

REPRESENTATIONALISM AND THE CONCEIVABILITY OF INVERTED SPECTRA

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i. Introduction

A natural view to hold regarding the phenomenal content of color experiences, one that I think has driven many present-day theories of color perception and phenomenal content, is that in color experience we are directly “presented” with the colors of things. Visual experiences somehow put us in a position from which we can “directly grasp” properties of the objects of perception. One way to think about this idea is in terms of the relationship between phenomenal character and phenomenal content. It is phenomenologically evident that in having a color experience, there is a distinctive sort of property that is before the mind. In fact, it is intuitive to suppose that the phenomenal character of a color experience simply consists in being aware of these properties. But it is also tempting to think that these properties are simply the colors of things in our environment. Or put another way, the properties that we are most directly aware of in color experiences are the properties that those experiences attribute to external objects. One articulation of this idea that has gained considerable currency in recent discussion of phenomenal content is in the idea that visual experiences are *transparent*.¹

Many philosophers have also found it attractive to suppose that these properties, the properties that color experiences represent, are mind-independent physical properties. Usually, these properties are simply identified with the colors of things. For example, Byrne and Hilbert (1997) identify colors with types of surface spectral reflectances. Tye (2000) adopts a similar view. Jackson and Pargetter (1987)

¹ For some representative discussions of this idea, see Moore (1903), Harman (1990), and Tye (1992).

identify colors with the (perhaps highly disjunctive) physical properties that ground the disposition to appear colored.

Together, these two ideas motivate a certain view about the phenomenal content of color experience, one that I will call Standard Russellianism. Despite its intuitive appeal, Standard Russellianism is incompatible with another strong intuition with regard to color experience and its content—the intuition that there can be spectrum inversion without illusion. A seemingly attractive response to this conflicting intuition is to insist that though spectrum inversion without illusion is conceivable, it is not in fact possible. In what follows I argue that this is in fact an unstable position. I argue that there is an “incompatible triad” of intuitive theses: transparency, the conceivability of spectrum inversion without illusion, and apparent color incompatibility. Resolving this incompatible triad requires either abandoning Standard Russellianism, abandoning its central motivations, or rejecting an intuitive datum. I suggest that the first of these options is preferable.

2. Russellian Theories of Phenomenal Content

Phenomenal content is content that supervenes on phenomenal character. Necessarily, if two experiences have the same phenomenal character then they have the same phenomenal content. This is the defining feature of phenomenal content, as I will use the phrase.²

The intuition that perceptual experiences are transparent motivates a Russellian theory of phenomenal content. According to Russellian theories of phenomenal content, phenomenal content is purely extensional, consisting solely in

² That there is such a thing as phenomenal content is an increasingly popular, though controversial, thesis. The present paper concerns a dispute about the nature of phenomenal content among those who accept that there is phenomenal content. I will not argue for its existence here.

reference to objects or the attribution of properties. Given that sameness of phenomenal character entails sameness of phenomenal content, Russellian theories of phenomenal content are theories that accept the following:

For any experience with phenomenal character r , there is some property p_r such that necessarily if an experience has phenomenal character r then it attributes p_r .

The second intuition above, when combined with Russellianism, motivates what we can call “mind-independent physical-property Russellianism”. Mind-independent physical-property Russellianism holds that

For any experience with phenomenal character r , there is some mind-independent physical property p_r such that necessarily experiences with phenomenal character r attribute p_r .

For the sake of brevity, I will call mind-independent physical-property Russellianism “Standard Russellianism”.³ Here I use the term “mind-independent” to refer to a property that does not essentially depend on any mental states or properties. I will call a property “mind-dependent” if it does essentially depend on mental states or properties.⁴ I mean to include in the notion of a mind-dependent property such things as dispositions to cause certain types of mental states.

3. Spectrum Inversion

³ This is a variation on Shoemaker’s (2002) use of the term “standard representationalism” to refer to this type of view.

⁴ This distinction does not assume that materialism is false. Even if materialism is true, there is presumably a distinction between those physical states that are also mental states and those physical states that are not mental. A mind-dependent property might, on such a view, be a mental property or a property that is constituted by relations to mental properties.

A problem for Standard Russellian theories of phenomenal color content comes from the possibility of spectrum inversion.⁵ For instance, it might be that the color experience Jack has when viewing a red thing is phenomenally identical to the experience Jill has when looking at a green thing. It seems conceivable that there could be two subjects who are spectrum inverted relative to each other.

Suppose that Jack is looking at a strawberry and that Jill is looking at a lime. The strawberry and lime could be such that, due to their being spectrum inverted relative to each other, Jack and Jill are having phenomenally identical color experiences.⁶ It seems also that neither Jack nor Jill need be misperceiving the color of the fruit. After all, the having of an experience with a certain phenomenal character in response to the strawberry or lime is not simply a product of the nature of the fruit. It is in large part a product of Jack and Jill's subjective constitutions: the way that their eyes work, the way that information received from the eye is processed in their brains, etc. There seems to be no grounds for saying that Jack's way of perceiving red things, or instead Jill's way, is the only correct way for red things to appear.

This can be made more vivid by imagining that half the human population is like Jack, and the other half is like Jill. By what criterion can it be rightly said that one half of the population misperceives the colors of things? Both those like Jack and those like Jill get around in the world just fine. And there does not seem to be anything about the relationship between the physical properties of objects and either

⁵ This is a problem that Sydney Shoemaker has frequently discussed as a problem for what he calls "standard representationalism"—a version of Russellianism. Shoemaker's own proposal is also a version of Russellianism, but on which the represented properties are taken to be relational properties between objects and perceivers. I discuss Shoemaker's view, and raise problems for it, in [Author's work].

⁶ Their experiences will presumably differ in other respects, such as with respect to the shape and size of the fruit they are viewing. Here I am only concerned with the color content of their experiences. One might instead suppose Jack and Jill are looking at inflated balloons, one green and the other red, which are identical in shape and size.

group's color experiences that would ground the claim that one group, rather than the other, accurately represents color. In considering the possibility of spectrum inversion, we seem to be confronted with a visual analogue to the case of something that tastes bitter to some and sweet to others (Shoemaker 1994b).

The possibility of "spectrum inversion without illusion" poses an immediate problem for Standard Russellianism. Jack and Jill have color experiences that are phenomenally the same, and their experiences are both veridical. But the external objects in their visual fields have different color properties. This entails that the shared phenomenal content of their color experiences cannot consist in the representation of color properties. And that is to say that Standard Russellianism for phenomenal color content is false.

Suppose that Jack is looking at a strawberry and Jill is looking at a lime. Let the colors of the fruit be such that Jack and Jill are having phenomenally identical color experiences as they look at their respective fruit. If Jack and Jill are both having veridical color experiences, Standard Russellianism must be mistaken:

1. Jack and Jill are having phenomenally identical color experiences.
 2. Jack and Jill are both having veridical color experiences.
 3. The objects in Jack and Jill's respective environments have different physical colors.
- ∴ The phenomenal content of color experiences cannot consist in the representation of physical color properties.

4. Conceivable but not Possible?

A defense of Standard Russellianism might seem attractive at this point. Grant that spectrum inversion without illusion is conceivable. But deny that it is

possible. Michael Tye (2000) is one philosopher who takes this strategy explicitly.⁷ Inverted spectra *with* illusion are possible. But inverted spectrum cases in which neither invert is a misperceiver of color is not possible, despite seeming to be so.

This line becomes even more plausible when one notes that Standard Russellianism is typically to be understood as an *a posteriori* thesis rather than a conceptual truth. On this view, the correct theory of phenomenal content entails that spectrum inversion without illusion is impossible, but since this theory is not knowable to us *a priori*, spectrum inversion without illusion cannot be ruled out *a priori* (and thus is conceivable). For all we know *a priori*, a red experience can represent physical greenness. This makes it conceivable to us that someone could be spectrum inverted relative to us without misrepresenting green things. But as a matter of fact, red experiences by necessity represent physical redness. And so spectrum inversion without illusion is not possible. Jack and Jill cannot both be veridical perceivers. One of them is a misperceiver, despite it being conceivable to us that they might both be veridical perceivers.

There is a large debate about the relationship between conceivability and possibility that is relevant to assessing the coherence of this position, and to determining when and in what sense it can be correct to say that something is conceivable but not possible (see Chalmers 1996, 1999; Yablo 1999). But I think that there are reasons independent of that general debate that show that this move on behalf of Russellianism about phenomenal color content cannot be successful. This response to the possibility of spectrum inversion without illusion is in conflict with the transparency thesis and the incompatibility of phenomenal color properties.

5. An Inconsistent Triad

⁷ See pages 109-112 in particular.

The allowing that spectrum inversion without illusion is conceivable is an unstable position for the Standard Russellian to adopt. The conceivability of spectrum inversion without illusion amounts to the conceivability that a single portion of an object could satisfy the conditions of satisfaction of a red experience had by one subject and the conditions of satisfaction of a green experience in another subject, simultaneously. But the transparency thesis that motivates Russellianism holds that we can know a priori from introspection that the conditions of satisfaction of color experiences are that the objects of perception possess the color properties that are manifest to us in experience. But it is also manifest to us that these properties, such as apparent greenness and apparent redness, are mutually incompatible. Together, these three theses form an inconsistent triad.

6. Transparency

Recall that the central motivation for Russellianism is the idea that perceptual experience is transparent. Representationalists like Harman and Tye have claimed that when we introspect on our perceptual experiences, we discover that the properties we find are not properties of our experiences, but rather properties that we represent the *objects* of our experiences to have. This is meant to be a point about the phenomenology of perceptual experience. And so it seems clear that the properties Tye and Harman have in mind are phenomenal properties. For instance, consider Tye's remarks about his experience of the blueness of the Pacific Ocean:

Standing on the beach in Santa Barbara a couple of summers ago on a bright sunny day, I found myself transfixed by the intense blue of the Pacific Ocean. ...[W]hat I found so pleasing in the above instance, what I was focusing on, as it were, were a certain shade and intensity

of the colour blue. I experienced blue as a property of the ocean and not as a property of my experience (1992, p. 160).

It is the phenomenologically salient blueness—phenomenal blueness—that he claims to experience as being a property of the ocean. This claim about experience does not appear to depend on any support other than introspection. It is not a matter of theoretical reasoning about the nature of experience, nor does it depend on empirical considerations that go beyond the deliverances of introspection on the phenomenology of experience. Let p be a phenomenal property (such as apparent blueness) that contributes to the phenomenal character of a perceptual experience e , and that one is aware of when introspecting on that experience. The transparency claim, as a motivation for Russellianism, can thus be put as follows:

Transparency: It is a priori on the basis of introspection that e attributes p to the object of perception.

It follows from transparency, of course, that in order for the experience e to be veridical, the object of perception must in fact have p .

Some clarification of *Transparency* is necessary. The Standard Russellian is not committed to the view that for every mode of presentation of p , it is a priori that e attributes p to the object of perception. So for example, the Standard Russellian typically identifies phenomenal color properties with physical colors, such as surface spectral-reflectance properties. And it is certainly not a priori on the basis of introspection that a red experience, say, attributes the particular surface spectral-reflectance property that it does. This fact is one that we can only discover by doing a bit of science. But according to the transparency intuition, when we introspect on a red experience we are aware of a certain property, and we experience it as being attributed to the object of perception. Let us call the concept that represents this

property in such episodes of introspective knowledge a “phenomenal concept”.⁸ Restricted to representations of p using a phenomenal concept, the transparency intuition supports *Transparency*.

7. The Conceivability of Spectrum Inversion

Intuitions that spectrum inversions without illusion are possible reflect our knowledge of our own color experiences and their phenomenal content. Consider a phenomenally red experience that one might have while looking at a fire hydrant. The experience, we will suppose, is veridical. When we imagine the possibility of spectrum inversion, we imagine that there could be a person who has a phenomenally green experience while looking at the very same fire hydrant at the very same time that one has a phenomenally red experience. And in conceiving that spectrum inversion without illusion is possible, one conceives of one’s own phenomenally red experience and another individual’s phenomenally green experience both being veridical representations of the fire hydrant.

To grant that spectrum inversion without illusion is conceivable thus is not simply to grant that it is conceivable that Jack is a veridical perceiver of color and it is conceivable that Jill is a veridical perceiver of color. It is to suppose that Jack and Jill can both be veridical perceivers of color. And given that Jack and Jill, on this supposition, can have veridical but inverted experiences of a single object (such as the fire hydrant), the conceivability of spectrum inversion without illusion entails that it is conceivable that an object satisfy the conditions of satisfaction of a phenomenally red experience and the conditions of satisfaction of another subject’s phenomenally green experience simultaneously.

⁸ For discussion of phenomenal concepts, see Loar (1990, 1997), Chalmers (2000), Nida-Rumelin (1995), Tye (1999).

8. Apparent Color Incompatibility

Transparency and the conceivability of spectrum inversion without illusion together conflict with a third thesis, one with at least as much if not more intuitive appeal. Transparency claims that it is a priori that the apparent redness and the apparent greenness of an experience are properties that an experience attributes to the object of perception. That is, transparency entails that it is a priori knowable on the basis of introspection that the conditions of satisfaction of phenomenally red and phenomenally green experiences are such that the object of perception must have apparent redness and greenness, respectively. The conceivability of spectrum inversion without illusion entails that it is conceivable that those conditions of satisfaction for a phenomenally red and phenomenally green experience be met simultaneously by a single object (and by the same region of that object). For these two claims not to lead to a contradiction, it must be the case that it is conceivable that a single object instantiate apparent redness and apparent greenness at the same place and at the same time.

But it is manifest to us from introspection that apparent redness and apparent greenness are mutually exclusive properties. It is not in fact conceivable that an object have the redness and greenness that are apparent to us in visual experience at a single location and time. The claim that something cannot be both red and green all over has historically been a favorite philosophical example of an a priori truth.⁹ Properly understood, I believe that it is indeed a priori that redness and greenness are incompatible.

Gilbert Harman, in a discussion of Bonjour's *In Defense of Pure Reason*, offers the following criticism of the claim that something cannot be red and green all over. First, he stresses that just because something cannot look red and green all over does

⁹ For a recent defense, see Bonjour (1998).

not mean that something cannot be red and green all over. He illustrates the point by having us imagine an object that looks red from one angle but looks green from another angle. It may be that the object cannot *look* red and green at the same time—but we still might want to say that the object is in fact red and green all over.

Harman also questions whether something couldn't also look red and green all over. Perhaps it is a lack of imagination on our part that it might seem that something couldn't look that way. And he cites research by Crane and Piantandia (1983) in which subjects reported that objects look both red and green at the same time.

Before assessing these challenges to the apriority of color incompatibility, we should clarify exactly what is being claimed to be a priori. The claim that has the most plausible right to a priori status is the claim that nothing can be two particular shades of color at the same time and place. Shades are determinates, as opposed to color categories (like being a shade of red) which are determinables. And here, colors should be understood as the qualities that are phenomenally present to us in color experience.¹⁰ What is a priori is that a particular shade of red and a particular shade of green, represented via our phenomenal concepts, are incompatible with each other.

Understood in this way, the claim that it is a priori that colors are mutually exclusive remains a thesis that the imagined defender of Standard Russellianism must deny. But the claim is clearly not refuted by the research of Crane and Piantandia. Crane and Piantandia's subjects reported that they experienced something as being reddish-green. They did not perceive a surface as having two distinct determinate shades (a shade of red and a shade of green). Rather, they experienced a single shade

¹⁰ I am not endorsing this view about the relationship between colors (as properties of external objects) and the phenomenology of color experience. But colors understood in this way are properties to which we might arguably have a certain kind of special epistemic access. And further, these are the properties that Standard Russellianism takes to be physical colors.

of color that was best described as “reddish-green”. So this experiment might show that in some sense redness and greenness are not incompatible, in the sense that there is a determinate shade of color that is both red and green. But it does not show that something can be two *determinate* shades at the same time. Further, one might very well question whether such an experience could ever be veridical. Even if one could experience something as being two shades, it doesn’t strike me as unreasonable to suppose that any such experience is necessarily partly a misperception.

Harman’s example of something that looks red from one angle and green from another can also be questioned. To further elaborate on his example, consider a surface with ridges such that the object depicts two different things depending on how you orient it.¹¹ In this sort of case, there is a level of spatial specificity at which a location on the object has only one, not two, colors. Different portions of the surface are visible from different angles, while others are invisible. There is no single portion of the surface that has two shades of color.

This example is not much different in kind from talking about the color of a region of colored newspaper print. Something will look purple from a distance, but upon closer inspection the “purple” region is composed of smaller red and blue dots. Whether it is correct to say that the area of the newsprint is in some sense purple is an interesting question. But such a case does not provide an example of something being two determinate shades simultaneously at a single location identified with the same degree of specificity.

Nassau (1983) describes other cases (such as some transparent films) in which the color something will appear to have depends on the angle of viewing, but in which the same surface properties at a particular location are responsible for the

¹¹ I seem to recall little disks like this were once given away with slushy drinks at 7-Eleven. They might show the logo of a football team when viewed at one angle, and then depict a particular player on that team when viewed from a different angle.

variation. Due to interference effects in the reflected light, a location can reflect different wavelength light in different directions. But it is far from clear that we ought to say of such cases that an object actually has, as one of its properties, two determinate colors at the same location. Indeed, the transparency intuition is far less robust for color experiences that are due to interference. It is not so obvious that, for example, the colors one experiences in a layer of oil in water are experienced as being located in the oil. When the color one experiences depends dramatically on the angle at which one views an object, one is no longer lead to attribute the phenomenal color properties as stable properties of the object perceived.

Other kinds of examples that the Standard Russellian might appeal to here undermine rather than support Standard Russellianism. For example, alexandrite is a gem that looks a strikingly different color depending on the lighting conditions.¹² Under white light, alexandrite looks a grayish purple. Under candle light, the same stone looks red. And it may be true that we do not want to say that any particular color experience had under one particular set of lighting conditions is veridical, to the exclusion of all other color experiences had under other lighting conditions. But insofar as this is what we would be inclined to say, we will be moved to one of the following views: 1) that color experiences do not represent stable mind-independent properties, 2) that phenomenal content does not consist solely in the representation of such properties, or 3) objects can change colors depending on how they are illuminated. Such cases do not support the idea that objects can have multiple determinate shades of color simultaneously.

It seems to me that it is a central function of color vision to provide perceivers with information about the ways things in his or her environment differ. When looking at a red thing next to a green thing, it isn't just that one is presented with an aspect of the red thing and an aspect of the green thing. The green and red

¹² Thanks to [acknowledgement omitted for blind review] for this example.

things are not merely represented differently by my experience. The two objects appear to actually *be* different with respect to their color. It doesn't seem to be compatible with the veridicality of my experience that the two objects in fact be precisely the same color-wise, as they would be if they were both red and green all over.

9. Conclusion

In summary, we are robustly aware of certain properties when we introspect on color experiences. Our awareness of them is such that it is a priori that they are mutually incompatible. But the transparency thesis claims that these are the properties that our color experiences attribute to external objects. But if this is so, then it should not be conceivable that two experiences (such as a phenomenally red and a phenomenally green experience), representing two of these distinct properties, could both veridically represent the same portion of an object at the same time. Thus, if the transparency thesis is true then spectrum inversion without illusion should not be conceivable. It is conceivable—so the transparency thesis must be false.

Transparency, the conceivability of spectrum inversion without illusion, and the incompatibility of apparent color properties are not mutually consistent. The Standard Russellian might deny transparency, but then the view lacks its primary motivation. He might deny that we can know a priori that phenomenal color properties are exclusive of each other, but this would be to deny what appears to be a datum from introspection that is at least as compelling as transparency. Finally, the Standard Russellian might deny that spectrum inversion without illusion is even conceivable. But that is to concede that the present reply to the inverted spectrum

argument fails. And it remains to be explained why spectrum inversion without illusion is not conceivable, despite seeming to be so.

What ought we conclude about phenomenal content? One conclusion would be that color experiences do not have phenomenal content. An anti-representationalist, such as Ned Block, might describe cases of spectrum inversion by simply appealing to non-intentional features of experience—qualia (1996). On such an account, qualia determine the phenomenal character of an experience. Jack and Jill have experiences with different phenomenal character when looking at a ripe tomato in virtue of tokening qualia of different types. Neither Jack nor Jill need misrepresent the tomato, since the tomato is not represented as having this feature of their visual experiences. It might be that Jack and Jill both represent the tomato as being red—but the phenomenal characters of their respective experiences are not fully determined by this representational fact.

But intuitively, color experiences do have phenomenal content. It seems that, in virtue of having visual experiences with a certain phenomenal character, the world is presented to the subject as being some way rather than other ways. Furthermore, this intentional feature of visual experience is shared by phenomenal duplicates. When I imagine a creature who is having a visual experience that is phenomenally just like the one that I am having, I thereby imagine that the way the world appears to her is just like the way the world appears to me.

Standard Russellianism identifies these “ways of appearing” with mind-independent physical properties that objects appear to have. The possibility of inverted spectra without illusion shows that this view is unsatisfactory. The way red things appear to Jack is the way green things appear to Jill. But there is no mind-independent physical property that is plausibly represented by such experiences and that red things and green things have in common.

There are two alternative theories of phenomenal content that promise to accommodate inverted spectra. One possibility is to accept Russellianism but deny that phenomenal content consists in the representation of mind-independent physical properties. This sort of view has been defended by Sydney Shoemaker (1994, 2001).¹³ A second alternative, which I develop and defend elsewhere, identifies phenomenal content with a kind of Fregean rather than Russellian content.¹⁴ On this view, color experiences do not involve “directly grasping” those features of objects that color experiences represent. Rather, ways of appearing are modes of presentation of represented properties. Like Standard Russellianism, this view holds that color experiences represent mind-independent physical colors. Jack and Jill both represent red things as having the very same mind-independent physical properties. But they do so under different modes of presentation.

¹³ I present arguments against Shoemaker’s view in my [Author’s work].

¹⁴ See my [Author’s work].

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