

Color and the Mind-Body Problem

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ABSTRACT

There is no ‘mind-body problem’, or ‘hard problem of consciousness’; if there is a hard problem of *something*, it is the problem of reconciling the manifest and scientific images.

Other philosophical traditions can offer a new perspective on our own ingrained and prejudicial habits of thinking. The insular, decontextualized, acultural analytic philosophy of today, with its emphasis on language, truth, and logic, needs to adopt a more pluralistic approach. In particular, philosophical traditions in other possible worlds have been systematically ignored. So, as a start on rectifying this omission, let us examine the dominant philosophy of mind and language in a possible world not so far from our own.

1. *Philosophy in w'*

w' is much like the actual world *w*. But, in *w'*, analytic philosophy of mind and metaphysics at the dawn of the twenty-first century is somewhat different. In *w'*, philosophers are not overawed by the mind-body problem; instead, it is the *color-body* problem that is widely regarded as the last – and possibly insuperable – obstacle to a fully naturalistic worldview. Colin McGinn', one of the leading philosophical pessimists in *w'*, puts it this way:

How can *technicolor* arise from matter? . . . How could the aggregation of millions of colorless particles generate *colors*? . . . Somehow, we feel, the water of the physical tomato is turned into the wine of redness, but we draw a total blank on the nature of this conversion.¹

Indeed, McGinn' thinks that we are *constitutionally* unable to answer these questions: there is a naturalistic explanation of how matter generates color, but the human mind is ‘cognitively closed’ to it.

Why isn't the *mind-body* problem taken seriously in *w'*? Well, the philosophers in *w'* are much taken with the idea that experience is *transparent*. Introspection

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¹ Cf. McGinn 1989, 394–5. An early twentieth century discussion of (*inter alia*) the color-body problem is in Broad 1929, chapter 2.

of one's experience of blue, for example, merely yields what the experience is *of* or *about* – the ostensible scene before the eyes.² As to the intrinsic nature of the experience, we are completely in the dark. If we like, we can say experiences of blue have a 'qualitative character', but that is simply because they *represent* that objects have a 'qualitative' property – namely, blueness. The experiences are, in this respect, like the *words* 'blue', 'purple', 'yellow', and so forth. We may say that 'blue' is more similar in a salient qualitative respect to 'purple' than to 'yellow', but that can only mean that 'blue' represents a property that is more similar in a salient qualitative respect to the property represented by 'purple' than it is to the property represented by 'yellow'. Likewise for the experiences of blue, purple and yellow. They too inherit their 'qualitative character' from the qualitative nature of the properties they represent. Hence, the philosophers in *w'* thought, if we can provide a satisfying naturalistic explanation of the qualitative nature of the *colors*, there will be no mysterious qualitative residue left in *experience*.³

Here is a potted history of philosophical thinking about the color-body problem. The textbooks usually start with the seventeenth century philosopher Descartes'. Descartes' was a *dualist*: colors, he held, were entirely non-material. Material properties, or *textures*, had a spatial or geometric essence; color properties, by contrast, had a distinct chromatic essence. Descartes' argument for this 'real distinction' went as follows. First, he could 'clearly and distinctly imagine that textures and colors are separated'. Second, 'everything which I clearly and distinctly understand is capable of being created by God so as to correspond exactly with my understanding of it'. Hence, colors and textures are not the same:

... on the one hand I have clear and distinct idea of colors, insofar as they are simply chromatic properties; and on the other I have a distinct idea of textures, insofar as they are simply geometric properties. And, accordingly, it is certain that colors are really distinct from textures, and can exist without them.⁴

That argument might seem fallacious, and in fact it took some centuries before the true power of Descartes' argument was recognized. In any event, it was soon realized – or so runs the Whiggish history of the textbooks – that dualism has some serious problems. For a start, the causal interaction between colors and textures (as when, say, an acid turns litmus paper red) was hard to explain, if they are utterly different kinds of properties. And since only the textures of bodies, not their colors, seemed necessary to explain why objects look colored, dualism faced

² See, in particular, Harman 1990. For reasons of space, this paper offers no argument that Harman-style claims of transparency are correct.

³ Admittedly, the philosophers in *w'* did think that the project of naturalizing intentionality – in particular mental representation – was on the difficult side. But they did not think that this project faced the especially powerful objection mounted by Kripke' (see the following section) against any naturalistic theory of colors.

⁴ Cf. Descartes 1642/1985, 16.

an epistemological problem. If colors do not cause our visual experiences, how do we know that bodies are colored?⁵

One overreaction to the dualism of Descartes', usually the subject of the next textbook chapter, was *behaviorism*. According to the behaviorists, to be colored is simply to be prone to behave colorfully. In particular, it is to have a disposition to affect perceivers in certain ways. To be red, for example, is to be disposed to produce certain characteristic effects – R-sensations – in perceivers. To be green is to be disposed to produce G-sensations in perceivers, and so on. Since there was no difficulty in explaining how merely physical bodies could have such dispositions, the behaviorists optimistically announced that the manifest and scientific images can peaceably coexist. A pink ice cube may be nothing more than a complex system of colorless particles.⁶

As any undergraduate in *w'* knows, the optimism did not last long, and behaviorism fell to a variety of objections. One turned on the apparent possibility of a colored object that was, in the jargon, 'completely paralyzed'. A paralyzed yellow object, for example, is one that is not disposed to produce Y-sensations, perhaps because it emits deadly rays that would kill anyone in the vicinity. Another was the converse possibility: the so-called 'perfect mimic' objection. There could be a 'perfect mimic' of a ripe tomato: say, a green tomato that emits rays that bypass the eyes and act directly on the visual cortex to produce R-sensations. Such a tomato would be indistinguishable in color to ordinary perceivers from a normal red tomato, yet it would not be red.⁷

If that wasn't bad enough, there were two further objections that were even more devastating. First, because the color sensations an object produces are influenced by the colors of other objects in the scene – the phenomenon of simultaneous color contrast – the colors of other objects apparently have to be mentioned in a specification of the relevant disposition. So – to take one of the extreme examples – an object will only be disposed to produce DB ('deep black') sensations if it is surrounded by objects of lighter colors. But this is to explain one color in terms of another. The second objection points to another source of circularity. What is an 'R-sensation', exactly? Surely it is an experience as of something's looking *red* – but this adverts to the very color that R-sensations were supposed to explain.

But perhaps the most simple source of disquiet with behaviorism was the thought that colors are states of objects that *explain why* they have various dispositions to affect perceivers, and so cannot be identified with the dispositions themselves.

⁵ See Hardin 1993, 60–1.

⁶ See Sellars 1962. Sellars himself takes the problem of the pink ice cube to reduce to the mind-body problem; according to the philosophers in *w'*, this is a mistake.

⁷ See Johnston 1992, 145.

Next up was the *chromo-physical identity theory*, proposed by the philosopher J. J. C. Smart' and the psychologist U. T. Place', and explicitly motivated, in part, by the last objection. Colors, Smart' and Place' argued, are identical to physical properties. They conceived this on the model of a posteriori scientific identifications that had been established by scientists in w': the Morning Star is the Evening Star, flashes of lightning are flashes of electricity, pain is c-fiber firing, and so on. The property of being green, Smart' and Place' suggested, is identical to the property of containing chlorophyll.

One important objection to this was given by Putnam'. Maybe everything green around here contains chlorophyll, he said, but what about 'extra-terrestrial life', namely little green men?'⁸ Little green men from Mars might be entirely chlorophyll-free. Perhaps they are green because their skins contain XYZ. Greenness, Putnam' claimed, could be *multiply realized*. This was one of the motivations for the next big advance, to which Armstrong' and Lewis' also made great contributions, namely the formulation of *functionalism*. The functionalists took on board multiple realization, and the anti-behaviorist point that the behavior associated with a particular color needed to be specified in partly chromatic terms. One widely adopted functionalist framework, proposed by Lewis', involved the technique of *Ramsification*. In a nutshell, the idea was to first write out the color theory as a long sentence, using names for the various colors. (On one view the theory is 'folk chromatics'; on another, color science.) A fragment of such a theory might be this:

Tomatoes possess redness . . . nothing has both redness and greenness . . .
yellowness . . . blueness . . .

Then the 'theoretical terms' 'redness', 'greenness', and so forth were replaced by variables, and 'redness', for example, was defined using the resulting open sentence as follows:

Redness = the first member of the unique quadruple $\langle P_1, P_2, P_3, P_4 \rangle$ that uniquely realizes 'Tomatoes possess X_1 . . . nothing has both X_1 and X_2 . . . X_3 . . . X_4 . . .'⁹

This is the so-called 'realizer' version of functionalism (basically the identity theory loaded with fancy options): redness is the property that in fact occupies the red-role. But on another – perhaps more popular – version, redness is the 'higher-order' property of having the role occupied by something or other. Deciding between the two versions occasioned a lot of scholastic moves in the metaphysics of causation.

⁸ Cf. Putnam 1973, 77.

⁹ See Smith 1994, 48–53.

A few philosophers took a rather extreme line. The folk theory of color, they said, is a radically *false* theory, because it cannot be smoothly reduced to physics, and so the world is entirely colorless. As Paul Churchland' put it:

A successful reduction cannot be ruled out, in my view, but the explanatory impotence and long stagnation of FC [folk chromatics] inspire little faith that its categories will find themselves neatly reflected in the framework of physics. On the contrary, one is reminded of how alchemy must have looked as elemental chemistry was taking form . . .¹⁰

Churchland's theory of *eliminative materialism* was not widely accepted, flying as it did in the face of apparently obvious facts. Most agreed that the hypothesis of a colored world was a *datum* which any theory should respect.¹¹ Some even speculated that Churchland' was unable to see the world as colored, due to a congenital condition of rod monochromacy.¹² Others argued that eliminative materialism was self-undermining – if it can be successfully stated, then rationality compels us to deny it.¹³

That brings us to the present day. Physicalism of one stripe or another is orthodoxy. One rather non-committal version currently in vogue is *non-reductive physicalism*: colors are not physical (or functional) properties, but nonetheless (metaphysically) supervene on physical properties. Despite the general physicalist flag-waving, very serious doubts remain, and have been the topic of innumerable papers and books. One recent and particularly influential book is Chalmers' *The Colored World*, a powerful synthesis of objections to physicalism, formulated using the semantic apparatus of *two-dimensionalism*. Chalmers' defends dualism as the best response to the 'hard problem of color'. According to him, colors are nonphysical properties that (merely) *nomologically* supervene on physical properties. We have to postulate, Chalmers' argues, fundamental chromo-physical laws linking physical properties and the colors, just as physicists have occasionally found it necessary to postulate new fundamental forces.

In more recent work Chalmers' remains opposed to physicalism, but now shows more sympathy toward *panchromatism*, the exotic view that color goes 'all the way down' to the ultimate constituents of matter. According to panchromatism, even elementary particles like quarks are colored!¹⁴

The two principal obstacles to a physicalist theory of color are Kripke's objection and Jackson's knowledge argument. Kripke's objection will be the main focus of later sections, and this will be explained first.

¹⁰ Cf. Churchland 1981, 75.

¹¹ Cf. Chalmers 1995, 188.

¹² Cf. Chalmers 1995, 190 (tongue in cheek): 'Perhaps Dennett is a zombie'.

¹³ Cf. Churchland 1981, 89–90. For an argument that eliminativism about color is self-undermining, see Stroud 2000, chapter 7.

¹⁴ Cf. the 'Type-F monism' or 'panprotopsychemism' in Chalmers 2002b.

2. Kripke's objection¹⁵

According to Smart' and Place', an identity statement of the following form is true: physical property $\Phi_Y = \text{yellowness}$. Further, they thought that this and similar identities are *contingent*. Kripke' corrected this mistake, arguing that if $\Phi_Y = \text{yellowness}$, it is *necessary* that $\Phi_Y = \text{yellowness}$. Yet, Kripke' said, consciously echoing Descartes', the link between Φ_Y and yellowness *appears* contingent. Intuitively, there could be a yellow banana that lacks Φ_Y , or a blue banana that has this physical property. But how can the physicalist account for the appearance of contingency? Kripke' argued that this was problematic, because a strategy that works in other cases won't work here. He illustrated the strategy with the example of the apparent contingency between heat and molecular motion. We think that there could be heat without molecular motion because we can conceive or imagine a counterfactual situation *s* that we would be inclined to describe as one in which there is heat but no molecular motion. However, although *s* is genuinely possible, it is *misdescribed* as one in which there is heat without molecular motion. Rather, *s* is an 'epistemic situation qualitatively identical' to one in which there is heat without molecular motion. More specifically, *s* is a situation in which something *contingently connected* to heat, namely 'certain calorimeter readings', used to fix the reference of the term 'heat', exists in the absence of molecular motion. But this strategy is problematic in the color case:

The trouble is that the notion of an epistemic situation qualitatively identical to one in which the banana has a color *C* simply is one in which the banana has that color. The same point can be made in terms of what picks out the reference of a rigid designator. In the case of the identity of heat with molecular motion the important consideration was that although 'heat' is a rigid designator, the reference of that designator was determined by an accidental property of the referent, namely the property of producing certain calorimeter readings *S*. It is thus possible that a phenomenon should have been rigidly designated in the same way as a phenomenon

¹⁵ In this and subsequent sections heavy use will be made of the notions of apparent *contingency*, *apparent possibility*, and *imaginability* (or *conceivability*). Imaginability will be left on an intuitive level, with hardly any accompanying explanation. The common assumption that imaginability is the source, or at least an important source, of our modal knowledge will not be questioned here.

Apparent contingency and *apparent possibility* may given a more-or-less orthodox explanation in terms of imaginability as follows. The connection between properties α and β is *apparently contingent* iff there is a proposition *P* such that (a) *P* is imaginable and (b) we are pretheoretically tempted to describe the imagining of *P* as either the imagining of the proposition that something has α but not β , or of the proposition that something has β but not α . The proposition *P* is *apparently possible* iff there is a proposition *Q* such that (a) *Q* is imaginable and (b) we are pretheoretically tempted to describe the imagining of *Q* as the imagining of *P*.

Kripke' is a *textbook Kripkean* (see Yablo 2000). Kripke' holds that if an *impossibility* *P* is apparently possible, then there is a *possible* proposition *Q*, the imagining of which we are tempted to describe as the imagining of *P*. As Yablo notes, it is not clear that our own Kripke is a textbook Kripkean.

of heat, with its reference also picked out by means of readings S, without that phenomenon being heat and therefore without its being molecular motion. Yellowness, on the other hand, is not picked out by one of its accidental properties; rather it is picked out by the property of being yellowness itself, by its immediate phenomenological quality.¹⁶

This sort of objection is not narrowly targeted at the Smart'/Place' identity theory. If it works at all, it refutes any physicalist/functionalist theory of color. Physicalists claim, at least, that there are physical conditions *metaphysically sufficient* for being such-and-such color. Suppose the physicalist claims that having Φ_R is sufficient for being red. The basic Descartes'/Kripke' objection is that it is *imaginable* that a tomato has Φ_R , but is not red. Hence – a step that some philosophers in w' dispute – it really is possible to have Φ_R without being red, and so physicalism is false. More specifically, the imagined situation might be one in which the colors are systematically permuted, keeping the underlying physical basis constant. For example, perhaps the situation is one in which tomatoes are green and cucumbers are red, despite having, respectively, Φ_R and Φ_G (the physical property allegedly identical with greenness). This is an 'inverted colors' scenario, first devised by John Locke'.¹⁷ Alternatively, perhaps the situation is one in which tomatoes are colorless – an 'absent colors' or 'zombie' scenario. Whichever situation is claimed to be imaginable, Kripke's point is that it is implausible that the content of the imagining has been misdescribed. This is because the colors are identified in the imagined situation, not by a contingent feature of them, but essentially, by an 'immediate phenomenological quality' (namely, the colors themselves).

3. Jackson's knowledge argument and Levine's explanatory gap

The second main objection to physicalism is Jackson's knowledge argument, first propounded in 'Epiphenomenal colors'. 'I am', Jackson' declares at the beginning of his paper, 'what is sometimes known as a 'color freak.' I think there are certain features of objects like fruits, which no amount of physical information includes'.¹⁸

The knowledge argument runs as follows. Superscientist Mary' knows all about the relevant physical properties of objects like tomatoes and strawberries, but she has never seen anything that is chromatically colored. If physicalism is true, then she should know everything there is to know about the nature of redness. Yet, when she is released from her black-and-white cell, and sees a ripe tomato for the first time, she will learn something – in particular, *what redness is*

¹⁶ Cf. Kripke 1980, 152.

¹⁷ See Block 1990.

¹⁸ Cf. Jackson 1982, 273.

like.¹⁹ Hence redness is a nonphysical property. The amount of ink the philosophers in w' expended on this argument is too great to be conceived.

And finally, any tour of w' would not be complete without a brief stop at the famous 'explanatory gap'. In 'Materialism and colors: the explanatory gap', Levine' claimed that Kripke's argument does not show that physicalism is false. He observed that Kripke's own emphasis on the distinction between epistemological and metaphysical possibility should raise suspicions: 'Since epistemological possibility is not sufficient for metaphysical possibility, the fact that what is intuitively contingent turns out to be metaphysically necessary should not bother us terribly. It's to be expected.'²⁰ However, according to Levine', the argument does demonstrate an important *epistemological* conclusion: 'that chromo-physical identity statements leave a significant *explanatory gap*'.²¹ Here is how he brought this out:

Let's call the physical story for redness 'R' and the physical story for greenness 'G'. My claim is this. When we consider the qualitative character of the colors of ripe McIntosh apples, as opposed to ripe cucumbers, the difference is not explained by appeal to G and R. For R doesn't really explain why the apples have one kind of qualitative property and not the other. As evidence for this, note that it seems just as easy to imagine G as it is to imagine R underlying the qualitative property that is in fact associated with R. The reverse, of course, also seems quite imaginable.²²

So much for w' . What about our own world?

4. *Philosophy in w*

By and large, contemporary philosophers in the actual world w have not followed the lead of their counterparts in w' .²³ It is commonly held that, if there is an especially acute problem about *color*, this is because colors are constitutively connected with experiences of certain sorts, and it is the *experiences* that pose the fundamental problem: the 'hard problem' of consciousness. The color-body problem, on this view, is entirely parasitic on the mind-body problem.

So, who is right? This is – after an overlong introduction – the question of this paper.

Assuming for the moment that there is a 'hard problem of consciousness' (specifically, a hard problem of color experience), the argument of the next two sections is that the color-body problem is equally hard. (For simplicity, the chromo-physical identity theory will serve as the representative of physicalist

¹⁹ See Johnston 2004, 146.

²⁰ Levine 1983, 356. See also 2001, chapter 2.

²¹ Cf. Levine 1983, 354.

²² Cf. Levine 1983, 356–7.

²³ But see, for example, Armstrong 1999, chapter 11, and Dretske 1995, chapter 3.

theories of color.) The final section takes up the question of the relation between the two problems. Has the hard problem of color experience been dissolved, to be replaced by the hard problem of color? Or have the hard problems just been doubled?

One answer that should be mentioned at the start – only to set it aside – is that the problems are *identical*, because *colors are mental properties*. Locke arguably held a view of this sort. He seems to distinguish secondary qualities, which are properties of external objects, from colors, which are ‘ideas’, or sensations. (Alternatively, properties of ideas or sensations.) On this interpretation, Locke denies that snow is white (at any rate, when speaking strictly). Snow has, instead, a secondary quality that corresponds to whiteness, the power to produce an ‘idea of white’ in us. So the color-body problem, namely how *colors* get annexed to matter, and the mind-body problem (confined to color experience), namely how *ideas of color* (a.k.a. *colors*) get annexed to matter, are one and the same. This Lockean view will be assumed to be false in what follows: colors, if they are properties of anything at all, are properties of objects like tomatoes and cucumbers.

The ‘hardness’ of the mind-body problem is illustrated by Kripkean conceivability arguments and Jackson’s knowledge argument. Earlier sections tried to parallel those arguments in the case of color. Where might the parallel fail?

5. Kripke’s argument revisited

Let us start by considering Kripke’s argument. The crucial step is that the apparent possibility of redness without Φ_R (for example) cannot be dismissed by saying that the imagined situation has been misdescribed. Is that correct?

5.1. Explaining the contingency away: color sensations

A candidate for the genuinely possible situation that we are misdescribing as one in which a red object lacks Φ_R can be extracted from the following *Naming and Necessity* passage:

In the case of molecular motion and heat there is something, namely, the sensation of heat, which is an intermediary between the external phenomenon and the observer. . . . Someone can be in the same epistemic situation as he would be if there were heat, even in the absence of heat, simply by feeling the sensation of heat; and even in the presence of heat, he can have the same evidence as he would have in the absence of heat simply by lacking the sensation S . . . although ‘heat’ is a rigid designator, the reference of that designator was determined by an accidental property of the referent, namely the property of producing in us the sensation S. It is thus possible that a phenomenon should have been rigidly designated in the same way as a phenomenon of heat, with its reference also picked out by means of the sensation S, without that phenomenon being heat and therefore without its being molecular motion (Kripke 1980, 151–2).

Let us apply this to the case of physical properties and colors. There are ‘sensations of color’, which are intermediaries between the external phenomenon and the observer, used to fix the reference of color words. The apparent possibility of a red cucumber with Φ_G (and so without Φ_R) is in fact the genuine possibility of a cucumber with Φ_G that produces sensations of red.²⁴

Now one might well think, in the case of heat, that there are ‘sensations’ that are intermediaries between the subject and the external phenomenon. A sensation of heat is felt in the hand when one touches a hot stove, for example. This suggests that one’s access to the heat of the stove is indirect, mediated by the sensation of heat in one’s hand. And if so, then presumably the ‘sensation of heat’ has no closer connection to heat itself than merely being one of its contingent effects. Kripke’s proposal about how this sensation is used to fix the reference of ‘heat’, and the attendant suggestion about the genuinely possible situation misdescribed as one in which there is heat but no molecular motion, can thus seem plausible.

However, the problem with extending this to the case of color is that there are no color sensations – at least, none that are ‘intermediaries’ between the subject and the external phenomenon. When one sees a tomato, one is not aware of a ‘red sensation’ in the eye (compare the stove example above).²⁵ True, the tomato produces a characteristic effect in the perceiver, but this is an experience of something’s *looking red*. And once the experience of something’s looking red is available, there is no need for any contingent reference fixer for ‘red’. The reference of ‘red’ can be *non*-contingently fixed as the property something looks to have when it looks red. Hence, Kripke’s diagnosis of the apparent possibility of heat without molecular motion cannot be straightforwardly applied to the apparent possibility of redness without Φ_R .

5.2. *Explaining the contingency away: looking colored*

Let us set reference fixing and ‘sensations of red’ aside, and concentrate on the more general idea that the surrogate situation involves the presence of the usual effects on perceivers in the absence of their usual causes. This naturally leads to the following suggestion: in the case of the apparent possibility of a red cucumber with Φ_G , the surrogate situation is one in which a cucumber with Φ_G *looks* red.

This suggestion can be developed in two ways, corresponding to two readings of ‘x looks red’. On one reading, to say that x looks red is to say that someone is currently eyeballing x, and that it looks red to her. On the other reading, to say that x looks red is to say (roughly) that if someone with normal vision were to

²⁴ This *may* be Kripke’s explanation of the apparent contingency in the color case: see Kripke 1980, fn. 71, 140, on using ‘visual impressions’ or ‘sensations’ of yellow to fix the reference of ‘yellow’.

²⁵ See Harman 1996, 252–3.

look at x in good light, it would look red to her.²⁶ On the second reading, but not the first, tomatoes in a closed refrigerator look red.

Let us start by examining the suggestion employing the second reading. According to it, when one apparently imagines a red cucumber with Φ_G , one is in fact imagining a cucumber with Φ_G that would look red to normal perceivers. And – at least according to the chromo-physical identity theory – the imagined situation is genuinely possible: a green cucumber might be disposed to look red to normal perceivers.

One problem with this version of the suggestion is that the surrogate situation is just *too* remote from the apparently imaginable situation to be plausibly mistaken for it. When one apparently imagines a red cucumber with Φ_G , growing deep in the jungle, what one imagines does not seem to concern *other people* (let alone ‘normal perceivers’); neither does it concern what effects the cucumber *would have* produced. Yet, if the suggestion is right, the imagined content concerns both. Pending some explanation of how we could be so confused, the suggestion is not credible.²⁷

What about the other version? According to it, when one apparently imagines a red cucumber with Φ_G , one is in fact imagining that a cucumber with Φ_G looks red to someone (oneself, perhaps). At least this has the virtue of paralleling Kripke’s description of the surrogate situation in the heat case – having the sensation of heat in the absence of heat. But it might seem even more hopeless than the suggestion just considered. When one apparently imagines a red cucumber with Φ_G , growing deep in the jungle, what one imagines does not entail that the cucumber is *perceived*. Yet, if the suggestion is right, it does: the imagined content is that a cucumber with Φ_G looks red to someone. Isn’t this just another ad hoc maneuver with no independent motivation?

Not necessarily. Peacocke has argued Berkeley was *right*: it is impossible to imagine an unperceived cucumber. (Here the relevant sort of imagination is ‘sensory . . . describable pretheoretically as visualizations, hearings in one’s head . . .’)²⁸ More generally:

The sense in which your imaginings always involve yourself is . . . this: imagining always involves imagining from the inside a certain type of viewpoint, and some-

²⁶ Cf. ‘I am not disclosing a fact about *myself*, but about petrol, when I say that petrol looks like water’ (Austin 1962, 43).

²⁷ Another problem is that this explanation of the apparent contingency threatens to overgeneralize (on this and other related points, see Yablo forthcoming). A situation in which a green cucumber is disposed to look red to normal perceivers is imaginable. The explanation in the text suggests that we would tend to mistake this (genuinely possible) situation for one in which a cucumber is both red and green (all over), and hence would be inclined to judge the latter situation to be possible. But of course we have no such inclination. The overgeneralization problem also afflicts the second account of the apparent contingency discussed in the text below.

²⁸ Peacocke 1985, 22.

one with that viewpoint could, in the imagined world, knowledgeably judge ‘I’m thus-and-so’, where the thus-and-so gives details of the viewpoint (Peacocke 1985, 21).

According to Peacocke, imagining a red cucumber amounts to this: (a) imagining ‘from the inside’ an experience as of a red cucumber, and (b) imagining non-imagistically (‘S-imagining’, in Peacocke’s terminology) that the experience is veridical.²⁹

Peacocke’s account could be pressed into service as follows. When one ostensibly imagines a red cucumber with Φ_G , in fact one (a) imagines ‘from the inside’ an experience as of a red cucumber, and (b) imagines non-imagistically that the cucumber has Φ_G . What one imagines, then, is that a cucumber with Φ_G looks red to someone – and this is not in conflict with physicalism.

However, Peacocke’s Berkelean conclusion apparently rests on conflating two notions of a ‘viewpoint’. There is a distinctive kind of (visual) imagination that involves imagining one kind of viewpoint, which we can call a *perspective* – a point labeled with up/down, front/back, and left/right directions, relative to which objects are imagined as oriented, as subtending solid angles, as more or less distant, as occluding other objects, and so on. Visualizing a cucumber involves imagining it from a perspective – in the imagined scene the cucumber might lie horizontally, partly occlude a tomato on the left, and subtend the same solid angle as a gherkin placed closer to the perspective.

Note, though, that there is *nothing* in the scene as imagined from a perspective that indicates that the perspective is occupied by a *perceiver*. Consider a camera, which records perspectival information about solid angles, and the like. The information recorded by the camera is not (usually) *about* the camera, or photography: a photograph of a cucumber might be entirely faithful when evaluated at a counterfactual situation in which the cucumber is not being photographed. The above quotation from Peacocke is correct if ‘viewpoint’ is read as ‘perspective’, but then there would be no argument for the Berkelean conclusion. Peacocke needs to assume that imagination always involves a ‘viewpoint’ in the sense of *a perspective occupied by a perceiver* – but he supplies no argument for that assumption.^{30,31}

²⁹ ‘“S” is for “suppose”’: although S-imagining is not literally supposing, it shares with supposition the property that what is S-imagined is not determined by the subject’s images, his imagined experiences’ (Peacocke 1985, 25).

³⁰ For a related point, see Dretske 2003, 2–3. In Williams 1966, a cinematographic example is used to argue against Berkeley, but its force is somewhat blunted by Williams’ unnecessary concessions that ‘visualising is in some sense thinking of myself seeing’, and ‘what is visualised is presented as it were from a perceptual point of view’ (37). See also Peacocke 1985, 28–9.

³¹ Martin (2002) recognizes the gap in Peacocke’s argument, and makes an ingenious attempt at filling it. Martin’s argument proceeds in two steps. First, he argues that ‘Peacocke is

In sum: none of the previous three candidates for the misdescribed possibility can block the intuitively obvious claim that one really can imagine colors and physical properties coming apart. So far, Kripke's objection stands.

5.3. *Explaining the contingency away: fool's colors*

Here is another suggestion. Granted, one can genuinely imagine that a cucumber without Φ_R has a certain salient qualitative property, and one would initially be

right that there must be a point of view within a visualised scene, at least where the visualising involves perspectival elements and those determine aspects of what is visualised'. Second, he argues that 'if one does have to imagine a point of view within the scene, then one thereby must be imagining an experience within the scene, as Peacocke also claims' (409). Putting the two steps together, it follows that visualizing involves imagining a visual experience. Martin does not explicitly say what a 'point of view' is supposed to be, but the first step of his argument (408–9) simply shows that visualizing is from a perspective (as explained in the text); we may therefore identify points of view and perspectives.

The second step of the argument is far from straightforward, but the basic idea is this. If perspectival visualizing simply involved imagining the environment, this would collapse the distinction between visualizing and visually experiencing. And the best way of denying that visualizing simply involves imagining the environment, and hence of preventing the collapse, is to suppose that visualizing involves imagining *experiencing* the environment. (See 405–7, 410.)

Why would the distinction between visualizing and visually experiencing collapse, if visualizing simply involves imagining the environment? Martin illustrates his argument at this point with another example, bodily sensations. Consider the experience of an itch in one's thigh, and the 'sensory' imagination of such an itch. One is aware of 'the quality of itchiness' (406). But now there is a puzzle, because the awareness of itchiness would appear to be sufficient for the presence of an itch – itchiness is a 'subjective qualit[y] of awareness' (407). Hence, if imagining an itch simply involves imagining itchiness, this would collapse the distinction between imagining an itch and really having one. The solution is to 'treat imagining an itch as a representing of an experience of an itch', for 'then we can both accept that the relevant quality is before the mind, as it is in experience itself, while yet denying that there has to be an actual instance of it, in contrast to the case of experience' (406–7).

The itchiness argument is then extended to visualizing (410). '[E]xamples of visualizing . . . possess experiential aspects in common with visual experiences which are related to them as the itchiness of imagining an itch is related to a sensation of one. In both cases these aspects are imagined and not actualised. Here too, we want to say that we do not have an instance of a visual experience but an instance of imagining a visual experience . . . The aspects of visualising in question are the perspectival aspects of visualising and visual experience. One can visualise things as to the left or to the right . . . just as one can visually experience them as so' (407). Thus the analogues of itchiness are relational properties like *being on the left* (relative to two non-parallel directions d_1 and d_2). At any rate, these are the analogues given that itchiness is supposed to be a property of an *itch* – something in one's thigh – rather than a property of an experience of an itch. Martin must intend the former, because the otherwise the supposedly parallel visualizing case would break down at an obvious point. It can hardly be assumed as a *premise* that when one visualizes something as on the left one is aware of a property of *experience* – the phenomenal quality of 'leftishness'.

Whatever the verdict on the itchiness argument, the adaptation of it to the visualizing case is problematic. Even if we grant that the awareness of uninstantiated itchiness presents a puzzle, there is no evident reason to find a similar puzzle with properties like *being on the left* – these are not in any sense 'subjective qualities of awareness'. And if there is no puzzle, the argument is unsound.

tempted to identify this property as redness – but perhaps the initial temptation should be resisted. The salient qualitative property might only be contingently correlated with redness, and for that reason easily mistaken for it – some kind of ‘fool’s red’. Let this proposal be the *Fool’s Colors Theory*, or FCT, and call fool’s red ‘ F_R ’. According to FCT, the apparent imaginability of a red cucumber without Φ_R (and with, say, Φ_G) is in fact the genuine imaginability of a situation in which a *green* cucumber has F_R . Because of the presence of F_R , the genuinely possible situation is ‘qualitatively’ the same as a situation in which there is a red cucumber. That is why it is misdescribed as one in which a red cucumber lacks Φ_R .³²

This diagnosis will certainly strike some as – to borrow a phrase from McDowell – ‘phenomenologically off key’. What many take to be the qualitative nature of the colors is in fact the qualitative nature of the surrogate properties. If this isn’t already obvious, consider the following example. Let Φ_O be the physical property that the physicalist identifies with orangeness, and let F_O be ‘fool’s orange’. According to FCT, the apparently possible situation that one would describe as an orange cucumber with Φ_G is, according to FCT, really a situation in which a green cucumber has F_O . Suppose one is shown a range of variously colored cucumbers (red, green, orange, etc.), and asked to pick the one that best fits, in ‘qualitative respects’, the situation one has in mind. The *orange* cucumber would be selected. On the present diagnosis, something that is in fact green could *be like that* (pointing to the orange cucumber) in qualitative respects. Note: not merely *look* like that, but *be* like that. Evidently, on this view, the unique/binary distinction between the hues is *derived*: it is inherited from the *phenomenologically-based* unique/binary distinction between the fool’s colors.³³ Greenness is unique because it is contingently correlated with fool’s green, which is phenomenologically unique. If greenness had been correlated with fool’s orange (as it is in the imagined situation), then that color would have been binary. Hence FCT is in conflict with the common view that the unique and binary hues are *essentially* unique and binary. Thus Hardin:

But hues do have certain characteristics necessarily. This is a central truth, no less true for having been so frequently overlooked. If we reflect upon what it is to be red, we readily see that it is possible for there to be a red that is unique, i.e., neither yellowish nor bluish. It is equally apparent that it is impossible for there to be a unique orange, one that is neither reddish nor yellowish (Hardin 1993, 66).

³² For arguments for properties like fool’s colors, see Shoemaker 1994 and forthcoming, and Thau 2002, chapter 5. However, the suggestion presently under consideration is not to be attributed to either Shoemaker or Thau, who have other fish to fry.

³³ Red, blue, yellow and green are the four ‘unique’ hues because they have shades that have no trace of any other hue. Orange is a binary hue because every shade of orange is to some extent reddish (and to some extent yellowish). See, for instance, Hardin 1993, 37–9.

Those who agree with Hardin should approve of Kripke's claim, quoted in section 2 above:

Yellowness, on the other hand, is not picked out by one of its accidental properties; rather it is picked out by the property of being yellowness itself, by its immediate phenomenological quality.

It must be admitted that these claims about essence are controversial, so if this is the best that can be said against FCT we are at something of a stalemate. However, there is a more decisive objection.

According to FCT, what some take to be the qualitative nature of redness and greenness in fact belong to the surrogate properties F_R and F_G . The surrogate properties are – or at least look to be – properties of objects like tomatoes and cucumbers. Are they perhaps *identical* to certain physical properties of tomatoes and cucumbers? Of course, if the current proposal is correct, the answer is 'no'. The whole point of the surrogates is that they are *contingently* connected with physical properties – the apparent possibility of a red cucumber with Φ_G turns out to be the *genuine* possibility of a green cucumber with F_R .

This is no progress at all. The problem was to explain away the apparent contingency between redness and Φ_R , in a way that did not generalize to the psychophysical case. That has been done by introducing 'fool's colors', for instance F_Y , an ostensible property of bananas and lemons. We have just seen that the obstacles to supposing that F_Y is physical seem just as high as they did earlier in the case of colors. F_Y is apparently only contingently correlated with physical properties; so, if F_Y is physical, how can the appearance of contingency be explained? Here we really have reached the end of the line, because, to adapt Kripke':

F_Y , on the other hand, is not picked out by one of its accidental properties; rather it is picked out by the property of being F_Y itself, by its immediate phenomenological quality.

So, out of the frying pan of the hard problem of color, but into the fire of the hard problem of fool's color.

The upshot is this. Insofar as the hardness of the mind-body problem traces to Kripke's argument, the philosophers in w' are right to hold that there is a hard problem of color. (Or, perhaps, if there are independent reasons for introducing fool's colors, a hard problem of fool's color.)

Could the extra special hardness of the mind-body problem be illustrated by the knowledge argument? But here the advantage would seem to lie clearly with the philosophers in w' . The emphasis (in the actual world w) on Mary's new knowledge of *experiences*, as opposed to her knowledge of *redness*, is surely a little contrived. Imagine that Mary is released from her black and white cell, and is confronted with a scene of monochromatic objects, except for one ripe tomato.

Her attention will be immediately drawn to the tomato, with its distinctive shade of red. She might turn her head to get a better view of it, and reach out to pick it up. ‘I never thought red things were like *that!*’, we may imagine her exclaiming, staring at the tomato. Mary’s reaction is not happily described as that of someone who is, in the first instance, learning about something *psychological*.

Hence, the color-body problem is at least as hard as the mind-body problem. To reinforce this conclusion, the next section briefly examines Searle’s more orthodox account of the relation between the two problems.

6. Searle’s account

According to Searle, Kripke’s argument, Jackson’s argument, and Nagel’s argument in ‘What is it like to be a bat?’, are in essence the same. Leaving aside whether Searle is right about this, here is (part of) his explanation of why color experiences cannot be given a physicalist reduction:

... where the surface feature is a subjective appearance, we redefine the original notion in such a way as to exclude the appearance from its definition. For example, pretheoretically our notion of [color] has something to do with perceived [color] . . . Red is what looks red to normal observers under normal conditions. But when we have a theory of what causes these and other phenomena, we discover that it is . . . light reflectances causing visual experiences of certain sorts (as well as other phenomena such as movements of light meters). We then redefine . . . color in terms of the underlying causes of both the subjective experiences and the other surface phenomena. And in the redefinition we eliminate any reference to the subjective appearances and other surface effects of the underlying causes. [‘Real’ color is now defined in terms of light reflectances, and the subjective experience of color is now treated as just a subjective appearance caused by color, as an effect of color.] . . .

... We don’t first discover all the facts and then discover a new fact, the fact that [color] is reducible; rather, we simply redefine [color] so that the reduction follows from the definition. But this redefinition does not eliminate, and was not intended to eliminate, the subjective experiences of . . . color . . . from the world. They exist the same as ever (Searle 1992, 119–20).³⁴

Why does Searle think that a physical ‘reduction’ (at least in the case of perceivable properties like color), proceeds by *redefining* the crucial terms? One might have thought that this would be to change the subject.

In broad outline, the answer is plausibly this. Redefinition is necessary because colors (speaking with the vulgar) are *nonphysical* properties. That is, color terms like ‘red’, as used *before* the ‘reduction’, do not denote physical properties, like ‘light reflectances’. Presumably this is because ‘red’ denotes a property that is partly defined in terms of ‘subjective experiences’ of color. The subjective experiences, Searle thinks, are definitely *not* physical. Assuming that (according to

³⁴ The sentence in square brackets is not a quotation; it is an adaptation of a similar sentence concerning Searle’s main example of heat.

Searle) the definition of a physical property cannot itself advert to any nonphysical properties, it follows that 'red' does not denote a physical property. Still, nothing important is left out on the side of *objects* (tomatoes, and the like) if we redefine 'red' as a certain kind of reflectance that is in fact causally responsible for the subjective appearance of red. The physically irreducible residue in redness is entirely on the side of *subjects*, not objects.

Why can't we redefine the subjective appearance of color in terms of certain neural processes? To this, Searle's reply is: 'Well, of course, if we insisted on making the redefinition, we could'. But here, he insists, something important *would* be left out, this time on the side of *subjects*, namely 'the subjective experiences themselves' (1992, 121).

However intuitively appealing this picture may be, the above quotation does not contain Searle's *argument* for supposing that the 'subjective experiences' cannot be physical. What is it? In fact, Searle – even by his own lights – doesn't really *have* an argument (which is no doubt why he calls it 'ludicrously simple'). He just thinks it is pretty obvious that subjective experiences aren't physical.

Searle does add one consideration, though, which derives from Nagel:

... it is a general feature of . . . reductions [of the sort described in the previous quotation] that the phenomenon is defined in terms of the 'reality' and not in terms of the 'appearance'. But we can't make that sort of appearance-reality distinction for consciousness [for example, color experiences] because consciousness consists in the appearances themselves. *Where appearance is concerned we cannot make the appearance-reality distinction because the appearance is the reality* (1992, 122).³⁵

What does this mean? It sounds like a claim of incorrigibility: if it *seems* that one has an experience of red, then one *does* have an experience of red, for instance. But it is quite doubtful that this is Searle's intent: for one thing, it is unclear how incorrigibility is relevant to the question of physicalism. Most likely, Searle is just expressing the Cartesian intuition that the essences of mental states and events are all on the surface – they are completely apparent to us after careful introspection. And since such introspection does not turn up any *physical* nature, mental states must be nonphysical.

Fair enough, there is such an intuition. However, there is a *parallel* intuition in the color case. Johnston calls it 'Revelation': in the example of canary yellow, '[t]he intrinsic nature of canary yellow is fully revealed by a standard visual experience as of a canary yellow thing' (Johnston 1992, 138). The philosophers in *w'*, needless to say, reject the first intuition and are attracted by the second.

³⁵ Cf. 'Experience itself does not seem to fit the pattern. The idea of moving from appearance to reality makes no sense here' (Nagel 1974, 223), and 'in the case of mental phenomena there is no 'appearance' beyond the mental phenomenon itself' (Kripke 1980, 154).

And, whether or not they are right, Searle does not give any reason why the second should be rejected in favor of the first.

7. *One hard problem, or two?*

The argument has been that the color-body problem – as measured by the usual Kripkean (Jacksonian, Levinean) yardsticks – is as hard as the mind-body problem is typically taken to be. To that extent, the philosophers in *w'* are right. But these philosophers are also dismissive of the mind-body problem – *that*, they say, is one of the ‘easy’ problems. Are they right here too?

One reply to the philosophers in *w'* is that if *Kripke's* argument works in the case of color, surely *Kripke's* argument works in the case of color experience. So the hard problems have been doubled, after all.

However, this reply fails to take the claim of transparency seriously. We are granting, with the philosophers in *w'*, that all one knows about experiences of red, simply from undergoing them, is that they are experiences of *this color* (demonstrating a tomato). This is too slender a reed to support the intuition that experiences of red are non-physical. Here is an analogy. Suppose that all one knows, of a word *W*, is that *W* refers to cheese. And suppose that one also suspects that chalk and cheese are quite different: the link between chalk and cheese is apparently contingent. This does not support the intuition that *W* is not made of chalk. Of course, it does support the intuition that the *referent* of *W* is not made of chalk, but this is entirely different matter.

What about the imaginability of zombies and the like? Suppose the property of being an experience of red is identified with some (perhaps highly extrinsic) physical property – for short, the property of having firing r-fibers. Can't one imagine firing r-fibers with no experience of red, or an experience of red without firing r-fibers? Now we already have a reason to expect no intuition of contingency here – the nature of experiences of red is hidden from us. Hence, if one really can imagine firing r-fibers with no experience of red, then this should cast doubt on the claim that a proposition's imaginability entails its possibility, rather than on physicalism about the mind. But if the entailment is (unwisely) insisted on, Kripke-style surrogates for what one is really imagining can readily be found, drawing on our discussion of Peacocke and the perspectival nature of visual imagination at the end of section 5.2. (The surrogates might seem rather forced, but no more so than those discussed earlier.)

Consider, first, firing r-fibers with no experience of red (instead, say, an experience of green). One ostensibly imagines having firing r-fibers and, ‘from the inside’, having an experience as of a green tomato. In fact, one is (a) imagining having firing r-fibers, and (b) imagining (visualizing) a green tomato from one's perspective. And that situation is perfectly possible, even under the assumption

that firing r-fibers guarantees that one has an experience of red. With that assumption, it is a situation in which a green tomato looks red to one.³⁶

Now consider the converse: an experience of red with no firing r-fibers. One ostensibly imagines lacking firing r-fibers and, 'from the inside', having an experience as of a red tomato. In fact, one is (a) imagining is lacking firing r-fibers, and (b) imagining (visualizing) a red tomato from one's perspective. And that situation is perfectly possible, even under the assumption that lacking firing r-fibers guarantees that one lacks an experience of red. With that assumption, it is a situation in which one is facing a red tomato, and is not having an experience of red.

A second reply to the philosophers in *w'* is that if *Jackson's* argument works in the case of color, surely *Jackson's* argument works in the case of color experience.

But it doesn't. We are assuming, with the philosophers in *w'*, that Jackson' has made a strong case that Mary learns what *redness* is like, and that she thereby learns something about experiences of red, namely that they are experiences of *this property*. Suppose Jackson's knowledge argument works, and that redness is a nonphysical property. The issue is: does *Jackson's* knowledge argument also show that *experiences* of red are nonphysical? One might think it does, because given the soundness of Jackson's argument, Jackson is right to claim that Mary learns something *nonphysical* about experiences of red, namely that they are experiences of *this (nonphysical) property*.

Here a comparison with orthodoxy is helpful. Suppose Jackson's knowledge argument is sound – Mary learns about the nonphysical nature of experiences of red, namely that they are experiences of *this (nonphysical) kind*. Does *Jackson's* knowledge argument also show that *redness* is nonphysical? After all, given the soundness of Jackson's argument, Jackson' is right to claim that Mary learns something *nonphysical* about redness, namely that it causes experiences of *this (nonphysical) kind*. The orthodox and correct reply is: no, not in any interesting sense, because there is no evident reason why a property with an entirely physical nature could not cause something *nonphysical* – the nature of effects is not to be confused with the nature of causes.

For analogous reasons, if Jackson' is right, then Jackson's knowledge argument does *not* show that experiences are nonphysical. There is no evident reason why an experience with an entirely physical nature could not represent something *nonphysical* – the nature of *representings* is not to be confused with the nature of

³⁶ In the zombie case, one (a) imagines having firing r-fibers and (b) visualizes that there is *nothing* (not even any illumination) from one's perspective. With the assumption that firing r-fibers guarantees that one has an experience of red, this is a (possible) situation in which one is having an experience of red while facing a void.

represented. For example, there is nothing ectoplasmic about the word ‘ectoplasm’.

A third reply is this. Grant that the *color experience*-body problem is relatively easy – but there’s more to the mind than color experiences. What about pain and the ‘sensation of heat’, for example? Don’t Kripke’s arguments show that these mental phenomena pose a hard problem?

For reasons of space, this reply cannot be examined in detail. A short answer is that it is remarkably concessive. The color experience-body problem is often taken to be a paradigm instance of the mind-body problem at its palpa-ble hardest.³⁷

Here is a fourth reply. Suppose that *nothing* is colored – Churchland’ is right. Then there can hardly be a color-body *problem*. Plainly there would still be *a* hard problem – the *mind*-body problem, presumably. Why would that problem vanish, or become ‘easy’, if we now suppose that Churchland’ is wrong, and that tomatoes *are* red? And if it wouldn’t, then (assuming that Churchland’ is wrong) don’t we have *two* hard problems?

There is some truth behind this reply. If visual experiences represent a range of properties that nothing has (and, perhaps, that nothing could have), then this presents a difficult problem for theories of perceptual intentionality, which typically suppose that perceptually represented properties are instantiated. So there would certainly be *a* problem if nothing were colored – although this would not trace to Kripke’s and Jackson’s arguments. But, of course, ‘if we now suppose that Churchland’ is wrong, and that tomatoes *are* red’, that problem *would* vanish. Hence, assuming that tomatoes are red, the reply does not support the view that there are two hard problems.

Finally, a fifth reply to the philosophers in *w*’. The hard problem of color surely has something to do with the way colors are represented in visual experience. Visual experiences represent colors ‘qualitatively’, or ‘under a phenomenal mode of presentation’, or something along these (obscure) lines. But they can be represented in other ways, as kinds of reflectances, perhaps. These two ways of representing the same thing must somehow account for the ‘appearance of contingency’. Doesn’t this at least show that the color-body problem is just the mind-body problem in disguise? We may not have *two* hard problems, but the ‘hard problem of color’ is misleadingly named. It is not a problem solely about properties of distal objects like tomatoes – it is really a problem about *mental representation*.

The hard problem of color arguably does arise because of the way colors are represented in visual experience. But that doesn’t make the problem one about

³⁷ A summary of the longer answer is that pain, sensations of heat, and the like, are perceptions of the condition of one’s own body (following Armstrong 1962); therefore they raise no fundamental issues not already present in the case of color perception.

mental representation. Here is an analogy. Suppose we find it hard to understand how Hesperus can be one and the same planet as Phosphorus – they are identical, yet seem to have different properties. The explanation of our puzzlement appeals to different modes of presentation associated with the names ‘Hesperus’ and ‘Phosphorus’: *the heavenly body that rises in the evening* and *the heavenly body that rises in the morning*, respectively. This is a ‘linguistic’ or ‘semantic’ explanation of why we are puzzled. But *what we are puzzled about* is not at all linguistic or semantic. It is how the heavenly body that rises in the evening can be the same as the heavenly body that rises in the morning. Similarly in the color case. The explanation of *why we are puzzled* arguably adverts to mental representation. But – for all this objection has shown – *what we are puzzled about* is not at all mental.

Shoemaker is one philosopher who might consider a move to *w'* when Trans World Airlines resumes operation. Apropos of Wittgenstein’s ‘unbridgeable gulf between consciousness and brain process’, Shoemaker notes that ‘we can get much the same puzzle without any attempt to turn our attention inwards’:

I look at a shiny red apple . . . And, focusing on its color, I say ‘THIS is supposed to be a reflectance property of [its] surface . . .’ (Shoemaker 1994, 248).

This paper has two conclusions. First, Shoemaker is right: there is a ‘hard problem’ of color. Second, once we recognize the source of the puzzlement, the mind-body problem disappears. There may an unbridgeable gulf between color and ways of reflecting light; there is none between consciousness and brain process.*

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