

Color and Perceptual Variation Revisited: Unknown Facts, Alien Modalities, and Perfect Psychosemantics

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Optimism, said Candide, is a mania for maintaining that all is well when things are going badly.

— Voltaire, *Candide*, ch. 19.

Abstract

An adequate ontology of color must face the empirical facts about perceptual variation. In this paper I begin by reviewing a range of data about perceptual variation, and showing how they tell against color physicalism and motivate color relationalism. Next I consider a series of objections to the argument from perceptual variation, and argue that they are unpersuasive. My conclusion will be that the argument remains a powerful obstacle for color physicalism, and a powerful reason to believe in color relationalism instead.

Suppose that colors are real rather than illusory properties of objects. Then what sorts of properties are they? Two competing views that have attracted philosophical adherents are the following:

Color Physicalism Colors are mind-independent, circumstance-independent (typically, physical) features of their bearers. They are, in this respect, analogous to shape properties such as *being square*.¹

Color Relationalism Colors are relational properties — properties constituted in terms of a relation between their bearers and subjects (possibly *inter alia*). They are, in this respect, analogous to a property such as *being a sister*.

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¹'Physicalism' is a curious label for this view, especially in the context of the contrast with relationalism. For (i) relationalism also allows that colors are physical (as do, for that matter, many other views that self-described color physicalists reject), and (ii) the view presently under consideration comes without any substantive characterization of the physical. That said, I'll adhere to the label preferred by the defenders of the view for present purposes.

One of the most important motivations that has been used to argue against color physicalism and in favor of color relationalism arises from a set of empirically motivated considerations about perceptual variation. The thought, roughly, is that, if color physicalism is right, then in every case in which a given stimulus produces distinct effects on different perceptual systems that count as representing that stimulus, at most one of those effects can count as a veridical representation; but it has been thought that, in a wide variety of cases, this entailment of the view is deeply implausible. In contrast, color relationalism makes no such entailment, but instead allows for an attractive ecumenicism regarding perceptual variation. The conclusion one is invited to accept, then, is that the phenomenon of perceptual variation favors relationalism over physicalism.

This general form of argument, which I'll call 'the argument from perceptual variation' is not novel (it can be found in some form in the writings of Galileo, Hume, and Locke). But it has been pressed anew in recent papers including Block (1999), Cohen (2006a), Cohen (2003b), Cohen (2006b), Cohen (2006c), Hardin (1988), Jakab and McLaughlin (2003), and McLaughlin (2003b); unsurprisingly, the authors of all these papers are hostile to color physicalism, and several of them (but not all) are sympathetic to color relationalism.

Predictably, however, defenders of physicalism have recently raised a number of objections to the argument from perceptual variation in an attempt to rebut the challenges that that argument poses for their view. This paper is an attempt to buttress the argument from perceptual variation against these objections. It is not a general defense of color relationalism (for that, see Cohen (2006a)), but a local attempt to block objections to the argumentative strategy that, in my view, most strongly motivates color relationalism. In §1 I'll review the argument from perceptual variation by considering several of its instances, and I'll show how the argument raises difficulties for color physicalism. Next, in §2 I'll show how abandoning color physicalism in favor of color relationalism resolves these difficulties in a simple and consistent way. Then, in §§3–5 I'll consider and respond to a number of objections to the argument. My conclusion will be that the argument remains a powerful obstacle for color physicalism, and a powerful reason to believe in color relationalism instead.

1 Physicalism and Perceptual Variation

The leading current form of physicalism maintains that (surface) colors are classes of surface spectral reflectance distributions.²

²A surface will reflect some percentage of the light of wavelength λ that falls on it. If we collect the percentages of reflected to incident light for each visible wavelength, we will get a function (from visible wavelengths to numbers in the interval $[0,1]$) that characterizes the disposition of a surface to affect light in the visible range in a certain way. This function is the surface's spectral reflectance distribution.

Physicalists typically prefer to identify colors with classes of such functions (rather than with the functions themselves) because of the phenomenon of metamerism: under any given illumination, an infinite number of surfaces (distinct in their surface spectral reflectance distributions) will be visually indistinguishable for a given observer. What this suggests is that

The challenge raised by perceptual variation for this view comes from the empirical observation that a given stimulus produces a remarkably wide variety of effects in different perceptual systems, and produces a remarkably wide variety of effects on a single perceptual system when viewed under different perceptual circumstances. The difficulty is that, on standard assumptions, each of these different effects is a representation of the color of the stimulus. But if colors are mind-independent and circumstance-independent properties of surfaces, as are spectral reflectance distributions (or classes thereof), then physicalists are committed to saying that at most one of these varying effects represents the color of the stimulus veridically. However, the objection goes, it is hard to see that anything could (metaphysically) make it the case that one of the variants is veridical at the expense of the others: it seems that any considerations that could be brought forward in support of the veridicality of one of the variants could be matched by considerations of equal force in favor of some other variant.

Significantly, the sort of variation of color vision at issue is no mere imagined possibility: there is overwhelming and unambiguous evidence of *actual* variation of color vision. In particular, I want to focus attention on actual examples of three types of variation: variation between subjects of different species, interpersonal variation between subjects of our own species, and intrapersonal variation in a single human visual system.³

First consider the following example of interspecies variation. The pigeon on the window ledge has a tetrachromatic visual system: an arbitrary color stimulus can be perceptually matched for a pigeon by a linear combination of four appropriately chosen primaries. In contrast, normal human visual systems are trichromatic: an arbitrary color stimulus can be perceptually matched for a human being by a linear combination of three appropriately chosen primaries. Consequently, there are pairs of surfaces that are perceptual matches for human visual systems but not for pigeon visual systems. This entails that there is a difference between the way at least one surface of the pair looks to pigeon visual systems and the way it looks to human visual systems. That is, the pigeon visual system represents the surface in question in a way that is psychophysically distinguishable (viz., in terms of whether it matches the other surface of the pair) from the way in which the human visual system represents the same surface.

There is also substantial interpersonal variation in color vision between (normal trichromatic) human visual systems. Perhaps the most discussed instance of this sort of interpersonal variation, discussed at length in Hardin (2004), is the variation in the spectral wavelength (alternatively, in the Munsell chip) se-

identifying colors with reflectance functions yields an excessively fine-grained individuation of the colors. The move to identify colors with classes of reflectance functions is intended to get around this problem. (An exception to this generalization is Churchland (2007); Churchland identifies colors with reflectance functions, and is prepared to live with the resultant extremely fine-grained individuation of colors.)

³For brevity I provide here only a single instance of each type of variation. Since this has the disadvantage of underplaying the scope and seriousness of the problem, and also the importance of a truly general response to the cases, I invite the interested reader to consult the more extensive discussions of variation in Cohen (2006a), Thompson (1995), and Hardin (1988).

lected by subjects as unique green (i.e., as looking greenish without looking at all bluish or at all yellowish). When two normal trichromatic observers view chip C under identical perceptual conditions, C looks unique green to one of them but bluish green (hence not unique green) to the other. Once again, the way one subject represents the color of C is psychophysically distinguishable (viz., in terms of whether it is represented as a unique hue) from the way the other subject represents C .

Finally, there is analogous variation inside a single human visual system as viewing conditions change. Again, there are a number of parameters along which the response of the visual system can be made to change (e.g., illumination, background, viewing distance, angular subtense of visual field, etc.); for convenience, I'll focus on single parameter of background. A single chip C can look unique green to a (normal trichromatic, human) subject S when C is placed against one background even though C does not look unique green to the same subject when placed against a second background.⁴ Here again, the way S represents C in a first viewing condition is psychophysically distinguishable (viz., in terms of whether it is represented as a unique hue) from the way S represents C in a second viewing condition.

In each of these cases, then, there is a range of representational variants of a single stimulus C . If color physicalism is true, then at most one of these variant representations veridically represents C 's color. But, once again, it is extremely hard to imagine what could (metaphysically) make it the case that one of the representational variants is veridical at the expense of the other. Any choice seems objectionably *ad hoc*.⁵ Moreover, the structural similarity of the interspecies, interpersonal, and intrapersonal cases is mutually reinforcing: given this similarity, it seems awkward to advocate a stipulative selection with regard to just one kind of variation. But the option of stipulating with regard to every kind of variation, while at least consistent, decreases in plausibility as the number of unmotivated stipulations increases.

2 Color Relationalism

It is against the backdrop of these problems for color physicalism that color relationalism begins to look like an attractive alternative. The problem, in a nutshell, is that physicalists are committed to claiming that at most one

⁴For some examples of this effect, see

http://aardvark.ucsd.edu/~joncohen/color/albers_examples.html.

⁵Response: The problem for the physicalist is to say, in a way that is not hopelessly stipulative, what makes it the case that one of the representational variants is veridical (at the expense of the others). Why not just say that what makes it the case that a variant is veridical is that (i) it represents the world as being some way, and (ii) the world is that way?

Counter-response: The proposal correctly lays out what it is for a variant to be veridical — it unpacks the condition about whose satisfaction by only one variant we are asking. That allows us to restate the query with which we began: what makes it the case that one of the variants, at the expense of the others, satisfies the condition so unpacked? Unfortunately, as far as I can see, we have made no advance on actually answering the query, as opposed to restating it.

among conflicting perceptual variants veridically represents the color of a single stimulus, but there is no reason for thinking that any one of the variants is distinguished from the others in this way.

In the face of these difficulties, the relationalist suggests that we should avoid the trouble by refusing to choose between the variants. That is, she suggests, the way out of the trouble is to hold that the conflict between the variants is only apparent, insofar as the single stimulus is genuinely both unique green to observer S_1 and not unique green to S_2 . Likewise, since a single stimulus can look unique green to a single observer S under one viewing condition C_1 but fail to look unique green to S under another viewing condition C_2 , and since there seems not to be any fact of the matter that makes one of these two representations of the stimulus's color veridical at the expense of the other, the relationalist will refuse to choose between the two: instead, she'll insist, the stimulus is genuinely both unique green to S under C_1 , and not unique green to S under C_2 .

What the relationalist proposes, then, is that colors are not (as the physicalist maintains) subject- and condition-independent properties of their bearers, but relational properties that are constituted in terms of relations to subjects and viewing conditions. Since, on this view, colors are relational properties, the perceptual variants that we initially characterized as conflicting are in fact not conflicting. This view does justice to the facts about perceptual variation, and it does so without requiring either unmotivated choices between variants or unjustified optimism that there is some unknown (or unknowable) fact that could motivate such a choice. This, it seems to me, is an important virtue of the view, and one that makes it worth taking seriously for those who aspire to realism about color.⁶

In my view, the above considerations about perceptual variation make for serious obstacles for color physicalism, and simultaneously give strong motivation for color relationalism. Alas, several philosophers have disagreed with this assessment, and have even made objections with which they intend to disarm the argument from perceptual variation, and thereby to clear the way for accepting color physicalism once again. In what follows I want to consider some of these objections and say why I find them unpersuasive.

⁶That said, it is worth emphasizing that relationalism is not, by itself, a theory of the nature of color. It says that colors are relational properties; but it does not say which relational properties, in particular, colors are. Because it is schematic in this way, there are several species of relationalism; these include the dispositionalist view of McGinn (1983), Peacocke (1984), and Johnston (1992), the so-called "enactive" view of Thompson et al. (1992) and Thompson (1995), and the color functionalism of McLaughlin (2003a), and Cohen (2003a). For this reason, relationalism might aptly be regarded as a family of accounts of color ontology — a family whose members share some commitments but not others, rather than as an account in its own right.

3 Unknown Facts

Physicalists have sometimes resisted the argument from perceptual variation (e.g., Byrne and Hilbert (2004), Byrne and Hilbert (2003), Tye (2000)) by urging that the difficulty raised by that argument is merely epistemic — that while facts about variation might prevent us from *knowing* which of the competing variants is veridical at the expense of the others, there is nonetheless a (possibly currently unknown) fact of this matter, just as color physicalism requires. For example, Alex Byrne and Michael Tye write,

Given the fantastic complexity of color vision, the fact that there are huge gaps in our knowledge of how colors are represented in the brain . . . and of the selection pressures driving the evolution of color vision, nothing exciting will follow from [our inability to say which variant is veridical in cases of perceptual variation]. It would be absurd to think that such failures teach us anything other than the lesson that mental representation is a very difficult subject (Byrne and Tye (2006), 11).

Although it is surely indisputable that color vision is exceedingly complicated, and that there is much that is not understood, I don't see that this should give solace to the color physicalist, whose difficulty, recall, is to motivate a choice between variants. Suppose we knew a lot more about the complicated causal story leading from the stimulus to the mental representation of colors; we would then know a lot more about the etiology of the many perceptual variants. But why suppose that this further information about their etiologies would help us in motivating a choice of one such variant at the expense of the others? Presumably *each* variant has some (possibly currently unknown) etiology about which a complicated causal story could in principle be provided. So if the problem of choosing between competing variants is to be resolved by appeal to their etiologies, then solving this problem amounts to choosing between competing etiologies. And now it appears that we have just pushed the problem back a step; for it is not clear what considerations could (metaphysically) distinguish one such etiology from the others. As before, it is hard to see any principled answer to this question in the offing.

Byrne's and Tye's particular emphasis on selection suggests that (in accord with Tye's preferred formulations of externalist psychosemantics; see Tye (2000)) they think we might be able to choose among etiologies by selecting the one that is most adaptive, or that most closely matches against the etiology at work during the selectional history of our visual systems. In my view this misses the force of the worry about perceptual variation: the problem is that there are *many* psychophysically distinguishable variants whose etiologies have an equally good claim to being adaptive, and to being at work during the selectional history of our visual systems. Perhaps viewing objects under daylight is more adaptive or more accurate to the selectional history of our visual systems than viewing objects at night; but this leaves a wide range of different illuminants with psychophysically distinguishable effects still in the running, and says nothing at all

about variation with respect to other psychophysically relevant parameters. To think that appeals to selectional history will help here is to think that there is one background, one viewing angle, one illuminant, one viewing distance, one sort of perceptual grouping (and on and on), under which our visual systems evolved. But there is little reason to believe, and substantial reason to doubt, that the selectional history of our visual systems was so confined along all of these psychophysically relevant parameters.

More generally speaking, I see no reason to believe the physicalist's insistence that there is some unknown fact of the matter that makes it the case that one variant is veridical at the expense of the others. On the contrary, there is substantial (but defeasible) reason to believe that this claim is false — namely, the failure of several hundred years of systematic efforts directed at uncovering such facts of the matter establishes a presumptive case against their existence. As such, the physicalist's insistence that there is an epistemically unavailable fact of the matter strikes me as a piece of unwarranted optimism.⁷

4 Alien Modalities

A related objection against the argument from perceptual variation has it that our difficulty in choosing amongst variants, which is crucial to the argument, could be remedied if only we had some further, non-visual, sensory modality for forming perceptual representations of the colors of objects — call this imagined modality 'color shmision'. The thought is that color shmision could serve as an independent standard against which we could check the multiple variants supplied by color vision, and thereby decide which of those variants is veridical: a perceptual variant of color vision will count as veridically representing the color of its object if and only if color shmision represents the object as having that very color. Of course, we lack color shmision; but the point of the objection is that there must be a fact of the matter about the color that shmision would represent objects as having, and that we can appeal to that fact of the matter (even if it is epistemically unavailable to us) to choose one of the perceptual variants supplied by color vision as representing the real color of an object.⁸

⁷ In fairness, there are some properties for which an analogous optimism would be warranted. To borrow an example of Byrne and Hilbert (2004), if our thermometers disagree about whether the environment exemplifies the property *being 70° F*, then presumably there *is* a (possibly unknown) fact of the matter about which, if any, of the thermometers veridically represents the temperature that the environment actually has. And yet there are other properties about which the corresponding sort of optimism would be deeply implausible. For example, if Pam and Sam disagree about whether the joke I just told exemplifies the property *being humorous*, we do not want to say that there is a (possibly unknown) fact of the matter about who, if either, veridically represents the property that the joke actually has. (Instead we would say that the joke is humorous to Pam, but not to Sam.) A conjectured diagnosis for the physicalist's optimism about *being red* is that she has focused attention entirely on the temperature-style cases while ignoring the humorous-style cases. (See Cohen (2006b) for more on this contrast and an argument for construing perceptual variation about color as analogous to latter, rather than the former, case of representational variation.)

⁸This objection has presented to me by a number of philosophers in conversation. Recently, Byrne and Hilbert have made something like this objection in print:

By way of analogy, this objection supposes that we possessors of color vision but not color shmission are like the proverbial blind men and the elephant: color vision supplies us with a range of conflicting reports about the world, and it is only our lack of shmission that prevents us from having an independent check on, hence way to adjudicate between, the different things that color vision tells us.

There are a number of problems with this objection. For one thing, it is not clear why color shmission should not also be subject to perceptual variation. Note that we cannot just stipulate a modality that (without perceptual variation) veridically represents the true colors of objects without begging the question against the relationalist, who believes that there is no non-relational color of objects to be veridically represented by an imagined modality not subject to perceptual variation. The question at issue is then: why should we believe that there is a modality for the perception of colors that is not subject to perceptual variation? Of course, if there is perceptual variation for color shmission too, then this modality cannot provide a standard against which to judge the deliverances of color vision. For in this case color shmission will have increased the number of candidates between which we have no way of deciding, rather than providing us with a criterion by which to settle on one of them. Just as the introduction of more blind men won't help the unfortunates in the proverb to discern the character of the elephant, color shmission won't help color vision unless the former is not subject to perceptual variation as well.

However, suppose for the sake of argument that color shmission does deliver a single verdict — that it is not subject to perceptual variation, but represents the colors of objects in just one way. Even so, we have no guarantee that the representation of color delivered by color shmission will agree with any of the representations of color delivered by color vision.

First suppose it does not. In this case, there seems little point in taking color shmission as the standard against which to settle the perceptual variation in respect of color vision; for, here again, color shmission will not adjudicate between the perceptual variants, but will add one more incompatible voice to the clamor. One might respond at this point by suggesting that, precisely because each representation of color vision fails to match with the representation of color shmission, *all* of the perceptual variants supplied by color vision are incorrect (just as all of the blind men in the proverb are incorrect about the character of the elephant). But it is unclear why we should side in this way with color shmission and against color vision. We have not been given any reason for investing color shmission with a better claim to represent the colors of objects (better in the sense that we are willing to rule representations of color vision

There is one final worry, which can be brought out by noting that in the shape case we have independent tests for whether someone is perceiving a shape correctly. In the color case, there is no such test. As it stands, the best evidence for a Munsell chip's having a certain color is that the majority of those with normal color vision see the object as having that color. The lack of an independent test is partly due to the fact that colors are not perceived by any other sensory modality. . . (Byrne and Hilbert (2003), §3.4).

veridical or erroneous on the grounds that they match or fail to match the deliverances of color shmission, but we are not willing to use color vision as a test for color shmission in the same way), merely because it delivers a single representation rather than many. Indeed, if the representations of color shmission fail to agree with all the representations of color vision, I think we would be justified in wondering whether the former modality should count as representing the colors of objects at all, rather than some other sorts of properties accessible only to shmission — whether, in this case, it would be more apposite to call the imagined modality ‘shmolor shmission’ (in which case it would clearly be wrong to take the deliverances of this modality as settling cases of perceptual variation with respect to color).

On the other hand, suppose that the representation of color delivered by color shmission agrees with one and only one of the varying representations of color delivered by color vision on a single occasion. And suppose no special skeptical worries about the reliability of color shmission are in play. Still, it is hard to see why we should think of color shmission as certifying certain of the deliverances of color vision, unless we are also prepared to say the same thing about the yet additional modality of color shmission, whose representations of color may or may not agree with any of those delivered by color vision or those delivered by color shmission. Now, since it is possible that color shmission and color shmission can disagree in their representations of the color of an object (and if they don’t, we still must consider the representations delivered by color shmission, etc.) it may be these two imagined modalities each certify different and incompatible representations produced by color vision. But in this case, our appeal to extra modalities does nothing to resolve the conflict between perceptual variants delivered by color vision. The extra modalities may provide more than one vote for some of the variants, but this hardly settles the conflict. To return to our analogy, if each of the proverbial blind men recruited friends to investigate just that part of the elephant that he himself felt, we would wind up with two votes for snake-like, two for rope-like, two for wall-like, and so forth, but we would be no closer to the truth about the character of the elephant.

To sum up, I am inclined to think that the appeal to color shmission does not block the argument from perceptual variation that we have been reviewing. Color shmission may be, like color vision, subject to perceptual variation, in which case it will provide no assistance in the face of worries about the perceptual variation of color vision. If it is not, it may not agree with any of the deliverances of color vision, in which case it is irrelevant to the decision between the variants delivered by color vision. And even if it does agree with color vision, we have no reason to endorse its deliverances rather than those of other imagined modalities which do not.

5 Perfect Psychosemantics

It is sometimes said (e.g., Byrne and Hilbert (2003), 8; Byrne and Tye (2006)) that the appeal of the argument from perceptual variation lies only in our not

yet having in hand The One True Psychosemantics (henceforth, TOTP). After all, it is generally accepted that a successful psychosemantic theory will have to distinguish cow-caused COW-thoughts from our horse-on-a-dark-night-caused COW-thoughts (and all the rest of our COW-thoughts), and say that the former are veridical but the latter are not.⁹ Similarly, critics of the argument from perceptual variation seem to be suggesting, an adequate psychosemantics must distinguish those UNIQUE-GREEN representations that are caused by *bona fide* instances of unique green (hence are veridical) from those caused by other things (hence are erroneous). Likewise, presumably, an adequate psychosemantics must distinguish those BLUISH GREEN representations caused by *bona fide* instances of bluish green from those caused by other things, e.g., instances of unique green. Therefore, if you represented a 500nm spectral light as unique green but I represented it as bluish green, TOTP would provide what we need to make a principled choice amongst the variants: TOTP would tell us that your representation of the light is veridical and that mine is not (as it might be). Of course, we are not yet in possession of TOTP, and so cannot give an explicit answer to the argument from variation today. On the other hand, the suggestion seems to be, the unsettled state of psychosemantics should not be exaggerated into an irremediable difficulty for color physicalism.

I agree that the state of play in psychosemantics is extremely unsettled. But, again, I don't see that this helps the color physicalist in the way indicated. The claim that the apparent force of the argument from perceptual variation results from inadequacies in existing psychosemantic theories might be taken in two ways. On the one hand, it might mean that, in assessing whether there is a distinguished variant in cases of perceptual variation we consult existing psychosemantic theories to see whether they provide grounds for singling out just one variant, see that they don't do this, and therefore conclude that there is no such distinguished variant. On the other hand, it might mean that the shortcomings in existing psychosemantic theories lead us to give up on the hope of ever finding TOTP — a theory that would both avoid those shortcomings and (*ex hypothesi*) say enough to single out a favored variant in cases of perceptual variation.

On the first disambiguation, the claim that the argument depends on problems in existing psychosemantic theories is just implausible. For suppose that we had a psychosemantic theory that *did* generate a clear prediction about whether there is a single veridical variant — either to the effect that there is no such single variant, or to the effect that some particular variant is the distinguished veridical one. It seems to me that, just because it made this clear prediction, this imagined psychosemantic story would be no less controversial than the disputed matter of color ontology: since many who have considered these matters believe that such a prediction would be erroneous, they would regard any psychosemantics that licensed that prediction as *ipso facto* unacceptable. This shows that it is not the case that the argument works by consulting such

⁹See Fodor (1990) for a discussion of this adequacy condition, and the difficulty it poses for going psychosemantic theories.

theories, finding that (because of their inadequacies) they fail to favor clearly any one variant over others, and consequently giving up on the search. Rather, the problem is that nothing *else* — in particular, nothing that could make for data for a psychosemantic theory — favors any one variant over others: not pre-theoretical intuition, nor theoretical physics, nor theoretical psychophysics, nor any combination of these, nor anything else that comes to mind. Only a prior commitment to color physicalism generates that prediction. Thus, it is not true that the argument from perceptual variation depends on the failures of existing psychosemantics in the present understanding of that claim.

On the second disambiguation, the suggestion would be that all sides are committed to the existence of an answer to the argument after all. For either the inevitable march of philosophical progress will deliver TOTP, and thereby supply an answer to the argument from variation, or it will reveal that there is no TOTP, and that our thoughts fail to hook onto the world. All sides would abjure the catastrophe represented by the second disjunct; but, the critic will insist, there's no reason to think that color physicalism makes it any more likely. On the contrary, the most pressing difficulties in current psychosemantic theorizing are (more or less) orthogonal to disputes about color ontology, so shouldn't be taken as special problems for the color physicalist. In any case, the thought goes, anyone who accepts psychosemantic realism of any sort — and that means everyone in the present dispute — is committed to there being the kinds of veridicality conditions on representations that would permit a non-stipulative response to the argument from perceptual variation, whether or not we now know what that response would look like.

That, at any rate, is the second disambiguation of the claim; unfortunately, it is hard to see why it should be true either. After all, it is uncontroversial that there are properties subject to representational variation such that there is no distinguished, uniquely veridical variant. To return to an example from note 7, it is deeply implausible that there is a uniquely veridical variant in the case where Pam says my joke is humorous but Sam says it is not. While different psychosemantic theories will treat this situation in different ways that it is beyond the scope of this paper to review, what matters for us is that no one would take the situation to entail the failure of psychosemantics. But then it would seem that whatever pattern of response one favors for treating *being humorous* is in principle available for application to *being red* as well.¹⁰ If psychosemantic realism survives the absence of a distinguished variant with respect to *being humorous*, it will also survive the absence of a distinguished variant with respect to *being red*. In short, it appears that reports of the demise

¹⁰Of course, one could block this move by finding some difference between the two properties (presumably there are plenty) and arguing that that difference requires distinct treatment of the properties by an adequate psychosemantics. It's hard to evaluate this objection without knowing (i) exactly what difference is alleged to make the difference (ii) what sorts of differences matter to an adequate psychosemantics. Still, even without knowing these things, notice that this form of objection depends on marking metaphysical distinctions between the two properties (prior to the appeal to psychosemantics); but since the metaphysics of *being red* is exactly what is in dispute between the two sides, the objection threatens to beg all of the relevant questions.

of psychosemantics are greatly exaggerated.

6 Conclusion

The argument from perceptual variation is not a deductive argument: it remains conceptually open that, in cases of variation, there really is a fact of the matter about which variant is veridical at the expense of the others. It is just that, given what we know, it seems exceedingly difficult to believe that that is true, and that it is true in all the different sorts of cases in which it would need to be true to sustain color physicalism. While physicalists may nevertheless wish to hold out hope for the existence of an unknown fact of the matter, I'm not holding my breath.

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