

Let's Get 'Physical'

Clarifying the Concept and its Presuppositions

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Abstract

This paper argues that the current range of competing approaches to what it is to be physical provide only a partial account of the concept. The paper identifies the role that the concept of the physical has to play in discussions of physicalism and the mind/body debates, articulates that concept and explores its presuppositions. The account builds on empirical findings in cognitive development and on the pre-theoretic grasp of things in the world necessarily presupposed by any physical science (and thence by physicalism itself). It draws together the key elements of the existing accounts and presents a new account which meets the requirements for fruitful debate over physicalism and its rivals. This enables a discussion of the presuppositions of discourse around physicalism, with a crucial focus on the notion of the agent, and provides a platform for a future analysis of the necessary conditions of the possibility of both the concept of the physical and of physicalism itself.

Keywords

agent; mental; mind/body; physical; physicalism

1 Introduction

The concept of the physical is central to all major theories about the relationship between the mental and the physical, including physicalism and those doctrines such as dualism,

panpsychism and neutral monism which in some degree define themselves in contradistinction from physicalism. To determine whether any of these are true or false, we should, as Montero [2001: 62] notes, “have at least a rough idea of what it means to be physical... that excludes some, if not actual, then at least possible, phenomena from being physical”.¹ The issue is not the lack of a non-circular *definition* of the term ‘physical’—there are many words that we come to understand without such definitions. Nor is it the lack of a non-circular reductive analysis of the concept—there are many concepts we understand without being able to provide such analyses. The issue is that the main approaches in the literature give us only a partial explication of the concept, yet in each case provide valuable indications of the concept we need. In this paper I offer a brief survey and assessment of existing views before building on them with an account which fulfils the philosophical role required. This will in turn provide a platform for future argument on the status of physicalism and its rivals.

2 Current approaches and assessment

There are four main approaches: positive, negative, combinatorial, and “common sense” conceptions.

2.1 Positive approaches

The predominant positive approaches to understanding the physical are as follows:

Theory-based Conception: A property is physical iff it is the sort of property that physical theory tells us about.

Object-based Conception: A property is physical iff it is the sort of property had by paradigmatic physical objects and their constituents.²

Spatial Location Conception: physical object is an object with a spatial location.³

¹ Although this matter has received significant attention (see Ney [2008] for a brief, helpful survey), for many philosophers considering physicalism the issue is either considered as mainly terminological (e.g. Goff [2017: 23]) and/or put to one side to take up other questions (e.g. O’Conaill [2018], Elpidorou [2018]).

² These formulations are from Stoljar [2024] and are further developed in Stoljar [2010].

³ This formulation is from Markosian [2000]. The position is further criticised in van Fraassen [2002: 52–3].

Each of these conceptions gives us a partial steer towards the concept of the physical at play in our philosophical discussions: the link with up-to-date physics, the everyday grasp of a physical object, and the notion of physical objects as occupants of physical space. Each of these conceptions also comes with its own limitations which when elucidated will lead us to a concept more adequate to our requirements.

2.2 The Theory-based Conception

The main focus of discussion around the theory-based conception concerns Hempel's Dilemma and how to avoid it,⁴ but here the concern is with its presuppositions.

For even if we aim at providing understanding, rather than strict definition, the theory-based conception requires a prior understanding of physical theory/physics. This will itself either presuppose an understanding of the physical (*e.g.* "physics studies the fundamental entities and causal structure of the physical realm"), and so introduce circularity, or will rely on paradigmatic examples (*e.g.* Newtonian, Einsteinian theories) perhaps in association with the notion of "family resemblance" popularised by Wittgenstein.⁵ However, such an approach will only work if we understand at least implicitly why other theories with which the physicalist is likely to be uncomfortable (for example, both Aristotle's *Physics*, and Whitehead's process theory involve teleological aspects not easily assimilated to a phys-

⁴ See Hempel [1980]. Briefly, that dilemma holds that a) if we define the physical to be what current physics says there is, then physicalism is very likely false and b) if we define the physical to be what an ideal/complete physics says there is then physicalism lacks fully determinate content since we cannot say what an ideal/complete physics will contain, and if the ideal physics were to include mental entities or properties then the truth of physicalism would be uninterestingly trivial. Strictly speaking this concerns the Theory-based Conception, but a close parallel can be devised for the Object-based Conception since a complete account of the intrinsic nature of paradigmatically "physical" objects may turn out to require basic mental properties.

⁵ The difficulties in using a family resemblance account are clearly laid out in Daly [1998: 200–2], who argues that there is no suitable (non-question-begging) way of specifying which family resemblance relations are appropriate for the task in hand. Although he uses it in connection with physical properties, parallel issues arise for theory-based conceptions.

icalist world view) are ruled out as paradigmatic physical theories,⁶ and barring a hapless nominalism regarding what is studied in university “physics” departments this will be necessarily be based on a prior understanding of the physical which is yet to be explicated.⁷ A further move here is to attempt to define the physical in terms of the hallmarks of physics or physical theories (e.g. Poland [1994: Chapter Three], Dowell [2006]). For example, Dowell’s proposal, which builds on Poland’s, defines “the complete and ideal physical theory” as the complete and ideal scientific theory of the world’s most fundamental elements. But this neither rules out Aristotle’s or Whitehead’s teleological theories, nor excludes mental properties from such a complete explanation, and there is a further issue. For although Dowell admits to not saying anything much about what makes an element “fundamental” (Dowell [2006: 28]), in the context it seems clear that she has already excluded, for example, the most fundamental elements of my phenomenal consciousness (or the most basic “*qualia*” that constitute my current experience) from the category of the world’s most fundamental elements. The understanding of “fundamental” at work here already limits it to the physical realm,⁸ and so presupposes an understanding of the physical.⁹ The notions of fundamentality and basicness are here already tied to the notion of physical entities, and so cannot serve to fully explicate the concept of the physical. Nevertheless, although this account can provide only a partial understanding of the physical, in highlighting the importance of physical science the approach plays a significant role in the account of the physical developed in Section 4 below.

⁶ See Crane and Mellor [1990] for a discussion of the attempt to distinguish between psychology and the physical sciences. It could perhaps be argued that neither Aristotle nor Whitehead produced *scientific* theories, given the characteristic features of such theories (e.g. Dowell [2006: Section III]), but this is to say the least arguable and, in any case, fails to rule out the possibility of scientific theories which are either teleological or incorporate fundamental mentality.

⁷ See Dowell [2006: 37] for further discussion: “For who knows what future people we’ll call ‘physicists’ will study? Given that we have no idea what will be a posit of that theory, we also have no idea what won’t”.

⁸ For example, she sees it as an advantage of her formulation that “its ontological commitments are tied to the posits of theories that are confirmed in accordance with our best methods for justifying our beliefs about the natural world”. It is clear that ‘natural’ is equivalent to ‘physical’ for Dowell, since she does not consider the possibility of aspects of consciousness being fundamental.

⁹ If this were done on the basis that such mental items do not occupy space, then we need an understanding of ‘space’ which differentiates it from, for example, the “space” of my visual field which contains a circular red patch in its lower right-hand corner. That is, we require an understanding of space as physical rather than mental, and the presupposed understanding returns (see 2.4 below).

2.3 The Object-based Conception

A related problem arises with the Object-based Conception.¹⁰ In teaching the everyday meaning of the term 'physical' we may refer to objects such as rocks and tables. So for instance, if I am talking to a young child, I can pick up a rock or point to a table and say, 'here is a physical object'. Normally, I will choose inanimate middle-sized objects for this role. This may suffice for everyday use but something more is required for an understanding of the physical at play in philosophical argument. The Object-based Conception will need a suitable list of paradigm objects to explicate in a non-circular manner the term 'paradigmatically physical object'. Two issues arise here:

First, for any proposed paradigm list it may be that one or more objects are found to have properties which are not intuitively physical *e.g.* miraculous powers, or feelings, which will then by definition count as physical. It may also be the case that physics discovers properties *e.g.* of being dark matter, which are not properties of any object on the list of paradigms, and so will not count as physical. In the first case physicalism will be true by definition and in the second case it will be false by definition. Neither will enable us to make sense of the debates on physicalism.¹¹

Second, and more specifically, is it acceptable to include people or animals in the list? If we do, then we seem to include agency and consciousness as physical properties, and thus make a physicalist account of agency and consciousness true by definition: an unhelpful consequence in the context of these debates. But if we do not include people or animals, we are at least implicitly operating a criterion of inclusion: in the case of ordinary language teaching it will be something like "include only inanimate objects which can be touched and jointly perceived". In effect operating such a criterion is already to presuppose a grasp of what it is to be physical, such that the paradigm objects can be chosen as clear examples and others excluded. It can be of only partial help in explicating the concept.¹²

¹⁰ Other objections to forms of the Object-based Conception are found in Daly [1998: 203–4] and Stoljar [2024]. Daly's critique of the family resemblance approach (fn. 5) also applies, as does the parallel to Hempel's Dilemma (fn. 4).

¹¹ This objection is drawn from, and further developed in, Dowell [2006: 33–5].

¹² Can we use a family resemblance approach to the Object-based Conception? Again, while helpful in ordinary language learning, this cannot do the philosophical work required of the concept of the physical. In particular, this approach cannot rule out the possibility that at least one object, which is paradigmatically *not* a physical object, is related by a chain of (supposedly) appropriate resemblance relations to a paradigm physical object. See Daly's discussion (fn. 5).

2.4 The Spatial Location Conception

Markosian [2000] ably considers several objections to his Spatial Location Conception, but questions remain. First, we must presumably be considering physical space, rather than colour space, the space of our visual field, or any other “logical” spaces, and this itself would seem to require a prior understanding of space as “physical”. Second, even if we can argue that these other “logical” spaces are parasitic on our normal understanding of space, that understanding itself seems problematic. Our grasp of space cannot be ostensive, gained through pointing, or directing our gaze, at space itself. Our understanding of space must be at least in part as a system of relations between objects, and not just any objects, but ones which can move around, can be repositioned, approached and departed from: that is, physical objects as normally understood. The account of what it is to be physical in terms of space seems to rely on an understanding of space which itself requires an understanding of objects as physical and so cannot be fully adequate to our needs.¹³ Third, current speculation in fundamental physics sees space as itself as a property emerging from a more fundamental level of reality. If this were the case it would count not as falsifying physicalism, but as physics discovering a new physical property: our notion of ‘the physical’ is tied more closely to physical theory than to one specific property.¹⁴

Even if these brief comments point to limitations in the Spatial Conception, the conception embodies a key feature in our grasp of the physical as in contrast to the Cartesian notion of the mind as non-spatial. It is to these contrastive approaches that we now turn.

2.5 Negative approaches

The focus here is on the standard *via negativa* approach adopted in various forms by Montero [1999], Crook and Gillett [2001], Montero [2001], Papineau [2002], Montero and Papineau [2005], Wilson [2006], Worley [2006], Fiorese [2015], Tiehen [2016], Goff [2017], Wittmer [2018] and others, which defines or equates the physical with the non-mental, or incorporates as a component of the concept of the physical a contrast

¹³ This discussion owes much to Daly [1998: 204] who also presses the circularity objection against an absolute conception of space. See also van Fraassen (2002: 52).

¹⁴ Again, see Dowell [2006: 32–3] for the general argument against such “direct” definitions of the physical.

with the mental.¹⁵

There are objections in the literature regarding the effectiveness of this approach in evading Hempel's Dilemma (e.g. Gillett and Witmer [2001], Dowell [2006], Judisch [2008], Vicente [2011]) and it seems to have the discomforting consequence of according the mental at least an epistemological and semantic priority over the physical. Nevertheless, the focus here is on its presuppositions. For the approach to be successful, it assumes that we have a grasp of the mental which is independent of, and clearer than, our grasp of the physical (e.g. Crook and Gillett [2001: 354], Montero [2001: 76], Worley [2006: 124, fn. 35], Vicente [2011: 397]). Thus we should be able to avoid replacing one problem with another equally intractable one. This assumption is overly optimistic.

The usual dictionary definitions of 'mental' relate the term to the mind and cast it in contradistinction to 'body' and 'matter'. To then explain the concept of the physical in terms of that of the mental, which in turn must be understood in relation to the concept of matter is clearly circular. But must we adopt the dictionary definition and fall foul of the ensuing circularity? For most philosophers in the area the issue seems unproblematic, it being enough for characterising the mental to refer to qualitative experience, or phenomenality, and intentionality (cf. Montero [2001: 76], Wilson [2006: 90], Fiorese [2015: 14]) or even to leave it as an undefined primitive term (Dorsey [2011: 220], in his representation of the "Fundamental Mentality" view), while Strawson [2003: 54] suggests that "there are two good reasons for taking 'mental' as the basic positive term...the terminological reason is simply that we do not have a convenient positive term for the non-mental [...]. The philosophical reason is ... that we have direct acquaintance with—know—fundamental features of the mental nature of [...] reality". Göcke [2009: 305] meanwhile argues that "mental properties are those and only those properties of which we know *a priori* that their exemplification conceptually entails the existence of a conscious being. This moves us closer to a key point, namely the presupposition of a subject to which mental states are attributed, but none of these approaches will fully explicate the concept of the mental or, therefore, the concept of the physical which is to be understood in contrast to it. In order to understand what we mean by 'experience', or 'intentional state', or 'conscious', we have a choice. We must either explain them as aspects of mental life, which is clearly circular, or to attempt an ostensive definition, which will itself presuppose a tacit understanding of the

¹⁵ Goff [2017: 31–6], along with Campbell [1997: 234], also excludes teleology or "value-laden causation", and Wittmer [2018: 463] generalises to "Human Interest Phenomena", thus adding to the weight of presuppositions to be uncovered.

item ostended as a mental state rather than, say, the intentional object of the experience¹⁶. If for example, I explain ‘intentionality’ as “directedness towards an object”, this could apply to a signpost, or a cat chasing a bird. It can only be grasped as a “mark of the mental” if I am already understood as describing an aspect of mental life. Similarly, if I characterise phenomenality as having a “what-it-feels-like” feature, this presupposes a grasp of “feels like” as an aspect of mental life. The usual understandings of the mental via “marks of the mental” such as consciousness, intentionality, phenomenality, sentience, experience and so forth, thus already presuppose a grasp of our mental life. This is clear in writers such as Nagel [1974: 438, 445, 2012: 38, 42] and Goff [2017: 2], who focus on consciousness as our “inner” as against our “outer” life, or on our “internal” as against our “external” world.¹⁷

This discussion therefore puts in question the assumption that the concept of the mental is more securely grounded than that of the physical, and so places the standard *via negativa* account in doubt. Again, while the standard *via negativa* grasps an important aspect of the concept of the physical it leaves its own presuppositions insufficiently explored and cannot adequately explicate the concept.

2.6 Combinatorial approaches

There exist in the literature attempts to combine positive and negative approaches such as that from Wilson [2006], Goff [2017] and Wittmer [2018] which combine an appeal to fundamental physics with a “No Fundamental Mentality” constraint. Such a combined approach brings us closer to the concept needed in our philosophical discussions and may have merits as a constructive way of addressing Hempel’s Dilemma. However, this approach combines the limitations of each account and cannot succeed in providing a full explication of the understanding of the physical required by discussions of physicalism.

To summarise, each of the main current approaches to explicating our understanding of what it is to be physical can provide only a partial account of the concept, while offering important clues to the understanding we need. While each account will have advocates pursuing arguments in its defence, it is time to take stock. Suppose this statement of the limitations of current accounts is right: how can we take this discussion forward? At

¹⁶ Cf. Wittgenstein’s comments on the limitations of ostensive definition (Wittgenstein [1958: #2, 28–9 et al]).

¹⁷ Nagel [2012: 42] draws a clear contrast between aspects of ourselves that are “both objectively physical from outside and subjectively mental from inside”.

least three initial responses may arise. Firstly, neuroscientists and neurophenomenologists may express their lack of interest in the issue: they are interested only in the physical processes that correlate to mental phenomena. This is valuable work, generates in itself no philosophical problems and merely sets the issue aside¹⁸. Secondly, philosophers may declare their frustration with, or lack of interest in, the issue by saying that we have a clear enough grasp of the concept of the physical and should now move on. After all, any attempt to explain a term, concept or understanding will presuppose at least some prior understanding or other, so we can hardly expect to start from a blank slate. This dismissal will not do, for unless we can go some way towards uncovering that presupposed pre-understanding, our discussions of the physicalist position and its rivals are based on shaky foundations with potentially profound philosophical consequences.

Thirdly, it may seem that there is no way of determining which understanding of the concept 'physical' is the correct one so that we are stuck in a sterile terminological debate (cf. Chalmers [2011: 533–4]). It may seem at this point that the “common sense” conception of what it is to be physical may have a part to play, and to this we now turn.

3 “Common sense” approaches

Consider these current dictionary definitions of 'physical':

Relating to the body as opposed to the mind.

Relating to things perceived through the senses as opposed to the mind: tangible or concrete.

Relating to physics or the operation of natural laws generally. [Oxford Dictionaries: 2017]

And now these:

Relating to the body.

Relating to things you can see or touch, or relating to the laws of nature.

Relating to physics. [Cambridge Dictionary: 2017]

This range of typical definitions—some including a “non-mental” contradistinction and

¹⁸ Although the basis for the neurophenomenological approach is more sophisticated than here presented. See Chalmers [1997], Varela [1997] and Thompson [2007: Ch. 11] for examples.

some referring to physics and the laws of nature—suggests that our “common sense” understanding of the physical is too variable and imprecise, offering little by way of a sharp boundary with the non-physical, to be of much help to us.¹⁹ Some philosophers have at this point turned to intuition (Dowell [2006: 32], Stoljar [2010: 52]), or referred to the different linguistic communities, contexts and purposes in which the term is used (Markosian [2000: 382–3], Goff [2017: 39]) to take us forward. Worley [2006] uses findings from developmental psychology as a basis for articulating our common understanding of the physical. Now intuitions often conflict and are at most defeasible evidence rather than arguments: they are in themselves unlikely to take us much further than the dictionary definitions above, even if backed up by developmental psychology.²⁰ Nor is the demarcation of linguistic communities (e.g., into “everyday” and “philosophical”) itself clear enough to help us make progress.

Van Inwagen [1990: 17] offers the following account of our ordinary understanding of what it is to be a physical object (taking ‘material’ as synonymous with ‘physical’ for present purposes): “A thing is a material object if it occupies space and moves through time and can move about in space (literally move about, unlike a shadow or a wave or a reflection) and has a surface and has a mass and is made of certain stuff or stuffs”. This representation of the “everyday” or “common sense” understanding is often accepted (e.g. Markosian [2000: 383]) but ignores the contrast with the mental that seems to figure in our ordinary understanding. Witmer [2018: 458] talks of our “ordinary-physical” concept in terms of “things that”, “one can bump up against”, and of the need to understand how the philosophical concept relates to the ordinary concept. Let us take up the challenge.

4 Understanding the physical: presuppositions and an account

To clarify the relationship between the ‘ordinary’ and ‘philosophical’ concepts of the physical let us consider both empirical findings on the development of the ordinary concept, and then the presuppositions behind the motivation for the philosophical concept.

¹⁹ It may be for this reason that this approach is often ignored, as in Tiehen [2018].

²⁰ I say more about developmental psychology in Section 4.1..

4.1 Conceptual development

The following sketch of empirical findings in developmental psychology is drawn from Carey's [2010] excellent survey of the field, and Wellman's [2014] summation of previous work.

Carey distinguishes between the tacit conceptual representations that articulate "core cognition", and those that articulate explicit linguistically encoded thought (Carey [2010: 22]). The former, which include conceptual representations of objects and of agency, are innate, have a long evolutionary history and may be manifest in explicit representations only after "extreme [time] lags" (Carey [2010: 460]). From the empirical behavioural evidence Carey argues that infants distinguish the physically real (including cars and trees, but also heat, light and shadows) from the physically unreal (mainly mental entities, including sadness, ideas and dreams) largely on the basis of objective perceptual access and causal interaction with other such entities—they "cannot be moved or changed just by thinking about it" (Carey [2010: 399]). Carey further argues that discontinuities in conceptual development, resulting in children's "intuitive theories" which transcend core cognition, and which are themselves transcended by adult scientific theories, are the outcome of what she calls "Quinean bootstrapping" (Carey [2010: 20]). This process of creating new conceptual resources that are not entirely grounded in antecedent ones has three typical features of interest here: first is the mutual dependence in which certain concepts "are acquired in a suite together" (Carey [2010: 403]). Second is that "in all cases of conceptual change, one crucial ingredient is the setting of a new explanatory agenda" (Carey [2010: 424]). Third is that there is "no one moment of conceptual change...on which it occurs as a single gestalt shift" (Carey [2010: 422]).

More specifically, Wellman [2014: 47–56] cites evidence to show that pre-school children develop an understanding of mental entities as contrasted with ordinary physical entities which can be touched, externally perceived and publicly observed. Mental entities are immaterial, cannot be externally perceived and are private. These contrasting concepts are developed on the back of explanations of situations faced by the children (Wellman [2014: 42–54]), and on contrasts between belief and reality, and between beliefs and desires of distinct individuals (Wellman [2014: 78–9]). These empirical findings characterise the development of the "ordinary" concept of the physical as that which can be acted on and observed, and which is in contradistinction to the mental. What underlies both of these aspects is a presupposition of the agent as that which can act on and observe the physical world, and which has thoughts, experiences, desires and other mental states.

If this is the empirical basis of the “ordinary” concept, it also enables us to grasp why some everyday objects are for us paradigmatic of the physical.²¹ Let us now explore the nature and motivation for the ‘philosophical’ concept at the heart of the debates over physicalism and its rivals.

4.2 ‘Physical’ and the physical sciences

Consider first the relationship between physicalism and the physical sciences which underpins the attraction of physicalism and is commonly accepted by its rivals. For many current philosophers it is the success of the physical sciences, with physics pre-eminent, which provides the main motivation for physicalism (*cf.* Papineau [2001]). That success informs the naturalism that suggests that the natural sciences, particularly physics, should guide our metaphysical commitments. More particularly it leads to the claim that the physical realm is causally closed, and that mental events are either epiphenomenal or identical with physical events (*e.g.* Kim [1993]). Let us now reflect on the concept or understanding of the physical inherited from the physical sciences.

Modern physics explores the fundamental components of the physical world, their structures and causal relationships and aims to show how things work, from the microphysical level to the level of medium-sized dry goods, to the inter-galactic level. It has gained its credibility through increasingly sophisticated experimentation, observation, theory-construction, prediction and practical utility. Broadly speaking, physical theory over the last four centuries postulates a range of entities, a set of quantifiable properties (*e.g.* energy, momentum, charge) and a set of forces (*e.g.* gravitational, electromagnetic, strong and weak interactive) which mediate the distribution and exchange of these quantifiable properties. While the specifics of the theories may change, so that we cannot usefully explain ‘physical’ in terms of any particular set of objects or properties, this *précis* provides for the continuity in physical theory that both underpins the physicalist position and helps explain the intuition that our understanding of the term ‘physical’ is linked to whatever our current

²¹ Some might argue that elementary particles are paradigmatically physical because of their explanatory power, or that rocks are not because they are nihilists about composition. Such approaches fail as they presuppose the “ordinary” concept of the physical and the paradigms that accompany it.

“well-confirmed physical theory tells us there is” (Dowell [2006: 31]).²² But while physics develops theories about the physical world, it does so on a prior, albeit implicit, understanding of the inhabitants of that world. How can we articulate that understanding?

4.3 Articulating the understanding of the physical

First, for physical theory to exist and develop, at least some entities in the world must be already pre-theoretically understood as manipulable and observable. These entities are such things as apples and rocks that we can see, touch, and manipulate. If such entities could not affect us, there could be no observation: if we could not manipulate them, there could be no experimentation. Such prior understanding of things in the world is evidently required for the very possibility of observation and experimentation crucial to the physical sciences. It also aligns with the conceptual development findings outlined in 4.1 above. An initial statement of our understanding of the physical, in line with the “ordinary” understanding, can be formulated as:

Primary understanding: to be physical is to be manipulable and observable.

This formulation needs both clarification and extension. Begin with ‘manipulable’. Beliefs, desires, feelings and social norms also seem to be manipulable—in that they can be affected by our actions—but cannot serve our current philosophical purposes as they would broaden too far our grasp of what it is to be physical. What is important for the pre-theoretical understanding of things in the world required for the possibility of experimentation in physical science is that they be grasped as *bodily* manipulable. This understanding cannot however be equated with that of being *physically* manipulable, since that would reintroduce a circularity of understanding we have tried to avoid. Instead, it opens up a conceptual gap between ‘physically’ and ‘bodily’ and refers us to the notion of an agent (explored further in Section 6) capable of bodily handling things in the world. Consider now ‘observable’. While we may hear that someone is in pain or see that they are trying

²² This intuition then motivates Hempel’s Dilemma, for how can we know that a future/complete physics will not postulate extensions to the theory such as proto-*qualia* or micro-volitons which any physicalist worth the name will deem inappropriate? Dowell accepts such possibilities, arguing that it is highly improbable and “incredible” that physics should take this turn.

to reach an apple, we do not observe the feeling or desire itself.²³ Again, what is required for scientific observation is a pre-theoretic grasp of things as observable through the bodily senses. Nor can we cling to the idea that we “observe” our own mental states: even if we accepted this account of our relation to our own mental lives it is *public* observability which is crucial to the intersubjective verifiability at the core of the “third-person” outlook which scientific theory takes for granted (*cf.* Dennett [1991: 66–71]).²⁴

Secondly, while we initially observe and handle or manipulate things in the world straightforwardly with our senses and body, the development of observational and experimental technologies allows us to undertake these activities by extending our capabilities. Physical sciences take us beyond what is immediately manipulable and observable, extending their theoretical reach far beyond the practical engagements of everyday life, although always depending on the manipulation of instruments of observation and experimentation, and on scientists observing the results. Through such theoretical extension the physical sciences expand the range of entities we accept as physical, since we accept that entities that are too small, or too remote, to be observed or practically engaged with in the normal way are the kinds of entity which can in principle be observed and interacted with, if only by extending or amplifying our senses and technical capabilities. Things are “in principle” observable and manipulable in that while some posited entities or properties cannot now be observed and/or manipulated, they would be if we possessed the appropriate micro- or macro-technology.²⁵

Thirdly, our account of what it is to be physical clearly needs to accommodate the

²³ Is this not to assume the falsity of identity theories? No: it concerns the pre-theoretical grasp of objects as physical and as distinct from the mental which was outlined in Section 4.1 on conceptual development, and which is presupposed by the identity theorist. Identity theory posits an identity between mental states and physical states and so presupposes an independent grasp of mental states. This grasp is of states which are ontologically subjective and cannot be publicly perceived as physical objects are. It rules out telepathy, understood as the “observation” of the mental states of another. See MacDonald [2003] for an account of the conceptual confusions implicit in the apparently conceivable notion of telepathy or tele-cognition.

²⁴ This is not to deny the possibility of third-person reporting of conscious states that is the basis of Dennett’s notion of “heterophenomenology” (Dennett 1991: Chapter 4). But it is the *reports* that are publicly accessible and intersubjectively confirmable, not the conscious states themselves.

²⁵ Can recent neurotechnology enable us to publicly observe pains, as subatomic technology allows us to “see” bosons? Only if we posit some form of identity between the pain and its observable neural correlate. Again, we are dealing here with the pre-theoretical grasp of objects as physical and distinct from mental entities which is presupposed by the identity theorist (see fn. 23).

theoretical advances of science in investigating the composition, structure, and causal relationships between things in the world. This can be done by extending the account to encompass those properties or entities which are posited in explanations of the nature of physical entities and properties. We may then extend our initial formulation thus:

Extended understanding: to be physical is to be:

A. Bodily manipulable and publicly observable, either straightforwardly or in principle through extension Or

B. An entity/property which is posited by a theory explaining the operations of entities/properties in A.

But if *any* theory is allowed then how do we exclude those—in fields such as sociology or literary criticism—which seem to posit entities or properties (e.g. meanings, values) which go well beyond the limits of the understanding of the physical we need. Restricting ourselves to *physical* theories will clearly reintroduce the circularity discussed in Section 2.4 above.

History will help us. In addressing these things with which we engage in the world, physical theory from Galileo and Descartes onwards takes up a stance which constitutes a more specific pre-theoretic understanding. It addresses things only in respect of those properties which exist independently of the agents which come to know them, and which can be objectively identified and quantified, such as mass, location, extension.²⁶ It does not concern itself with the categories of property or entity whose existence depends essentially on the existence of agents, and which cannot be objectively identified and measured—such as meanings, values, intentions, and phenomenal qualities. Let us call this wide range of entities and properties “agent-dependent”, in the sense that without agents of some kind

²⁶ Cf. Galileo [1623: 274–7]. The actual history of science is far more complex than this. See for example Wilson [1995: Ch. 1] for a much more nuanced account which nevertheless accepts the fundamental point being made here. The relevance of Galileo to the current issue is emphasised in Goff [2017, 2019].

these entities and properties could not exist²⁷.²⁸ Nor does physical science itself²⁹ attempt to investigate these phenomena as such (rather than their physical correlates).

This focus on the objective³⁰ properties of agent-independent things in the world is not an accidental feature of physical science. The agent-dependent properties listed above, including mental phenomena, are not primarily bodily manipulable or publicly observable, even in principle, by scientists in the way that generates the intersubjective verifiability discussed earlier.³¹ This necessary pre-theoretic understanding of the physical—as consisting of entities and properties which are manipulable and publicly observable, and whose existence is independent of the investigating agents—thus structures the field of study of the physical sciences and lies at the core of its methodologies and its credibility. It also explains why the issue of understanding the place of the mental *vis-a-vis* the physical arises and is so hard³² to address. Meanings, values, intentions and phenomenal qualities—those agent-dependent entities and properties which are not publicly observable or intersubjectively verifiable—have their place in other fields of study but not in physical science. If it were suggested that certain events could be explained only by postulating that a certain object or event had a certain meaning or purpose, or that certain fundamental entities were conscious, the physical scientist would count this as a mark of an area of incompleteness

²⁷ Clearly some entities *e.g.* eyes and ears are agent-dependent but are also bodily manipulable and publicly observable, and so count as physical. Furthermore, an agent's centre of gravity is an entity defined formally, *i.e.* logico-mathematically, in terms of the bodily manipulable and publicly observable aspects of the agent, and so counts as physical. It is those features which are not so manipulable and observable which are relevant and will henceforth be referred to as 'agent-dependent'.

²⁸ Does this rule out *e.g.* objective values which hold independently of agents' beliefs, desires and interests? Lacking space for a foray into metaethics, we can say that even these values, although not relative to agents' interests, are principles for action and so, as values *simpliciter*, depend on the existence of agents.

²⁹ The emphasis on physical science *itself* is intended to distinguish the science from any metaphysical claims or assumptions about identity, realisation, emergence, or supervenience which scientists themselves may wittingly or unwittingly make.

³⁰ 'Objectivity' here has the primary sense of the ontological independence of an entity from the agent. The perspectival notion of objectivity, as independence from a subject's point of view, is also important but distinct. See Gomes [2016: 947–8] for further discussion.

³¹ Of course, if we accept the identity of mental and physical states, it will turn out that mental states *are* bodily manipulable and publicly observable, but this cannot be assumed when clarifying the concept of the physical itself.

³² Or impossible: *cf.* McGinn [1989].

in the science, not as an addition to its theoretical resources. (Consider an example: the spontaneous decay of a radium atom is currently understood as a random process, with no known underlying cause or mechanism. Physicists do not however postulate microvolitions on the part of the relevant atoms or their particles. Such acts of will could not be publicly observable and confirmable even in principle).³³ A helpful historical example is provided by Kepler's postulation of an *anima motrix*, or "moving soul", in his explanation of planetary motion. This later became the *virtus motrix*, or "motive power"—a physical force which was the precursor to Newton's concept of gravity (cf. Gentner et al [1997]).

We can now offer the following account of the concept of the physical which underpins the philosophical discussions we are engaged in.

Finalised understanding: to be physical is to be:

A. Bodily manipulable and publicly observable, either straightforwardly or by extension.

Or

B. An entity/property which is posited by a theory explaining the operations of entities/properties in A.

And

C. Not agent-dependent in a manner which excludes bodily manipulation and public observability.³⁴

How does this account relate to the accounts discussed earlier?

5 Situating the account

The above account draws together key strands of others to provide a fuller non-circular understanding of the physical required for our discussions of physicalism and its rivals.

First, Clause A builds on the primary pre-theoretic notion of the physical which is part of the cognitive development outlined in Section 4.1 above and which underpins our

³³ Interpretations of quantum theory which require an irreducible reference to observation or to "mind-like" qualities of fundamental particles are controversial and insofar as they introduce agent-dependent features at a fundamental level are not on this account purely physical theories. See also footnote 36.

³⁴ Not much hangs on the scope of the connectives here, but it may be more transparent to read the finalised understanding as $A \vee (B \ \& \ C)$.

ordinary human-scale paradigms of physical objects.

Second, our everyday “common-sense” grasp of the physical seems at ease with counting as physical the component parts of middle-sized physical objects, and indeed any entities which a physical theory posits to explain the behaviour of such objects.³⁵ This common-sense understanding encompasses both the Sellarsian “manifest” image and the “scientific” image as its extension, and so accounts for the intuition that our understanding of “physical” is linked to well-confirmed scientific theory, as articulated in Clause B.

Third, if something is physical in the above sense, then it must exist in both space and time. This is why accounts of the physical as something with a spatial location (Markosian [2000]) or as concerned with occupants of space-time (Poland [1994]) have been attractive. However, while spatial location is a *necessary condition* of something counting as physical under the Finalised Understanding, it is not part of that understanding itself.

Fourth, again in line with common usage, the account rules out in Clause C the salient agent-dependent entities and properties. This, in effect, is a revised version of the *via negativa*, with ‘mental’ being replaced by ‘agent-dependent’ as the term being excluded from our understanding of the physical, and requires further discussion.

A problem with the standard *via negativa* was that an understanding of the physical presupposed an understanding of the mental whose grounding was no more secure than that of the physical it was intended to explicate. On the Finalised Understanding formulated in 4.3 above the notion of the physical presupposes that of the agent. In addition, the notion of the mental, as discussed in 2.5 above also presupposes the notion of a subject to which mental states can be ascribed. Both scientific practice and normal cognitive development require an agent with both physical (bodily) and mental capacities.

The literature on agency is too complex and vast to engage with here. However, two initial points can be made. First, the concept of the agent cannot be defined in terms of a being with mental and physical properties, since this would introduce an unwanted circularity of understanding: it must instead be presupposed as prior to the concepts of the physical and mental. Second, the concept of the agent must be such as to make possible the distinction within it of both mental and physical (bodily) aspects.

This account thus draws together key aspects of the current accounts and explains their

³⁵ This account therefore avoids Markosian’s [2002: 383–4] criticism of van Inwagen’s [1993] account as not coping with micro-physical entities.

importance. It also has the following features. The account is neither stipulative, nor obtained through mere empirical description of the use of the term 'physical' by philosophers, scientists, or lay people. Nor does it accept the relaxed pluralism expressed in Ney [2008], and to some extent in Stoljar [2024]. It builds on the pre-theoretic understanding of things in the world required for any physical scientific practice to get going in the first place, and on the more specific focus on only (in principle) publicly observable and intersubjectively verifiable (and therefore non-agent-dependent) entities and properties which is crucial to the success of the physical sciences on which physicalism draws. The account is compatible with physicalism, dualism, idealism and various monisms. It explains the intuition that the concept of the physical is tied to physics, and provides a more satisfying account of the intuition that the physical excludes the (fundamentally) mental than Dowell's deflationary suggestion that we just think it is very *unlikely* that physics will posit basic mental entities (after all, the intuition predates the existence of an integrated science of physics). The account thereby provides the basis for grasping the oppositional relationship between the mental and the physical which the standard *via negativa* hoped to exploit, and which makes the mind-body relation so hard to understand.

In addition the account takes a position on the following issues:

A Priori not A Posteriori. This account provides an argument to show why the mental is excluded *a priori* from the physical that is demanded by Dowell [2006: 45]. Does it thereby place unwarranted limitations on the possibilities of physical sciences? No: the exclusion of agent-dependent features—of values, purposes, meanings and the mental—derives from the structuring of physical science itself since the seventeenth century. The limits are self-imposed, drawn from within, not imposed by external philosophical fiat. However, while these are limits to how the *physical* realm may turn out to be, *nature* or the whole world in its widest sense may on this account include other, agent-dependent, entities and properties.

Hempel's Dilemma. By not tying 'physical' solely to the deliverances of physical science but anchoring it also in our pre-theoretic understanding of physical things, this account avoids Hempel's Dilemma. Whatever a true/ideal physical science comes up with, it will not include fundamental agent-dependent entities. The spectre of "inappropriate extensions" to physics is removed.

Mind-body debate. This account of what it is to be physical maintains the problem-

atic nature of the debate, as it remains unclear how mental phenomena, *qua* mental, relate to the physical objects in our ordinary world or the mathematico-nomic universe of modern physics. Furthermore, neither physicalism nor its opponents are ruled in or out by this account, and all remain distinct metaphysical positions. If physicalism is true, then dualism, idealism and panpsychism are clearly false. The situation with Russelian or neutral monism is less clear and depends on the precise characterisation of the monism at issue. However insofar as such monisms posit a fundamental ontology which is neither mental nor physical then on the current account, as on all others, physicalism is trivially incompatible with neutral monism.³⁶

Conceptual continuity. The current account makes sense of two issues concerning the continuity of the concept of the physical. First, it allows us to see proto-physicalists such as the ancient atomists as beginning with the same prior understanding of physical entities as observable and manipulable (indeed, divisible) and then offering a metaphysical account of the world based on that understanding. Second, we can understand seventeenth and eighteenth-century materialists as beginning with the same prior understanding of the physical, explicitly excluding agent-dependent features, and then developing a theory of the nature of physical reality (as extended, solid etc) which was superseded by other theories which are putatively closer to the truth. The account thus allows us to accept such historical antecedents as physicalists *avant la lettre*. The fact that we no longer accept their theories of the entities in our world as true does not imply that they are not using the same concept of the physical as articulated above in Section 4. Third, the account accommodates scientific theory change. If our current physics were a complete and true theory (which is clearly not the case) then we would have in principle a list of all the physical entities in the world. Nevertheless, the concept

³⁶ See Goff [2017: 145–7] for further discussion, and Carruth [2018] on the failure of current accounts of ‘physical’ to deal with monisms. To take an example: the Bohmian ontological interpretation of quantum theory postulates an “implicate” order from which entities with and without mind-like qualities can emerge (*cf.* Seager [2013], Pytkänen [2020]). Whether this is viewed as a form of panpsychism is a moot, and possibly semantic, issue: insofar as the “implicate order” is neither mental nor physical then it is trivially incompatible with physicalism. Thanks to Alex Carruth and Paavo Pytkänen for discussion of these points.

of the physical would remain undisturbed, and the truth or falsity of physicalism undecided.

6 Presuppositions and necessary conditions

If something like the above account of what it means to be physical is right, what follows? After all, don't all accounts of meaning presuppose something? And if so, why is the current account not itself subject to concerns over circularity of understanding? And in any case isn't the point of (physical) science to investigate the phenomena of our pre-scientific world view and give an objective account of what that view is a view of (*cf.* Heil [ms]). How can we respond?

If the pre-theoretic understanding of the physical relates to entities which can be bodily manipulated and publicly observed, then commitment to the existence of physical entities comes with an apparent commitment to the existence of (embodied) agents by which those entities can be manipulated and observed. This in turn implies the existence of causal relationships which make possible such manipulation of things by agents, as well as the capacity of things to affect each other and to affect the observations of agents including scientists themselves. Indeed, this implied causal efficacy is crucial to the physical sciences which would hardly possess their current credibility without it.³⁷ Such agents in turn are clearly required to be capable of acting, observing, thinking and reasoning.

In addition to the empirical findings on conceptual development outlined in Section 4.1. above, the idea that the concept of agent has conceptual priority receives implicit support from Worley [2006] who notes that in their normal development children contrast objects which are only moved by "impersonal" forces with those which are "self-propelled". She continues (Worley [2006: 118]):

Impersonal forces are presumably those which don't involve persons in any essential way. But 'persons' here should be taken, also presumably, as being persons qua agents, or qua intentional beings.

Worley takes this to show that our concept of the physical is constituted in part by a contrast with the mental, but in the absence of a complete account of either of those concepts

³⁷ This holds even with a Humean reconstruction of the concept of cause, but the argument would take us beyond the scope of this paper.

it is the concept of the agent itself that serves as the key presupposition in grasping the notion of the physical. Furthermore, the concept of 'agent' here cannot be explicated using the concepts of the physical or the mental, since it is presupposed by them.

Do these considerations offer a short route to dealing with physicalism? At first sight they may seem to imply that any physicalist attempts to recast, reduce, or explain agents acting, observing and reasoning in purely physical terms are self-defeating. For if the physicalist claims that, in general terms, all actions and perceptions are at bottom merely physical events, then s/he is faced with the problem that the conception of the physical employed in that claim already necessarily presupposes a prior understanding of agential action and perception. If the physicalist tries to explain the notion of physical, they are then necessarily driven back to this prior understanding and so into an inescapable circularity which renders physicalism self-defeating. But this manoeuvre against physicalism is too quick. For physicalists may argue in turn that this circle of understanding is merely an epistemological or semantic matter. For even if in using the concept of the physical we must presuppose the existence of agents, the claim that physical entities provide the ontological substratum of the world, including the agent and the mental, remains unscathed. The physicalist position would then resemble Sellars' [1962: Part IV] construal of the relationship between the "manifest" and "scientific" images: the scientific image necessarily presupposes the manifest image from which it emerges, and then supersedes it in its more adequate account of the world.

Delineating the necessary presuppositions of the concept of the physical will not in itself therefore advance an argument for or against physicalism. As Stroud [2000: 196] puts it in a different context: "The truth of something does not follow from everyone in the world's believing it, even fully reasonably believing it, or their being completely unable to avoid believing it".

The outcome of this discussion is an account of what it is to be physical which does justice to both our pre-theoretic understanding of the physical and to the outcomes of the physical sciences, which explains the difficulty of the mind/body relationship, and which respects the continuity of the concept.

Can we now put the issue to rest as a terminological sideshow and get on with the hard metaphysical questions concerning the truth or falsity of physicalism and its rivals? No: the importance of grasping the concept of the physical goes beyond mere clarity of philosophical expression and leads to further questions. For how is this concept possible? How is the concept of an agent to be explicated in a way that clarifies its role as a presupposition of the concept of the physical? What are the necessary conditions of the emergence

of the concept of the physical explicated above? Here the cognitive development account discussed in 4.1. above offers a clue to our way forward. The evidence it provides sets out empirically necessary conditions for the development of concepts which, like 'mental' and 'physical' are grasped in part in contradistinction to each other. Neither concept can be understood merely in terms of the other, thereby establishing the primacy of one over the other: they come as a mutually dependent "suite" in response to a new "explanatory agenda" (Carey [2010: 403, 424]). Such explanatory agendas arise in the context of situations faced by agents where their previously unquestioned expectations of how things are in the world are disrupted (*cf.* Wellman [2014: 42–4]). The next stage of the philosophical argument will be to explore whether and in what way there is a route from these empirically necessary conditions of the emergence of the concepts of the physical and the mental, to metaphysically necessary conditions of their possibility. These will include the delineation of the necessary structure of agency such that disruptions in its unquestioned expectations of the world make possible the interrelated concepts of the physical and the mental. If there are such metaphysically necessary conditions then, unlike the mere necessary presuppositions of the use of those concepts, they will be conditions of the very meaningfulness and possibility of the mind/body debates to which they are central. As such they will have significant consequences for those debates. The stage is now set for the future development of this argument.³⁸

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