

# A PROBLEM FOR RELATIONAL THEORIES OF COLOR

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Some time ago Paul Boghossian and David Velleman pointed out that some dispositional accounts of color are circular.<sup>1</sup> These accounts claim that red =<sub>def</sub> a disposition to appear red in standard conditions (i.e. that x is red iff x is disposed to appear red to normal observers under standard conditions), where red is a property that we visually attribute to objects. They went on to argue that this circularity results in an untenable account of visual content.

The dispositional accounts of color criticized by Boghossian and Velleman are versions of a broader class of theories of color: *relational theories*, which maintain that the colors we visually attribute to objects are relational properties, specifically, properties constituted by relations between objects and perceivers.<sup>2</sup> The question we consider is whether, in general, relational accounts of color have a similar circularity problem and, if so, whether this circularity also results in an untenable account of visual content. We think the answer is affirmative on both counts. To show this we first present our objection within the framework of Jonathan Cohen's relational account of color - surely the best and most developed relational account of color available today.<sup>3</sup> We then argue that any relational theory will be subject to this fatal objection.

What is the motivation for relationalism? Cohen explains the crux of the position by appeal to what he calls the 'Master Argument':

In rough outline, this argument works in two stages: in the first, the relationalist points to the wide variety of perceptual effects (in respect of color) of a single stimulus; in the second, she alleges that there is no independent and well-

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1 Boghossian, P. and Velleman D. 1989. Colour as a Secondary Quality. *Mind* 98: 81-103.

2 Some objectivist theories hold that colors are spectral reflectances, and spectral reflectances are relations between light and surfaces. We are only discussing relational theories where a perceiver is one of the relata.

3 Cohen, J. 2004. Color Properties and Color Ascriptions: A Relationalist Manifesto. *The Philosophical Review* 113: 451-506. All citations are to this essay.

motivated reason for thinking that just one of the variants is veridical (at the expense of the others). But if there is no singling out of one of the variants at the expense of the others, then we must reconcile the variants; and the way to reconcile apparently incompatible variants is to view them as the result of relativizing colors to different values of certain parameters, which is just to admit that colors are relations between objects and those parameters. (454)

So nothing is red *tout court*; rather an object, *x*, is red to subject *S* in conditions *C*. Using dashes to express the relationalist's unit of color this becomes 'x is red-to-S-in-C', and similarly for other colors. (Cohen uses both 'red to S in C' and 'red for S in C' to refer to this relation. However, for Cohen there is only one relation here, which we will always refer to by using 'red-to-S-in-C'.)

Cohen also proposes a sufficient condition for *x* to be red-to-S-in-C (which gives us epistemological access to colors); a similar account would be given for other colors:

(1) If *x* looks red-to-S-in-C then *x* is red-to-S-in-C.<sup>4</sup> (473, 463, see also 479.)

For example, a ripe raspberry is gray-under-low-light-conditions-to-many-of-us.(470) It follows from (1) that there are no color illusions; that is, we never see something as having a color that is different from the color it has.<sup>5</sup> We maintain that if (1) is true, then so is (2):

(2) If *x* looks colored-to-S-in-C then (*x* is red-to-S-in-C iff *x* looks red-to-S-in-C).

To see this, suppose that *x* looks colored-to-S-in-C. From this we aim to show that *x* is red-to-S-in-C iff *x* looks red-to-S-in-C. (1) says that if *x* looks red-to-S-in-C then *x* is red-to-S-in-C, which gets us the conditional from right to left. To get the conditional from left to right, assume that *x* is red-to-S-in-C. Given that *x* looks colored-to-S-in-C, *x* cannot

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4 On page 463 and note 21 Cohen says that (1) is a material conditional. On page 473 Cohen says that the antecedent implies the consequence.

5 Cohen offers both a metaphysical account of the color properties that we visually attribute to objects as well as a linguistic account of our ordinary color language. Our objection targets Cohen's metaphysical position. Cohen accounts for talk about color illusions in terms of the way we speak of colors. If *S* or *C* lie outside the conditions for normality presupposed by our ordinary use of color language, then we can recognize a sense in which the way *x* looks to *S* in *C* can be erroneous; namely, that it does not match the way *x* looks to *S\** in *C\**, where *S\** and *C\** are the sorts of perceivers and viewing conditions we take to be normal. (473) However this does not affect the point being made here (concerning Cohen's metaphysics), namely that Cohen holds that (1) is true, and that ripe raspberries *really are* gray-for-many-of-us-in-low-light.

look-blue-to-S-in-C, because, if it did, then by (1) it would follow that x is blue-to-S-in-C, but by hypothesis x is red-to-S-in-C. We assume that no object is, at the same time, both red-to-S-in-C and blue-to-S-in-C. (This assumption does not violate the relationalist's leading idea: that an object may be red-to-S1-in-C, but blue-to-S2-in-C.) The same point applies to any non-red color, so x cannot look any non-red-color-to-S-in-C. By hypothesis x does look colored-to-S-in-C, hence x must look red-to-S-in-C. Thus, if (1) is true, then so is (2).

We maintain that relationalism entails a patently false claim about visual content. Note that the following is analytic: if x looks red-to-S-in-C, then x looks like it is red-to-S-in-C. (Here 'looks', which takes an adjective, is switched to 'looks like', which takes a noun. For example, if an object looks elephantine, then it looks like it is an elephant.) Consider a specific case. Suppose you see a matador's cape, in a sunlit arena, a cape that we would ordinarily call 'red.' For Cohen, what we have described is a case in which the cape looks red-to-you-in-the-sunlit-arena; or, for short, a case in which c looks red-to-y-in-a. We find that even this is a strange account of your visual content; it seems to us that the cape looks red, period. But the problem is more serious. That c looks red-to-y-in-a entails, of course, that c looks colored-to-y-in-a. It also follows, given our analytic claim, that c looks like it is red-to-y-in-a. Given (2), then, it follows that c looks like it looks red-to-y-in-a. This reasoning can be repeated; it follows that c looks like it looks like it looks red-to-y-in-a. And so on.

Our objection is that this gets the phenomenology of looking red *wrong*. When the matador's cape looks red to you in the arena, it is just not the case that the cape looks (to you, in the arena) like it looks red-to-you-in-the-arena. The cape simply looks like it is red; it does not look like it *looks* red, much less like it looks like it looks red, and so on. The content of looking red is not about itself; much less is it about itself an infinite number of times. For this reason Cohen's relationalism is untenable.<sup>6</sup>

Cohen cannot escape our objection by modifying (1) to avoid the consequence

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<sup>6</sup> We are sympathetic with a another objection that arises in connection with this circularity: the charge that relationalism fails to give us a substantial theory of color, since the concept we are meant to be characterizing is illicitly used in the characterization.

that there are no color illusions. Cohen says:

The relationalist can allow for another (less ordinary) sense of error by excluding cases that involve deviant causal chains. For example, consider the telekinetically chromatic tomato: in addition to its ordinary capacity to look red, this tomato has a surface property that directly (that is, without retinal stimulation of any kind) affects visual cortices of perceivers in such a way as to produce in them a green appearance. (501, note 41)

Cohen holds that because the green appearance of the tomato is due to a deviant causal chain the relationalist can hold that this appearance is erroneous. There are two problems here. First we do not see how Cohen can consistently make this move, given the Master Argument. To paraphrase the Master Argument, there is no independent and well-motivated reason for thinking that just one of the variants in causal chains results in veridical perceptions (at the expense of the others). This is the relationalist's leading idea; to violate it is to abandon the spirit of relationalism. Second suppose we grant Cohen's exceptions to (1). Cohen would still be committed to (1');

(1') If the cause of S's perception of x is normal then (if x looks red-to-S-in-C then x is red-to-S-in-C).

If (1') is true then so is (2'):

(2') If the cause of S's perception of x is normal and if x looks colored-to-S-in-C then (x is red-to-S-in-C iff x looks red-to-S-in-C).

The circularity objection can then be run by supposing that x looks colored-to-S-in-C *and* that the cause of S's perception of x is normal. The objection is now that relationalism gets the phenomenology of looking red wrong in *normal* perceptual situations.<sup>7</sup>

It might be objected that when we used (2) to substitute 'x looks red-to-S-in-C' for 'x is red-to-S-in-C', we were substituting into an intensional context, which is illegitimate. Suppose an observer does not know that The Morning Star is identical to The Evening Star. The objector might claim that if a heavenly body looks like The Morning Star to the observer it might *not* look to that same observer like The Evening Star. This objection to our reasoning does not work for two reasons.

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<sup>7</sup> Our thanks to our student Rachel Myers for pointing out the significance of footnote 41.

First, we deny that 'looks' contexts are always (or ordinarily) intensional. To see this, imagine that you observe, in the morning, some heavenly body that looks like the Morning Star. Consider, now, the way the Morning Star looks to you, in the morning. Whether you know it or not, this is the same as the way the Evening Star looks to you, in the morning, because it is the Evening Star that you are looking at, when you are looking at the Morning Star. The appearance of the Morning Star, to you, in the morning, is the same as the appearance of the Evening Star, to you, in the morning. These 'two' look the same, in other words. Now to say that some heavenly body looks (to you, in the morning) like the Morning Star is just to say that it looks the way the Morning Star looks (to you, in the morning). But, as was just argued, this way of looking is the same as the way the Evening Star looks (to you, in the morning). So, even if you do not know that the Morning Star is the Evening Star, the aforementioned heavenly body looks (to you, in the morning) like the Evening Star. It looks the way the Evening Star looks (to you, in the morning). What this shows is that there is a perfectly natural and ordinary sense of 'looks' and 'looks like' that do not generate intensional contexts. The relationalist may insist, however, that she intends to use 'looks' in such a way that it does generate an intensional context.

So, second, we will, for the sake of argument, grant that 'looks' generates an intensional context, so that substitutions into 'looks' contexts can change truth values. But such substitutions do not always change truth values. Note this conditional: if an observer believes that The Morning Star is identical to The Evening Star then 'The Morning Star looks bright to her' is true iff 'The Evening Star looks bright to her' is true. Again assume that (1) and therefore (2) is true. In (1) and (2) we will substitute for 'S' the name of someone who believes (1) and, having read our argument that (2) follows from (1), also believes (2). (Notice that no substitutions were used to get from (1) to (2).) Let this person be called 'W'. Suppose that x looks red-to-W-in-C. Given that we can now freely substitute into 'x looks red-to-W-in-C', because W believes (2), it follows that x looks like it looks red-to-W-in-C. And so on. Thus when something looks red-to-W-in-C either her experience is about itself an infinite number of times, or the relationalist's claim (1) is false. We suspect that the latter is the correct alternative – relationalism entails an incorrect phenomenology, at least for those who believe it!

Is our objection fatal to relationalist theories, in general? We think that it is.<sup>8</sup> Recall the relationalist's motivation, as presented in the Master Argument. All relational theories of color want to *relativize* color properties, so they must invoke something like Cohen's 'red-to-S-in-C' construction. And given that relational theories consider color a relation between objects and perceivers, any plausible relational theory will appeal to the relations between objects and *how they look*. In other words, they must invoke some (1)-like conditional to connect being a certain color with *looking* a certain color. So any plausible relationalist theory will imply a thesis similar to (2). These two elements in conjunction – the relativization of color and the link between looking a certain color and being a certain color – lead to the regress described, and this entails an untenable claim about the visual content of color experience.

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<sup>8</sup> We see one way out: characterize an object's being red, *not* in terms of it's looking like it is red, but in terms of looking like it has some other property, say red\*. So (1) becomes: if x looks red\*-to-S-in-C then x is red-to-S-in-C. This is to abandon the key motivation for relationalism (and that which distinguishes it from error theoretic opponents) – the idea that the various color experiences described in the Master Argument (including those in 'standard conditions') are veridical. See Peacocke, C. 1984. Colour Concepts and Colour Experience. *Synthese* 58: 365-81; and Johnston, M. 1997. How to Speak of the Colors (with a postscript), in Byrne and Hilbert (eds.), *Readings on Color, Volume 1: The Philosophy of Color* (MIT, 1997), 137-72.