

REALISM AND EXPLANATION IN PERCEPTION

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Suppose that we identify physical objects, in the first instance, by extension, as things like stones, tables, trees, people and other animals: the persisting macroscopic constituents of the world in which we live. Of course, there is a substantive question of what it is to be like such things in the way relevant to categorization as a physical object. So this can hardly be the final word on the matter. Still, it is equally clear that this gives us all a perfectly respectable initial conception of what we are talking about; and it is an entirely adequate starting point for what follows.

Reflection on the history of epistemological and metaphysical discussions of perception, especially through the early modern period, shows philosophers struggling in practice to combine two intuitively compelling ideas about physical objects and our relation with them in perception.

1. Physical objects are the very things that we are presented with in perceptual experience, in the sense that perceptual experience thereby provides us with at least a rough provisional conception of what physical objects are. I call this basic idea empiricism.
2. Physical objects themselves are mind-independent, in the sense that the nature of such things is entirely independent of their appearance, and not

in any way a matter of how they do or might appear to anyone. I call this basic idea realism.¹

I call the conjunction of the two empirical realism.

Locke (1975) notoriously attempts to secure empirical realism indirectly. Perceptual experience consists in our direct acquaintance with mind-dependent entities. Still, these sufficiently resemble the distinct mind-independent physical objects that are normally their cause— there is resemblance in primary qualities at least – that we may nevertheless acquire a conception of what physical objects are through perception. Berkeley (1975a, 1975b) equally notoriously rejects this purported combination, effectively arguing from empiricism against realism. Crudely, if, as empiricism contends, perception provides us with a conception of what physical objects are, then these must indeed stand in some appropriate resemblance relation with the mind-dependent entities that we are acquainted with directly in such experience; but “an idea can be like nothing but an idea” (Berkeley, 1975b, § 8); hence physical objects must themselves be likewise mind-dependent.

¹ I mean by the nature of the entities of a given kind here the most fundamental answer to the question what such things are. This is of course a contentious notion. I take it for granted here without argument and without committing myself to any specific philosophical elaboration. The justification I offer for doing so rests on the merits of what follows within this framework. For a helpful and sympathetic historically informed elucidation of this notion of an object’s nature, see Wiggins (1995). For a highly influential further development of his own position, see Wiggins (2001). Charles (2000) elaborates the Aristotelian source of these ideas with great force and illumination. Strawson (1959) contains important motivation for the modern relevance of the notion. Ayers (1991, esp. parts I & III) offers an alternative development to Wiggins that focuses more directly on the idea of the nature of physical objects in general as causally integrated enduring and spatially extended material unities. Although I intend to remain neutral on this here, I am myself more persuaded by Ayers’ position. See also Campbell (2002, esp. ch. 4).

This line of objection to the Lockean indirect empirical realist combination seems to be confirmed by Rae Langton's (1998) reconstruction of Kant's transcendental idealism (1929), according to which perception in principle fails to afford us knowledge of any of the intrinsic properties of mind-independent physical objects themselves. So the idea that we grasp what such things are through perception, since this discloses their nature at least as bearers of primary qualities, is again indefensible. Berkeley's accusation that introducing a domain of mind-independent causes of our experience at best changes the subject from the nature of the genuine physical objects that we all know and love is quite just. For this procedure results in a theoretical postulation of intrinsically unknowable physical objects as the causes we know not what of such and such experiential effects in us. Thus, retaining realism certainly appears to be in some tension with empiricism.

Of course there is a great deal going on here; and I certainly do not wish to endorse everything involved in these various considerations against a straightforward combination of realism with empiricism. I offer these familiar moves rather as a historical illustration of a prima facie tension that I take as my starting point.

My plan in what follows is to pursue a specific version of this traditional problem in some detail. This version of the problem centres on the commonsense assumption that we may explain the actual and counterfactual order and nature of our perceptual experience of physical objects by appeal to the prior and independent nature of the physical objects themselves that we perceive. Thinking of physical objects as entities whose nature explains our experience in this way plays a crucial role in securing their status as mind-independent in the sense required for realism. I spell out exactly what I

think this status consists in and explain how the commonsense explanatory assumption secures it.

On its most familiar interpretation and development, though, this assumption that we explain the order and nature of our perceptual experience physical objects by appeal the nature of the physical objects themselves raises a serious problem. For it threatens the basic empiricist idea that we are genuinely presented with those mind-independent physical objects themselves in perceptual experience, that it is through our experience of them that we acquire a rough and provisional conception at least of what mind-independent physical objects are.

I argue that this threat may be avoided by resisting the orthodox development of the realist's explanatory strategy that effectively began with Locke. The assumption that we may explain the actual and counterfactual order and nature of our perceptual experience of physical objects by appeal to the prior and independent nature of the physical objects themselves that we perceive succeeds in securing realism without threatening empiricism provided that we respect the autonomous standing of our everyday commonsense explanations of experience. These are in no need of any fundamental scientific revision in such a way as to undermine empiricism.

The paper has two parts. First, I elaborate the explanatory assumption, explain in detail its role in securing the mind-independence of the physical objects that we perceive, and outline the threat that the orthodox development of this strategy poses to the presentation of those very objects to us in experience. Second, I suggest how this threat should be avoided. I argue that there is a perfectly adequate interpretation of the

explanatory assumption that secures the status of physical objects as mind-independent without in any way threatening the idea that these are the very things that are subjectively presented to us in perception.

I

We ordinarily cite the properties of physical objects in explanation of the actual and counterfactual order and nature of our perceptual experience of those very things. In vision, for example, we regularly give explanations along the following lines.

(E1) The coin looks circular to Janet because it is circular and she is viewing it from head on.

(E2) The coin looks elliptical to John because it is circular and he is viewing it from an angle.

(E3) The coin would look elliptical to Janet if she were to change her point of view because it is circular and she would then be viewing it from an angle.

(E4) The jumper looks red outdoors because it is red and lighting conditions are normal outdoors.

(E5) It looks mauve in the store because it is red and the lighting conditions are artificially dingy the store.

(E6) It would look red if the lights in the store were improved because it is red and it would then look its actual colour.

I contend that our offering and accepting such explanations constitutes a commitment to realism about the physical objects that they cite. For, first, realism consists in a certain priority of the natures of physical objects themselves over the perceptual appearances to which they may give rise; and, second, the explanatory standing of such explanations depends upon this very priority. I elaborate each of these two points in turn.

First, let us begin with the familiar distinction between primary and secondary qualities, for example, between the shapes and colours of physical objects respectively (Locke, 1975). It is hardly uncontroversial how best to draw this distinction. The approach that both seems to me faithful to the key historical arguments in the area and is in any case most useful for my purposes here characterizes this as a distinction between the relation that the relevant properties of physical objects bear to the perceptual appearances to which they may give rise in the two cases. I call this the standard account.²

Thus, the most basic distinctions concerning secondary qualities are between, say, red-type and green-type appearances, and the rest, conceived quite independently of the question of what their worldly correlates, if any, may be. The characterization of such appearances is prior to, and independent of, any characterization of the worldly

² I should say that I do not myself endorse the following characterization of secondary qualities and our perceptions of them. See Campbell (1993) for an alternative that I prefer. This will become relevant later with my inclusion of the colour explanations (E4)-(E5) alongside shape explanations (E1)-(E3) throughout.

properties that may in some way be presented or indicated by them. Having given such a characterization, of red-type appearances, say, we may then define a property – redness – which applies to mind-independent objects, as that of being disposed to produce those kinds of appearances – red-type ones – or, alternatively, as the property of having whatever underlying physical constitution happens in the actual world to ground that disposition.

In contrast, the most basic distinctions concerning the primary qualities are those between, say, squareness and circularity, and the rest, as properties of mind-independent things themselves, conceived quite independently of the question of what appearances, if any, they might produce. Having first identified which property squareness is, we can then identify square-type appearances as those that present something as having that property – squareness. So, the relevant appearances are to be characterized only by appeal to a prior, and independent, characterization of the worldly properties that they may present.

Generalizing this basic idea, I claim that the mind-independence of the objects that we perceive consists in the individuating priority of their nature over the various appearance properties that show up in our perception of them. So an account of our perceptual experience of physical objects preserves realism if and only if it offers a characterization the nature of physical objects themselves as the prior and independent basis on which it goes on to give a characterizations of the relevant appearances that such objects may present in perception.

It is natural to object to this whole approach that priority of characterization is one thing, metaphysical status quite another. The first is a matter of how we identify the phenomena in question; the second is a matter of the nature of those phenomena themselves. Indeed, the standard account of secondary qualities outlined above surely serves to make just this point. Suppose that we do first of all characterize the red-type appearances, as specific conscious experiential phenomena, conceived quite independently of the question of what their worldly correlates, if any, may be; and suppose that we do then go on derivatively to characterize the redness of physical objects as their possession of whatever underlying physical constitution happens in the actual world to ground the disposition to produce such red-type appearances in normal subjects under normal circumstances. Then an object's possession of that underlying physical property, whichever it may be, is a perfectly mind-independent matter. It is entirely independent of the way in which it does or might appear to anyone. Thus, although the redness of physical objects is characterized only on the basis of a prior characterization of the experiential appearances to which it gives rise, the property itself is perfectly mind-independent.

In reply I admit entirely that there is a mind-independent property here: whichever underlying physical property it is that turns out actually to ground objects' disposition to produce red-type appearances in normal subject under normal circumstances. The crucial point, though, is that this is absolutely not the property that such objects are subjectively presented as having in our perceptual experience of their colour. For we have no idea whatsoever which property this underlying physical property is on the basis of our perception of it on the standard account of secondary qualities in question. Put the other way around: the property – if any – that physical objects are

presented as having in our colour experience, on this view, is not mind-independent, but rather a mind-dependent one. Suppose that colour appearances were quite conceived differently. Suppose, that is to say, that they were correctly characterized as presentations of specific properties of things not themselves individuated by any reference to their appearances, as appearances of squareness are characterized according to the standard account of primary qualities above as presentations of a specific geometric shape. This is in my view the correct account of colour appearances, although it is of course quite contrary to the standard account currently under consideration here by way of illustration of the notion of mind-dependence in play. In that case the colour properties presented in perception would indeed be mind-independent. But this is precisely what is not the case on the standard account.

I conclude that this standard account of the distinction between primary and secondary qualities in fact serves strongly to confirm my criterion of mind-independence. The mind-independence of the objects that are presented in perception consists in the individuating priority of their nature over the various appearance properties that show up in our perception of them.³

Second, the explanatory standing of our ordinary explanations of the order and nature of perceptual experience on the basis of the nature of the physical objects themselves that we perceive depends upon precisely this individuating priority of objects over appearances. For suppose that the individuating priority were the reverse, as in the standard account of secondary qualities given above. In that case, purportedly

³ The key claims involved in this illustration from the standard account of the primary/secondary quality distinction, and especially the crucial role of empiricism as defined above, return at the heart of the main argument of section II below.

explanatory ascriptions of properties of physical objects are in reality ascriptions of properties essentially characterized in terms of the disposition to produce such and such appearances in normal subjects under normal circumstances. Thus the resultant explanations of those very appearances are either unsatisfying or mere placeholders for genuine explanations in quite different terms that re-establish the individuating priority with properties of objects independent and prior to any question of their appearances. Simply being told that something appears a certain way because it is disposed to do so gives us no substantive understanding why it appears as it does without some indication of what grounds the relevant disposition. Articulating this ground, along with the general law that things that are so constituted normally appear thus and so, does provide an explanation; but only by citing a grounding constitution that is characterized prior to and independently of any question as to what appearances, if any, things so constituted may produce. Thus the genuine explanatory standing of explanations of perceptual appearances depends upon an individuating priority of the explanatory properties of physical objects over the appearances to be explained.

It is sometimes said that the relation between certain perceptible properties of physical objects and the appearances that these present in perception is one of no straightforward priority either way (McDowell, 1985). I find it difficult to articulate the proposal fully; but the essential outline is as follows. On the basis of certain experiences that we have, we are able directly to sort various objects into groups, without, as it were, paying any heed to the nature of the experiences that provide our cues to do so. We may call the relevant groups of objects 'red', 'green' and so on. Reflecting on this capacity for object categorization, we may go on to sort our

experiential cues into groups also, characterizing these in turn as appearances of red, appearances of green, and so on. Thus there is an epistemological priority, on the subject's part at least, from the colour properties of objects to their colour appearances. Still, there is nothing 'in reality' that unifies all the red objects other than their disposition normally to produce appearances of red in us. These appearances are unified metaphysically as single kind in virtue of their intrinsic subjective type, entirely independently of the question of what their worldly correlates, if any, may be; and this in turn, and derivatively, imposes a metaphysical unity on the red physical objects, as those disposed to produce such appearances in normal subjects under normal circumstances. Thus there is a metaphysical priority from colour appearances to the colour properties of objects. There is no straightforward single priority either way.

If this really were a view on which there is no individuating priority of the relevant kind either way between the perceptible properties of physical objects and the various appearance properties that show up in our perception of them, then my argument above would fail. For I conclude that our explanations of perceptual appearances by their objects depend upon an individuating priority from objects to appearances from the fact that they are incompatible with an individuating priority from appearances to objects. I ignore the possibility of any genuinely no-priority view. Fortunately the position outlined above is categorically not a no-priority view of this threatening kind. For the primary unification is at the level of appearances, in the characterization of which subjective condition is that of something 'looking red', say, only on the basis of which is it then possible to characterize the corresponding property of physical objects themselves: being red. So, regardless of the epistemological claims, about our

capacity for sorting coloured objects in advance of sorting their colour appearances, there is a clear individuating priority of the relevant kind from appearances to objects. The point is confirmed by the fact that any genuinely mind-independent unity that there may be to the objects sorted as red, say, on this view, is not the unity that those things are subjectively presented as having. For we have no idea whatsoever what this may be on the basis of our perception of them. So this position is a definitively an instance of the order of individuating priority characteristic of the standard account of secondary qualities given above.

Indeed it is difficult to see how there possibly could be a genuinely no-priority view of the kind required to block my argument. For what it is to be an appearance of F-ness must in general have something to do with what it is to be F. I offer two possibilities: being F is characterized in terms of appearing F (as in the case of the standard account of secondary qualities); or appearing F is characterized in terms of being F (as in the case of the standard account of primary qualities). A no-priority view must presumably either endorse neither of these claims or endorse both of them. If it endorses neither, then the worry is that appearing F and being F fail to be related to each other in any way that is adequate to sustain the prima facie impression that 'F' is being used without equivocation between them. If it endorses both, then the danger is that the resultant circularity will obstruct any attempt to distinguish the two pairs being F and appearing F, on the one hand, and being G and appearing G, on the other, for any F and G of the same general type – e.g. colours. Thus in the absence of any clearly articulated candidate for a genuinely no-priority view, I contend that my argument goes through.

To reiterate my second key point about explanations of perceptual appearances by appeal to the physical objects that we perceive then, their explanatory standing depends upon the individuating priority of the natures of the physical objects themselves over the perceptual appearances to be explained.

Putting this together with the constitutive account of mind-independence, in terms of precisely such individuating priority, it follows that the explanatory standing of our explanations of the order and nature of our perceptual experience of physical objects on the basis of the nature of the physical objects themselves that we perceive delivers a clear positive verdict on the status of physical objects as mind-independent.

Offering and accepting such explanations constitutes a commitment to realism about physical objects. Call this the Explanatory Strategy (ES) for vindicating realism. The key claim is that we sustain realism concerning physical objects by thinking of physical objects themselves as the explanatory grounds of our various perceptual experiences of those very things from different points of view and in different circumstances of perception.

(ES) raises a serious problem, though. For it is prima facie plausible to accept the best scientific-physical theories as providing essential substantive revisions to our initial commonsense explanations (E1)-(E6) of our perceptual experience by appeal to the physical objects that we perceive. Thus, we may be inclined to appeal ultimately to fundamental scientific-physics for the complete and correct articulation of such explanations. Call this the scientific implementation of (ES).

On this way of thinking, the correct and genuinely explanatory explanations of the actual and counterfactual order and nature of our perceptual experience of physical objects are to be given only in the language of fundamental scientific-physics. This in turn determines the natures of the objects whose mind-independence is thereby secured by (ES). For these are the entities whose natures are explanatorily relevant in such fundamental scientific-physical explanations. Thus, insofar as their mind-independence is secured by (ES), physical objects are mereological sums, over regions of space and time, or perhaps some other kind of composition, of whatever turn out to be the most basic elements of the correct fundamental scientific-physical theory.

The theoretical conception that most of us have of what such things are actually like is no doubt very primitive. Indeed, Lewis (forthcoming) presents a powerful argument for the claim that we are irremediably ignorant of the intrinsic natures of their fundamental scientific-physical components. In any case, it is quite clear that these are not the very things that we are presented with in perception. For, as I explicated the notion at the outset, perceptual presentation provides us with at least a rough and provisional conception of what the objects are with which we are presented; and we have no conception whatsoever of what the most fundamental scientific-physical primitives are simply on the basis of perception. So we have no conception whatsoever of what any simple mereological sum or composition of such things might be either. The objects whose mind-independence is secured by the current scientific implementation of (ES) are therefore not subjectively presented to us in perception. Thus, the scientific implementation of (ES) is incompatible with empiricism as defined above.

This consequence should be resisted if at all possible for two reasons. First, as I said at the outset, empiricism is intuitively highly compelling. We come to these issues with the strong conviction that we are presented with mind-independent physical objects in perception in just this sense. Second, and more importantly, empiricism plays a fundamental role in setting the domain for the most important and contested philosophical controversy concerning realism as I envisage it from the start. The physical objects whose status is at stake here are precisely those things that are subjectively presented to us in experience. Preserving realism at the cost of distinguishing mind-independent physical objects from the stones, tables, trees, people and other animals that we all know and love is a hollow victory indeed for the realist.

At this stage, then, with only the scientific implementation of (ES) in view, it looks rather as though Berkeley (1975a, 1975b) must be right in his contention that the only conceivable form of realism involves changing the subject matter entirely from the physical objects with which we are presented in perception. For those things – the things whose metaphysical status is our initial and primary concern – perhaps we really must accept some kind of anti-realism.

II

I shall now argue that this threat may be overcome. (ES) is absolutely the right strategy for securing realism. The unacceptable consequence of undermining empiricism that follows from its scientific implementation may however be avoided.

It is correct to secure metaphysical realism concerning physical objects by thinking of physical objects themselves as the explanatory grounds of our various perceptual experiences of those very things from different points of view and in different circumstances of perception. It is a mistake, though, to look to fundamental scientific-physical explanation to provide and characterize what are therefore phenomenologically mysterious targets of this identification. The key lies, instead, in our initial commonsense-physical explanations themselves, which I claim are in excellent standing absolutely as they are, in no need of any scientific-physical revision.

Thus, the scientific-physical option outlined above, and incompatible with empiricism, is not the only possible implementation of (ES). An alternative commonsense implementation is available that preserves empiricism and is also in my view a perfectly stable and adequate defence of realism. The truth and explanatory standing of our initial commonsense-physical explanations of perceptual appearances as they stand is sufficient to secure realism for the physical objects that are presented to us in perception. Furthermore these commonsense-physical explanations are in absolutely no need of any substantive revision and correction by anything from scientific-physics. For they have features that any purported scientific-physical explanations of perceptual appearances lack that are crucially relevant to precisely this project of securing empirical realism. These features simultaneously establish the autonomous explanatory standing of commonsense-physical explanations and avoid the unacceptable anti-empiricist consequences that come with the move to scientific-physics in defence of realism.

To begin with, then, recall that commonsense-physical explanations of the actual and counterfactual order and nature of our perceptual experience of physical by appeal to the familiar perceptible natures of those very things, along with our point of view and other relevant circumstances of perception, depend upon the individuating priority of the natures of the physical objects presented in perception themselves relative to their various appearances. For the latter appearances are explicitly individuated in terms of the prior natures of the physical objects that they present. Thus, in my toy examples, the explananda visual appearances are individuated explicitly in terms of the shape and colour properties they (apparently) present: as the coin's looking circular or elliptical, and the jumper's looking red or mauve. As we saw above in connection with the standard account of secondary qualities, if the order of individuating priority were the reverse, then insofar as the offered explanations point to anything genuinely explanatory this would inevitably proceed in terms of imperceptible grounding properties of the physical objects in question. The definitive feature of commonsense-physical explanations, that these appeal precisely to the familiar perceptible natures of physical objects in explaining their perceptual appearances, would be lost entirely.

Most importantly at this stage of the argument, commonsense-physical explanations of the order and nature of perceptual experience by appeal to the perceptible properties of the physical objects have two distinctive features that make them far superior for the purpose of vindicating empirical realism to anything available at the level of scientific-physical explanation. What I call their explanatory robustness avoids the purported need for any scientific-physical revision of commonsense-physical explanations in connection with securing realism on the basis of (ES). The particular priority relation between the natures of the physical objects that constitute

the explanantia of such explanations and the appearances that are their explananda ensure in contrast with the scientific implementation of (ES) considered above that empiricism is preserved. I take these two points in turn.

First, in comparison with any candidate scientific-physical explanations of perceptual appearances, commonsense-physical explanations are robust. That is to say, they maximize modal correlation with the perceptual appearances they explain in the following sense. All other things being equal, objects with quite different scientific-physical properties that share the same commonsense-physical properties will appear in the same way; and what unifies the various respects in which their scientific-physical properties might differ in such a way as to alter these appearances is precisely that these are precisely those scientific-physical variations that significantly alter the commonsense explanatory properties in question.

By way of illustration from a related area independent of perceptual appearances, compare Putnam's (1978) famous observation that the best explanation of the fact that a given one inch square peg passes through a one inch square hole and not through a one inch round hole is given by citing its size and shape. All other things being equal, it is precisely this property – one inch squareness – whose presence facilitates, and absence obstructs, its passage. Any proposed move in the direction of scientific-physical explanation by appeal to lattices of elementary particles and the like reduces this robust modal generality. For one inch square pegs of quite different materials equally pass through a one inch square hole and not through a one inch round hole, regardless of the fact that the scientific-physical properties involved in explanation of their motion and interaction are quite different; and whatever their scientific-physical

differences may be – within reason⁴ – appropriately sized pegs that are not square will not pass through a one inch square hole, and square pegs greater than one inch in side will not do so either. Thus, all other things being equal, the scientific-physical differences between pegs that do, and pegs that do not, pass through a one inch square hole but not through a one inch round hole, are explanatorily unified as those in which the peg is one inch square versus those in which it is not. This is what I mean by the explanatory virtue of robustness.

Similarly, in connection with the explanations of our perceptual experience of physical objects that are central to (ES), commonsense-physical explanations are robust in comparison with scientific-physical explanations. The most robust explanation of why a coin looks circular to Janet viewing it head on and elliptical to John viewing it from a specific angle is given by citing its stable circular shape and not by appeal to the way in which its fundamental scientific-physical properties affect their respective perceptual systems. For, other things being equal, similarly circular objects of quite different materials look equally circular and elliptical respectively, to them and to other observers, from these same points of view, regardless of the fact that what is going on in scientific-physical terms may be quite different; and the scientific-physical changes to such objects that would alter these appearances are precisely those that significantly affect the commonsense-physical explanatory shape. This, rather than anything specific at the scientific-physical level is what unifies the objects that look circular and elliptical from these respective points of view as against those that do not. Thus, commonsense-physical explanations of such appearances have the explanatory virtue of robustness.

⁴ Excluding, for example, pegs made of material that dissolves the sides of the hole and so on.

Again, I contend, the most robust explanation of why a jumper looks red outdoors and mauve in the store is given by citing its red colour and the relevant variation between normal and artificially dingy lighting conditions, not by appeal to the way in which its fundamental scientific-physical properties affect viewers' perceptual systems in the two conditions. For, other things being equal, similarly red objects of quite different materials look equally red and mauve respectively in these same lighting conditions, regardless of the fact that what is going on in scientific-physical terms may be quite different; and the scientific-physical changes to such objects that would alter these appearances are precisely those that significantly affect the commonsense-physical explanatory colour. This, rather than anything specific at the scientific-physical level is what unifies the objects that look red and mauve in these respective lighting conditions as against those that do not. Thus, commonsense-physical explanations of such appearances again have the explanatory virtue of robustness.⁵

Having said all this, there is no obvious conflict, so far as I can see, between the robustness of commonsense-physical explanations of perceptual appearances of the kind involved in (ES), on the one hand, and the equal robustness of fundamental scientific-physical explanations of closely related but distinct phenomena, on the other. For example, it may well be that the most robust explanation of highly specific retinal or neural phenomena involved in our perception of some red objects in some circumstances are most robustly explained by appeal to the very specific scientific-

⁵ Notice that in extending the commonsense-physical explanatory picture in this way to secondary quality appearances, such as those of an object's colour, I am explicitly rejecting the standard model of the primary vs. secondary quality distinction set out above. See, again, Campbell (1993) for discussion and defence of this idea. Note, though, that this extension is not essential to the main argument of the current work.

physical properties of the light arriving at the eye reflected from the surfaces of such objects. That is to say, I see no good reason in what has been said here to deny that commonsense-physics and scientific-physics are two perfectly compatible but quite distinct explanatory projects, running in parallel, in no real competition, with each other. In any case, the key point from this discussion is that commonsense-physical explanations have the virtue of robustness over candidate scientific-physical explanations in connection with the perceptual appearances that figure in (ES).

This provides an illustration of how and why any blanket explanatory reductionism is to be rejected, where this is the crude idea that the best explanation of anything going on in the physical world is ultimately to be given in terms of fundamental scientific-physics. It certainly blocks directly any suggestion, however prima facie plausible, that the commonsense physical explanations of perceptual appearances that we began with in setting out (ES) are essentially subject to substantive revision by scientific-physics, in a way that then threatens empiricism as I understand it here. There is no such general obligation; and thus, so far at least, such commonsense-physical explanations are in perfectly good explanatory standing absolutely as they are.

There may be another worry about their explanatory status, though. For the properties of physical objects that are involved sound very much like the perceptual appearances that they are invoked to explain. How can the fact that something is red, or round, say, be a genuine explanation of the fact that it looks red, or round? It is far from obvious what the condition on explanation is supposed to be that is failed by such explanations; and we will see again below that the close individuating relation between the natures of objects and appearances involved here is crucial to the

preservation of empiricism. Still, it is worth emphasizing two points about commonsense-physical explanations that should silence this general line of objection. First, an object may clearly be F (red, or round, for example) without looking F, because it is not seen at all; because although it is seen the subject is attending exclusively to certain other features, and so only has eyes for them, as it were; or because it is seen in misleading perceptual conditions and so looks G instead. Second, an object may look F and yet not be F, again due to any number of variously misleading perceptual circumstances. So insofar as the general worry is that there is insufficient modal independence between explanans and explanandum for commonsense-physical explanations to get any genuine explanatory purchase, then this seems to me to be simply false.

I conclude therefore that the commonsense implementation of (ES) suffices as it stands to secure realism as defined at the outset. Physical objects are mind-independent: their nature is entirely independent of their appearance, and not in any way a matter of how they do or might appear to anyone. Furthermore, in avoiding the need for any substantive revision of commonsense-physical explanations by scientific-physics, this version of (ES) avoids the loss of empiricism that I argued above comes with any such move. I end by explaining in a little more detail how exactly this commonsense implementation also positively secures empiricism. This is the second point that I distinguished above: the priority relation between the natures of the physical objects that constitute the explanantia of such explanations and the appearances that are their explananda ensures in contrast with the scientific implementation of (ES) considered earlier that empiricism is preserved.

The standard account of primary qualities outlined earlier lies at the heart of the commonsense implementation of (ES). According to the current strategy, this model applies to all the properties of physical objects and their appearances that figure in commonsense explanations of our perceptual experience.⁶ That is to say, the natures of the perceptual appearances to be explained are characterized precisely as the subjective presentation of certain specific and independently individuated properties of physical objects in the world around the perceiver. Even in illusory cases, in which something that is F looks G, say, the appearance in question transparently presents the object as being a specific way that such things may be, although this one is in fact not. In the normal veridical case, something's looking F makes absolutely evident which way that very thing out there is. The explanatory ground of that very appearance in its mind-independent object's F-ness itself is entirely transparent to the subject in that very experience. Hence physical objects really are the very things that we are presented with in experience – our perception of them provides us with at least a rough provisional conception of what such physical objects are. Thus the commonsense implementation of (ES) also secures empiricism as defined above.

So the mind-independent physical world is the world of the familiar macroscopic objects that we all know and love; and those very things are subjectively presented to us in perception. The physical objects whose mind-independence is secured by the

⁶ Note, again, that my inclusion of secondary quality explanations of perceptual experience such as (E4)-(E5) above, alongside primary quality explanations such as (E1)-(E3), marks a significant departure from orthodoxy by embracing the secondary qualities under the familiar primary quality model. See Campbell (1993) for defence of this 'Simple View'.

commonsense implementation of (ES) are precisely those that we are genuinely presented with in perception. Commonsense (ES) secures empirical realism.⁷

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