

# *Physicalism decomposed*

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## 1. *Introduction*

In this paper we distinguish two issues that are often run together in discussions about physicalism. The first issue concerns *levels*. How do entities picked out by non-physical terminology, such as biological or psychological terminology, relate to physical entities? Are the former identical to, or metaphysically supervenient on, the latter? The second issue concerns physical *parts and wholes*. How do macroscopic physical entities relate to their microscopic parts? Are the former generally determined by the latter? We argue that views on these two issues are independent of one another and should not be conflated.

## 2. *Microphysicalism*

The conflation of these two issues is widespread, as we shall show in our final section. But let us begin by further explaining the distinction we have in mind. It can usefully be illustrated by considering the position that Philip Pettit calls 'microphysicalism'. He defines this as:

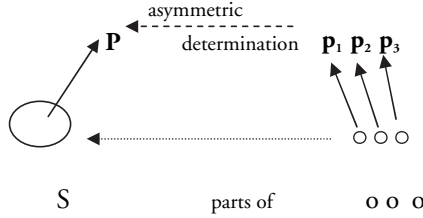
... the doctrine that actually (but not necessarily) everything non-microphysical is composed out of microphysical entities and is governed by microphysical laws. (Pettit 1994: 253)

From our point of view, this doctrine can usefully be decomposed into two dissociable claims. The first claim concerns the way things go *within* physics. It is intra-level. It says that macroscopic physical entities are asymmetrically determined by their microscopic physical parts and the microscopic physical laws that apply to those parts.<sup>1</sup> The second claim then relates non-physical entities to physical ones. It says that any non-physical entity is identical to, or at least metaphysically supervenient on, physical entities. This claim is inter-level. Together the two claims then deliver Pettit's 'microphysicalism'. The first says that everything physical is dependent on microphysical constitution. The second tells us that everything is physical. Together they imply that everything of any kind is dependent on microphysical constitution.

<sup>1</sup> Why 'asymmetrically'? Because determination *simpliciter* may be mutual. The determination has to be asymmetric in some sense in order to capture the idea that the parts govern the whole. We shall return to this issue.

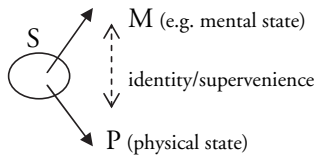
Let us thus distinguish

- (A) Part-whole physicalism. Macroscopic physical entities are asymmetrically determined by their microscopic physical parts and the microscopic physical laws that apply to those parts.



P: Physical property of macroscopic system S  
 p<sub>1</sub>, p<sub>2</sub>, p<sub>3</sub>, ...: Physical properties of parts of S

- (B) Levels physicalism. Any putatively non-physical entity is identical to, or at least metaphysically supervenient on, physical entities.



### 3. Independence

To see that (A) and (B) are independent, note that affirming or denying one of them does not commit one to the affirmation or denial of the other. There are thus four possible positions.

- (1) Affirmation of both (A) and (B). This is Pettit’s microphysicalist position.
- (2) Affirmation of (B), denial of (A). This position upholds the levels-physicalist claim that mental and other special entities are identical to or realized by physical entities, but denies the part-whole claim that macroscopic physical entities are asymmetrically determined by the properties or behaviour of their microphysical parts. This is the position we favour.<sup>2</sup>

<sup>2</sup> It was our discovery of this agreement that led us to write this note. Papineau’s *Thinking about Consciousness* 2002 presents a defence of physicalism. Hüttemann’s *What’s Wrong with Microphysicalism?* 2004 is directed against contemporary physicalist doctrines. However, in discussion it became clear to us that we each agreed with the other’s arguments.

- (3) Affirmation of (A), denial of (B). On this view, it is true that any macroscopic *physical* entity is asymmetrically dependent on microphysics, but false that everything is physical, since certain entities, such as psychological states, will be distinct from anything physical. This may well be the position adopted by some contemporary dualists about the mental, like David Chalmers.
- (4) Denial of both (A) and (B). This position has it *both* that some entities are not physical, *and* that some macroscopic physical entities are not asymmetrically determined by microphysics. This position is upheld in Tim Crane's and Hugh Mellor's paper 'There is no question of physicalism' 1990, which argues against both versions of physicalism.

#### 4. Arguments

As further confirmation of the independence of levels and part-whole physicalism, note that quite different arguments are appropriate to the defence of these two theses.

The standard strategy used to defend levels-physicalism (B) is the 'causal completeness argument'. This argument hinges on the premiss that physical effects are always fully caused (in so far as they are caused at all) by prior *physical* states. It then infers, from the further assumptions that special causes have physical effects, that those special causes must themselves be physical – otherwise the causal completeness of the physical would seem to leave no room for them to make a causal difference. For what it is worth, it seems to us that this argument is sound. (Cf. Papineau 2002: ch 1)

Now, this argument does nothing to establish part-whole physicalism. The causal closure argument makes no assumptions about the relationship between the macrophysical and the microphysical. It assumes only that any physical effect will have *some* full physical cause, but says nothing about whether those physical causes will always be determined by their microphysical parts.

The kind of argument that might establish part-whole physicalism (A) is not obvious, if only because the precise commitments of this doctrine are not clear-cut. To have something to work with, let us take it that (A) is the conjunction of two theses:

- (A1) The behaviour of macrophysical wholes is determined by the behaviour of their microphysical parts plus *general* laws that do not apply only to wholes of that kind.

- (A2) This determination is *asymmetrical*, in that the behaviour of microphysical parts is not similarly dependent on the behaviour of macrophysical wholes.

An argument for part-whole physicalism thus needs to defend both (A1) and (A2).

To defend (A1) is to oppose the kind of ‘emergence’ that C.D. Broad believed in. Broad did not think of emergentism as a matter of levels – his views are consistent with our levels-physicalism – but he did deny that the behaviour of compound physical systems can always in principle ‘be deduced from the most complete knowledge of the behaviour of the components, taken separately or in other combinations, and of their proportions and arrangements in this whole’ (Broad 1925: 59). Rather, Broad thought that there are systems whose behaviour can only be predicted with the help of *special* laws which apply to just the kind of system in question. (For example, the behaviour of certain complex molecules might not be deducible, even in principle, from knowledge of their component atoms and general laws about what atoms do singly or when they combine.)

We see no reason to agree with Broad on this matter. The issue is essentially empirical, and there seems nothing in modern physics to force us to accept special laws and the kind of emergence Broad had in mind. (Cf. Hüttemann 2004: ch. 2.)

However, even if this is agreed, it does not yet establish (A). That would also require us to show that the determination of physical wholes by their parts is asymmetric (A2). And here it seems to us that the part-whole physicalist is likely to face a problem. Let us suppose, in line with (A1), that physics contains general laws of composition that tell us how to add up contributions of parts in order to yield the behaviour of wholes. There seems no reason not to read these laws as showing that parts and wholes mutually determine each other, rather than that parts asymmetrically determine wholes.

Let us illustrate this through a simple example. Assume we are dealing with a compound massive system consisting of three subsystems. We are only interested in mass. In classical mechanics the mass of the compound ( $m_4$ ) satisfies this equation:

$$m_1 + m_2 + m_3 = m_4 \quad (\text{M})$$

Here (M) is our general law, with  $m_1$  to  $m_3$  the masses of the subsystems. But (M) implies no asymmetry of determination. Any three values of the above variables determine the fourth. The law (M) that governs the relation of parts and wholes thus seems to imply no asymmetric determi-

nation of the macromass, but simply a mutual dependence of parts and wholes.<sup>3</sup>

This is why we are inclined to reject part-whole physicalism, while upholding levels physicalism. No doubt some readers will feel that there are other arguments which can establish the asymmetry required by (A2), and thus vindicate not just levels physicalism but Pettit's full-blooded micro-physicalism.<sup>4</sup> Be that as it may, our main point in this paper is that levels and part-whole physicalism are separate issues. Disentangling these two claims will help to clarify a number of important issues in the philosophy of mind.

### 5. *Literature*

Let us conclude by surveying some further examples where the intra-level and the inter-level issues are not distinguished, and physicalism is identified with their conjunction, as in Pettit's microphysicalism.

Thus consider Oppenheim's and Putnam's seminal paper (1958) on the unity of science. Oppenheim and Putnam talk of 'reductive levels', and they characterize these in terms of decomposition:

Any thing of any level except the lowest must possess a decomposition into things belonging to the next lower level. In this sense each level will be as it were a 'common denominator' for the level immediately above it. (9)

Similarly Kim, in the first chapter of his (1998) introduces levels-talk in terms of mereology:

The bottom level is usually thought to consist of elementary particles, or whatever our best physics is going to tell us are the basic bits of matter out of which all material things are composed. As we go up

<sup>3</sup> Multiple realization of properties does not pose a problem for this claim as long as one keeps in mind that it is not only macro-properties but also micro-properties that might be multiply realized. (Cf. Hüttemann 2004: ch. 5.)

<sup>4</sup> How about arguing, using a version of the causal completeness argument, that the effects of physical wholes will always also be caused by the parts of those wholes, and so the wholes must be identical with or supervene on the parts, on pain of illegitimate overdetermination? This question raises more issues than we can deal with fully here. Our first response, though, is that the 'physical parts' will here only cause the effect in the sense that some kind of whole containing those parts has this effect (after all, it's the parts taken together and as actually related that have the effect). Given this, it seems to us that the suggested argument simply gives us levels physicalism again, showing how one kind of macroscopic physical fact must be identical to or supervene on a more finely described macroscopic physical fact. It does not show that the latter fine-grained fact is asymmetrically determined by its parts.

the ladder, we successively encounter atoms, molecules, cells, larger living organisms, and so on. The ordering relation that generates the hierarchical structure is the mereological (part-whole) relation: entities belonging to a given level, except those at the very bottom, have an exhaustive decomposition, without remainder, into entities belonging to the lower levels. (15)<sup>5</sup>

Finally, take a recent article in which Jonathan Schaffer reviews some attempts to explicate the metaphor of ‘levels’. On the basis of the passages we have just quoted and some further evidence he concludes that the central commitment of physicalism is to

*a mereological structure*, ordered by the part-whole relation. (2003: 500)

In opposition to these authors, we feel that discussions of physicalism would generally be much improved if levels physicalism and part-whole physicalism were clearly distinguished and analysed separately.<sup>6,7</sup>

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<sup>5</sup> Later on in his book Kim seems to distance himself somewhat from this picture, though it is not quite clear to what extent (1998: 80–87).

<sup>6</sup> Some writers entangle the issues somewhat differently. Rather than identifying physicalism with microphysicalism, as in the above examples, they define it as the disjunction of levels physicalism and microphysicalism. Thus consider Carl Gillett’s definition of property realization: ‘Property/relation instances F1-Fn realize an instance of a property G, in an individual s, if and only if s has powers that are individuating of an instance of G in virtue of the powers contributed by F1-Fn to s OR s’s constituent(s), but not vice versa.’ (Gillett 2002: 322). [The capitalization is ours.] In our terms, the part of Gillett’s definition before the capitalized ‘OR’ corresponds to levels physicalism alone, while the part after the ‘OR’ amounts to the stronger microphysicalism. Again, here is the way that Andrew Melnyk (2003: 251) envisages a physicalist explanation of some macro-objects T having properties C1, C2, ... Cn: ‘Ts have physical systems Ps (e.g., one or another of the sorts of physical structures mentioned earlier) as physical constituents (OR as physical coincidents) ... So the hypothesis that Ts are OR are realized by Ps, provides an explanation of why Ts have characteristics C1, C2, ... Cn.’ [Capitalization ours again.] On the disjunct where the physical Ps are constituents of the macroscopic Ts, Melnyk is specifying our microphysicalism; but if the macroscopic Ts simply are physical Ps, then we only have levels physicalism.

<sup>7</sup> We would like to thank Scott Sturgeon for comments on this paper.

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