailment between D and S, is explained by the substantive fact that the dots compose and control the shapes; and it is this fact which ensures the dependence – the ‘asymmetrical dependency’, in Daly’s phrase – of the shapes on the dots: it is this fact which means that dottism is a reductive doctrine.

The point I am making here may be best brought out by reference to a particular position on the mental and the physical (or microphysical). According to functionalists, mental facts just are functional facts: facts to the effect that things are so arranged – as it happens, physically so arranged – that certain functions are reliably satisfied. This position means, under plausible assumptions, that the mental facts are entailed by certain physical facts, and supervene upon them. But the dependence of the mental on the physical that functionalists assert consists, not just in the fact that the entailment holds, but in the fact that the relation between the physical and mental realms is substantively such that the entailment holds. The entailment is explained, not in the way that the entailment of mathematical truths is explained, but on a basis similar to that which is relevant in the dots-shapes case.

There is great merit in trying to express the sort of dependency that reductive doctrines claim with the help of well-defined notions like that of entailment. But the fact that all truths entail necessary truths ensures that something more than entailment is going to be needed. At the least, we are going to need to restrict the entailment involved to that which bears on contingent truths. My own restriction consists in saying that the entailment

must be explained in the fashion at which I gesture in speaking – admittedly with a degree of vagueness in [4] – of microphysical composition and control.

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The characteristic thesis of anti-individualism

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According to Michael McKinsey, the 'characteristic thesis' of anti-individualism about content-bearing mental states is

(CT) Many de dicto ascribed thoughts metaphysically depend upon the existence of objects external to the thinker. ([7], p. 127)

(To say that *p* metaphysically depends upon *q* is to say that it is metaphysically necessary that if *p*, then *q*.) McKinsey presents the following argument against anti-individualism. We start with a plausible Kripkean essentialist premiss which 'most individualists would gladly accept' ([7], p. 125):

(1) Every human's existence metaphysically depends on the existence of that person's biological parents. ([7], p. 126)

Since a human's being in a psychological state metaphysically depends on that person's existing, we have

(2) Any human person's being in any psychological state metaphysically depends on the existence of physical objects external to that person [viz. his biological parents]. ([7], p. 126)