

Senses for Senses

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i. Phenomenal Content

When I open my eyes and look at a Rubik's cube, there is something it is like for me visually in looking at it. Various color qualities are presented to me, and they are arranged in a specific pattern. By having an experience with this particular phenomenal character I am also thereby visually representing the world outside my experience as being a certain way. If I experience a blue square to the left of a red square, the world outside my experience is represented as being one way. As I turn the cube, and come to view a green square to the left of another green square, I have an experience with a different phenomenal character. But I also come to represent the world differently. In virtue of the difference in phenomenology there is a corresponding difference in how the world is represented as being.

Moreover, it seems that any two experiences with the same phenomenal character will share a certain sort of intentional content.¹ If two subjects have phenomenally identical experiences, there is an important sense in which the way the world appears to them is precisely the same. I will call this intentional content that supervenes on phenomenal character "phenomenal content".

But how are we to understand this notion of "ways of appearing"? Most philosophers who have acknowledged the existence of phenomenal content have held that the way something appears to a subject is simply a matter of the properties

¹ I will not provide arguments for this position here. See Siewart (1998) and Horgan and Tienson (2002). Representationalists, such as Dretske (1994) and Tye (2000), are also committed to this thesis. Representationalism is the claim that phenomenal character supervenes on intentional content of a certain sort.

something appears to have.² On this view, the way something appears is simply the way something appears *to be*. This identification is often driven by phenomenological considerations. Experience is often said to be “transparent” or “diaphanous”.³ According to the transparency thesis, when one introspects on the phenomenal character of one’s perceptual experience one finds only the properties that objects in one’s environment appear to have. One does not find properties of one’s experience or any other perceptual intermediaries.

Perhaps due to this widespread conviction, philosophers have rarely questioned the idea that ways of appearing are simply properties that things appear to have. They have generally ignored an equally intuitive alternative—that ways of appearing are manners or modes of appearing. It is this alternative view that I will explore and defend in the present paper.

One can approach this issue more carefully by considering what *kind* of content phenomenal content is. A content is Russellian if it is composed from the properties and/or objects represented by the contentful item. For example, one might hold that the content of a belief that San Francisco is beautiful is a structured proposition composed of San Francisco itself and the property of being beautiful. Similarly, those who think that the way something appears is simply a matter of the way something appears *to be* adopt a Russellian theory of phenomenal content. According to Russellian theories, phenomenal content consists in *what* specific properties are represented by the experience.⁴ The vast majority of theories of

² Most representationalists about phenomenal character, such as Tye, Dretske, and Harman, have accepted this principle at least implicitly. Sydney Shoemaker (2000) adopts this principle explicitly. Shoemaker has more recently called this principle (which he labels the “Ways=Properties principle”) into question (Shoemaker 2006).

³ See Moore (1903), Harman (1990), Tye (2000), Martin (2002), Stoljar (2002).

⁴ I will here make the common (but not universal) assumption that phenomenal content is not *object-involving*. That is, I will assume that particular objects do not enter into the conditions of satisfaction for phenomenal content. This assumption, however, will play no substantial role in what follows given that I will focus only on the experience of color properties. The standard reason for this assumption is that it

phenomenal content that have been offered are Russellian.⁵ Given that sameness of phenomenal character entails sameness of phenomenal content, any Russellian theory of phenomenal content must accept the following “Russellian thesis”:

For any experience (that has phenomenal content) 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 .

A content is Fregean if it consists of modes of presentation of objects and properties rather than the objects and properties themselves. According to Fregean theories of phenomenal content, the phenomenal content that is shared by any two phenomenally identical experiences is a matter of *how* the world is represented, and need not involve sameness in *what* is represented. That is, Fregean theories of phenomenal content, unlike Russellian theories, need not accept the Russellian thesis above. For the Fregean, sameness of phenomenal character need only entail sameness in the mode of presentation.⁶ This is compatible with the idea that perceptual experiences do represent particular properties, and that they even have Russellian contents. But this property-involving content will not be, on the Fregean view, *phenomenal* content, since it will be a kind of content that need not be shared by phenomenal duplicates.

seems that one could have two distinct veridical perceptual experiences that are phenomenally identical, but are perceptions of two different particular objects. For example, one might have phenomenally identical experiences of two distinct (but qualitatively similar) soup cans. Given that phenomenal content is content that is shared by any two phenomenally identical experiences, this requires that particular objects do not enter into the phenomenal content of an experience. This is compatible of course with there being some other kind of perceptual content according to which particular objects are part of that content.

⁵ Lycan (1996a), Dretske (1995), Tye (1995, 2000), Shoemaker (2001), Clark (2000).

⁶ This leaves open the possibility of a Fregean theory that accepts the Russellian thesis. This is because there are possible Fregean views according to which sameness of mode of presentation entails sameness of represented properties. Indeed, in Frege’s philosophy of language sameness of sense entails sameness of reference. This aspect of Frege’s view results in a difficulty in handling indexicality, which as I argue below is an important aspect of phenomenal content.

The primary objective of the present paper is to develop in some detail a Fregean theory of the phenomenal content of color experience.⁷ As mentioned above, most philosophers writing on phenomenal content have adopted a Russellian theory of one variety or other.⁸ But in part because of their commitment to the Russellian thesis, these views face difficulties that do not arise for the Fregean theory to be developed below. For example, they have difficulty accommodating the possibility of inverted spectra without illusion, and in giving an intuitively plausible account of color constancy.⁹ The Fregean theory of the phenomenal content of color experience, which is developed in Sections 2 through 5, provides an attractive account of these and other aspects of color experience. Finally, in Section 6, I defend Fregeanism about phenomenal content against arguments based on phenomenological considerations, such as the transparency thesis, that have recently been lodged as challenges for Fregean theories like the one developed here.

2. Fregean Phenomenal Content

The phenomenal content of an experience is a kind of intentional content had by an experience that it would share, necessarily, with any experience with the

⁷ See my [Author's manuscript] for a Fregean theory of the spatial content of visual experience.

⁸ One notable exception is Chalmers (2006), although he pairs his Fregean account with a Russellian account of the "perfect veridicality conditions". His attraction to a dual content view is motivated largely by phenomenological considerations like the ones discussed below in section 6.

⁹ For discussion of inverted spectra without illusion, see Shoemaker (2001, 2002, 2006), Tye (2000), and [Author's article]. For color constancy, see [Author's article]. It remains to be seen whether there are possible Russellian views that can accommodate these phenomena satisfactorily. The Russellian might appeal to the idea that color experiences represent primitive color properties and/or the idea that color experiences are systematically illusory (Maund 1995, McGinn 1996, Chalmers 2006, Pautz 2006). The view to be offered here avoids an error theory of color and color experience and is compatible with color physicalism, two features that at least many philosophers would count as virtues.

same phenomenal character. That is, it is a kind of content that supervenes on phenomenal character. According to a Fregean theory of phenomenal content, the phenomenal content of an experience consists in a mode of presentation.

Phenomenally identical experiences need not share Russellian content, but instead share a phenomenal mode of presentation.

For example, consider an inverted spectrum scenario in which two subjects, Jack and Jill, have been red-green inverted with respect to each other for their entire lives. Many philosophers have had the intuition that in such a scenario, neither Jack nor Jill need be a systematic misperceiver of color. Let's call such scenarios in which neither subject is a misperceiver of color cases of "inverted spectra without illusion". When Jack views a lime and Jill views a strawberry, they have phenomenally identical color experiences. Correspondingly, there is a "way of appearing" that they share. On a Fregean view this way of appearing corresponds to a shared mode of presentation, rather than in their attributing the same property to their respective fruits. The mode of presentation under which Jack visually represents red things is the same as the mode of presentation under which Jill represents green things, and vice versa.

If Jack and Jill's phenomenally identical color experiences do not pick out or refer to the same properties, why think that the "way of appearing" that they share is a form of intentional content at all? Like Fregean senses, we can think of phenomenal modes of presentation as a type of content because they determine reference and truth conditions. A phenomenal mode of presentation places a *condition on reference*. A phenomenally red experience picks out, roughly, the property in the environment that typically causes red experiences in the subject.¹⁰ This mode of presentation in Jack picks out one set of physical properties, and in Jill it picks out

¹⁰ Here the use of color terms such as "red" to characterize experiences rather than external objects should be understood as picking out phenomenal properties of experiences that are associated with viewing external colors.

a different set of physical properties. Let's call these properties "physical colors".¹¹ This feature allows for Jack and Jill to represent the same physical color property under different modes of presentation, and to represent different physical color properties under the same mode of presentation. "Reddish" experiences, given the actual world centered on Jack, return physical redness as their extension. A phenomenally identical experience, given the actual world centered on Jill, returns physical greenness.¹²

There are of course a wide range of possible Fregean views. By reflecting on various ways the world might be outside our experience, and asking ourselves whether those ways the world might be are ways which our experience "rules out", we can get at the semantic contours of an experience's phenomenal content. In what follows I will propose a particular theory about the nature of the phenomenal modes of presentation involved in color experience. Phenomenal color content is response-dependent, indexical, and holistically determined.

3. Response-dependence

Notions of "response-dependence" or "response-dispositionality" have been employed both at the level of properties and of concepts (Johnston 1989, 1992, 1993; Petitt 1991; Wright 1992). Here I will use the term "response-dependent" as describing a semantic feature of concepts, experiences, or any other content-bearing entity. In particular, a concept C is a response-dependent concept if it is a priori that, for some non-trivial specification of r , s , and k , x is C if and only if x is disposed

¹¹ These properties are plausible candidates for being the colors simpliciter, but we need not take a stand on that issue here.

¹² I am assuming that Jack and Jill are inverts in the actual world. There may be other possible worlds in which Jack has a perceptual system like Jill's in the actual world. A reddish experience, centered on Jack in that world, returns physical greenness.

to produce a response of type r in subjects s under conditions k .¹³ For instance, color concepts might plausibly be understood as response-dependent concepts as follows: x is red if and only if x is disposed to produce a phenomenally red sensation in ordinary human observers under standard lighting conditions. Other concepts that have been suggested as being response-dependent—though not always using that term—include the concepts of intrinsic value (Lewis 1989), moral goodness (McDowell 1985, Author’s article), and even *all* concepts (Pettit 1990).

The notion of response-dependence can be generalized to apply to phenomenal content, even if such content is (as I assume here) non-conceptual. Response-dependence can be understood as a feature of the mode of presentation of a concept or experience, articulating the nature of the condition on reference. We can say that a mode of presentation is response-dependent if its conditions on reference are properly characterized as picking out at a world only the properties or objects that are disposed to produce a response r in subjects s under conditions k .¹⁴

The evidence that guides us in determining the nature of the conditions of satisfaction of color experience is our judgments about the veridicality of an experience under various scenarios considered as actual. The possibility of inverted spectra without illusion, and the phenomenon of color constancy (to be discussed below), suggest that there is no *particular* physical property represented by a red experience that an object must have in order for the experience to be veridical. Is there nonetheless some condition that an object must satisfy in order for a red experience to veridically represent that object? Though there is no particular physical property that the object must have, it seems that it minimally must have some property or other that typically causes experiences of that type under those

¹³ This formulation relies heavily on the notion of response-dependence articulated in Johnston (op. cit).

¹⁴ This is meant to leave open the possibility of “rigidified response-dependence”. The relevant subjects and conditions can be restricted to actual subjects and actual conditions.

lighting conditions. Color experiences can thus be seen as having a particular kind of response-dependent mode of presentation, one in which the vehicle of content is an instance of the relevant response type. Further, a color experience picks out not just any property that is disposed to cause an experience of that type, but only those properties that have typically in the past caused such experiences.

This can be seen easily by considering a brain-in-a-vat scenario. Suppose that I have lived the majority of my life as a fully-embodied human being whose visual experiences are caused in the ordinary manner. But at some point in adulthood, an evil scientist removes my brain from my body while I am sleeping and places it in a vat of chemicals. She keeps my brain alive and electrochemically stimulates it in such a way that I have visual experiences that are phenomenally just like the kinds of experiences that I normally have, and like those that I would have had if I had not been newly envatted. I have an experience as if I am looking at tangerines in a supermarket. The orange phenomenal properties of my visual experience are not caused by those properties of external objects that normally cause such experiences in me; instead, all of my visual experiences are due to direct brain stimulation. It seems clear that in this scenario, I am subject to systematic misperception with regard to the colors and spatial features of the world around me. And it seems as though the reason for this is that my orange experiences during envatment are not caused by those properties that have normally in the past caused orange experiences in me.¹⁵

Ned Block's "Inverted Earth" thought experiment provides further intuitive data for the idea that part of the conditions of satisfaction of a color experience is

¹⁵ There are other ways of getting this result, but they are not plausible. One might claim that the experiences must be caused "in the right way" or in "the ordinary visual way" (Shoemaker 2002). But I do not think there is any way of specifying the relevant manner of causation that would not mistakenly render veridical experiences as false. For instance, there might be creatures that have color experiences but who do not have sense organs like ours. I see no barrier to those creatures nonetheless veridically representing the world with their color experiences (see below).

that it be caused by properties that typically cause such experiences (Block 1990). In the thought experiment, a normal perceiver on Earth is transported to another planet that is like Earth except that the colors of things are inverted relative to the Earth. The grass is physically red, the sun is blue, etc. But the individual Fred has color-inverting lenses placed in his eyes, such that his color experiences are indistinguishable from the ones that he would have had if he had remained on Earth. That is, even though the grass is red on Inverted Earth, it still phenomenally appears green just as it did on Earth.

Intuitively, when Fred first opens his eyes on Inverted Earth, he is a misperceiver of color. After all, he represents the grass in just the same way as he did a day before—as being green. The grass is in fact red, and so this counts as a misperception. But it also seems plausible that after some amount of time, Fred's color experiences are no longer mistaken. There comes a point at which we are inclined to say that Fred represents objects as being physically red by having phenomenally green experiences.

This intuition is explicable on the present view about the modes of presentation of color experiences. Before leaving Earth, phenomenally green experiences were typically caused by physically green things. Immediately upon arriving on Inverted Earth, this remains the case. When Fred has a green experience in response to the red grass, his experience is not caused by a property that typically causes green experiences. The initial experience on Inverted Earth thus counts as a misperception. But after some amount of time on Inverted Earth, green experiences *are* typically caused in Fred by red things. And so after some amount of time, the present view entails that Fred becomes a veridical perceiver of color on Inverted Earth.¹⁶

¹⁶ It is worth noting that Russellian Representationalists, if they accept that Fred's color experiences become veridical after some period of time on Inverted Earth, face

A difficult question concerns how much time must pass before Fred becomes a veridical perceiver. And in general, it is difficult to give a precise analysis of what counts as a “typical” cause. I will not offer a precise analysis here. Instead, two things deserve noting. First, the natures of the modes of presentation involved in color experiences are characterized or approximated, but not “analyzed”, by the descriptions being offered here. It may be that there are no precise necessary and sufficient conditions for the satisfaction of a color experience’s content that can be articulated with an English language description. On the present view, there need not be an analysis in the form of necessary and sufficient conditions for when something satisfies the phenomenal content of a red experience. But what is being claimed (and what is usually tacitly assumed among those trying to provide such an analysis in this and other domains) is that we as subjects who have experiences with a certain phenomenal content are in a position to judge about a given epistemic possibility whether that possibility would satisfy the experience’s phenomenal content if it were actual.¹⁷

Second, the vagueness of “typicality” might be seen as a virtue in this context. For our intuitions about various scenarios are fuzzy in roughly the same places as are our intuitions about what counts as typical. The Inverted Earth thought experiment discussed above provides one example. Insofar as it is difficult to say what the

a real difficulty. Given that the represented properties change, the phenomenal character of Fred’s experiences must also change. But when? There does not seem to be any reasonable basis for picking out an exact moment at which red things cause green rather than red experiences in Fred. And it is difficult to imagine what it would mean to say that the change is gradual. Do red things cause blue experiences on their way to eventually causing green experiences? It is a virtue of the Fregean theory that it does not have to answer such vexing questions. It is sensible to say that intentional content can be indeterminate. But it is not so clear that one can make sense of the idea of indeterminate phenomenal character.

¹⁷ See Chalmers (2002a, 2002b, 2004) for a developed view on this as it applies to thought contents. See also Jackson (1998), where something like this claim is (plausibly, in my opinion) offered as an account of what it means to be “semantically competent” with one’s words. This also is in the spirit of “Russell’s Principle” (Evans 1982).

typical cause of Fred's red experiences is, we have difficulty deciding whether his experience is veridical. After a long period of time, after which it becomes clear that Fred's experience has as its typical cause the statistically normal cause on Inverted Earth, we find it easier to decide that Fred's red experiences are veridical. If there are scenarios of which we have great difficulty deciding whether an experience would be veridical, we should not expect a characterization of the experience's phenomenal content to deliver a clear verdict about those cases. This would, I think, put the cart before the horse.

One worry that might be raised about the requirement of a typical cause in the mode of presentation of color experience comes from considering a creature's very first visual experience. The notion of a typical cause is a backwards-looking, statistical notion. A first experience thus lacks a typical cause. But it might seem that such an experience could be a veridical one. And at a minimum, it surely is the case that such experiences have phenomenal content. This in fact seems to be required by the notion of phenomenal content, since a first visual experience could plausibly be phenomenally just like a veteran perceiver's experience (at least with respect to color).

But we have already encountered reasons for thinking that a first color experience might lack a truth-value. The inverted spectrum thought experiment shows that two phenomenally identical experiences could have different truth values, even if they are had in response to the very same circumstances. For suppose that Jack has a red experience while looking at a cherry. If Jill were to have an experience just like Jack's in response to the very same object under the very same conditions, her experience would be mistaken with respect to its color content. A red experience in Jill would falsely represent the cherry as being green.

Now consider Jane who has a red experience for the first time, perhaps while viewing the same cherry. On what grounds should we say that Jane's experience is

made true by the cherry, like Jack's, rather than made false by the cherry, like Jill's? There is nothing about the experience, nor about Jane's history, that could choose between these possible assignments of truth-value. We might appeal to the causes of Jane's *future* experiences, but it isn't plausible that the conditions of satisfaction of color experiences are forward-looking in this way. It might be that Jane will in the immediate future have inverting lenses placed in her eyes, or become a brain-in-a-vat. But this fact about the future surely cannot have a bearing on whether Jane's present or past experiences are veridical. I might now be a veridical perceiver of color, despite the fact that from tomorrow and the next fifty years, I might be a brain-in-a-vat whose color experiences are typically caused by entirely different properties.

I suggest that first color experiences lack truth-values but do not lack phenomenal content. They have conditions of satisfaction that are just like those of all other experiences that are phenomenally identical to them. But those conditions of satisfaction involve a presupposition that is not satisfied—that there *is* a typical cause of experiences of that phenomenal type. This makes them infelicitous, but not false. And phenomenally different experiences will have different phenomenal content, even without truth values. An area of space that looks red will look to be different from an area of space that looks blue. But this can be made sense of without endorsing the idea that those experiences have truth-values.

4. The indexicality of phenomenal color content

To allow for the possibility of spectrum inversion without illusion, it must be the case that Jack and Jill can both have veridical phenomenally green experiences. It is definitional of the notion of phenomenal content that phenomenally identical experiences have the same phenomenal content. Thus Jack and Jill's green

experiences must have the same phenomenal content. And so Russellianism requires that there be some property that Jack and Jill can veridically represent objects as having by their green experiences. Shoemaker (2000) seeks, as a candidate for what is represented by both Jack and Jill, a dispositional property of causing green experiences under certain circumstances in some sort or other of observer. But as I argue elsewhere (Author's article), there is no satisfactory way to specify the relevant observers. If Jack represents the object as being disposed to cause a green experience in observers like him, and unlike Jill, then his experience does not share content with Jill's experience. If Jack represents the object as being disposed to cause a green experience in observers like him *and* in observers like Jill, his experience is a misperception (since the object is causing a red rather than a green experience in Jill). If Jack represents the object as being disposed to cause a green experience in observers like him *or* in observers like Jill, his experience will be veridical. But then it becomes difficult for Jack to ever misrepresent the colors of things. For example, if he had a green experience while looking at a red thing, his experience would represent the red object as having the disposition to cause a green experience in observers like him or in observers like Jill. Red things do in fact cause green experiences in observers like Jill. Jack's red experience, which is clearly a case of misperception, would on this account be counted as a veridical perception.

The Fregean approach to phenomenal content has available to it a solution to this kind of problem. The dispositional "element" of phenomenal color content is, on this view, a feature of the modes of presentation involved in phenomenal content. The Fregean does not need to find a dispositional *property* that is shared by the objects that cause green experiences in Jack and the objects that cause green experiences in Jill. Instead, there need only be some condition on reference that is shared by Jack and Jill. And that condition on reference can involve indexicality. An utterance of the English word "I" refers to the speaker who tokens it. All instances

of "I" thus share a condition on reference, the condition of being the person who uttered it. Uses of the word "I" need not share a reference. Uttered by Jack, "I" refers to Jack. Uttered by Jill, "I" refers to Jill. Likewise, it is available to the Fregean about phenomenal color content to hold that a green experience picks out the property that typically causes green experiences in the subject. Had by Jack, a green experience would pick out the property that typically causes experiences like that in Jack. Had by Jill, a green experience would pick out the property that typically causes experiences like that in Jill. Jack and Jill's green experience still share phenomenal content, understood as Fregean modes of presentation. But their experiences refer to different properties in their respective environments.

Frege's notions of sense and reference had difficulty accounting for indexicality.¹⁸ But many of the insights of Frege's semantic theory can be captured in a way that allows for indexicality. One problem for Frege's theory is that sense by itself determines reference, and so there does not seem to be any room for shared senses with different references. The two-dimensional framework is a broadly Fregean semantic framework that provides a better model for the relationship between sense and reference.¹⁹ The two-dimensional framework handles indexicality via the notion of a centered possible world. A centered possible world is a possible world from a point of view, with a space-time point (or an individual at a time) marked as the "center".²⁰ The primary intension of a concept is a function from centered possible worlds to an extension. For instance, the primary intension of "I" can be understood as picking out the individual at the center of a given possible world. Centered on George Bush, "I" returns George Bush as its referent. The same

¹⁸ See Kaplan (1989), Perry (1977).

¹⁹ My discussion of two-dimensional semantics relies heavily on the approaches found in Chalmers (1996, 2002b) and Jackson (1998).

²⁰ See Quine (1968), Lewis (1979), and Chalmers (2002b).

primary intension, centered on Sandra Day O'Connor, picks out Sandra Day O'Connor.

The phenomenal content of a red experience can now be understood as a function from a centered world that picks out the property that typically causes red experiences in the individual at that center. Centered on Jack, this content will pick out one property, such as physical redness. Centered on Jill, the same intension picks out a different property, physical greenness.

The indexicality of phenomenal color content, understood in this way, also explains our intuitions about the veridicality of our color experiences when considering various epistemic possibilities about how the world is outside our experience. For example, suppose that a roughly Aristotelian theory of color were correct, in which redness is a physically irreducible intrinsic property of external objects and experiences of redness are caused by being receptive to these intrinsic qualities. I do not think that such a theory is the correct one in the actual world. But if the Aristotelian theory of color were the right one, this would not lead us to conclude that our color experiences are mistaken. And there are various other possibilities about the physical nature of color that seem to be compatible with the phenomenal content of color experience. This can be illuminated by thinking about color content indexically as a function from centered worlds considered as actual to properties. If I am in an Aristotelian world, my red experiences represent the form of redness. That is to say that my experience, centered on the Aristotelian world, has the form of redness as its extension. If I am in a world in which my red experiences are typically caused by some particular physical property, then my red experience has that physical property in its extension. In each case, what all red

experiences have in common with regard to content is the same indexical mode of presentation.²¹

The indexicality of phenomenal color content together with the response-dependence described in section 3, allows the Fregean view to capture many (seemingly irreconcilable) intuitions about color and color experience. The colors themselves are what color experiences represent. These properties can be understood as genuine mind-independent physical properties that external objects actually have. And yet many of the attractions of a dispositional account of color or of color content are preserved, in the form of a response-dispositional mode of presentation.

5. The Holism of Phenomenal Color Content

Consider the way that a ripe tomato looks at noon in full sun versus at five o'clock in the afternoon. The tomato, both at noon and in the late afternoon, will appear to be the same color. Changes in illumination are adjusted for in such a way that the tomato will appear to be the same color despite differences in the spectral distribution of the light reaching the eye. This kind of adjustment by the visual system is called "color constancy". But despite the fact that the tomato will look *to be* the same color, the tomato nonetheless *looks different* at noon versus five o'clock. Color constancy is also a commonplace phenomenon when viewing an object at a time rather than across time. For example, consider the experience of viewing a homogeneously red table. The table will likely "look darker" in some areas and "look

²¹ It might seem that Shoemaker could have made a similar move in defending the idea that color experiences have Russellian content that represents appearance properties. But Russellianism requires that there be some property in common that is represented by Jack and Jill's red experiences. And it is not clear that there could be such a thing as an indexical property. What would this indexical *property* be, such that both Jack and Jill veridically represent it when they have red experiences?

lighter” in other areas, due to highlights and shadow, despite also looking to be the same shade of red across its entire surface.

I’ve argued elsewhere that a Russellian theory of phenomenal content cannot properly accommodate colour constancy.²² Particularly problematic is that, due to color constancy, two objects that are of *different* color (and look to be different in color) can present the same appearance due to being in different lighting conditions. For example, a shaded region of a lime green object can look the same as a roughly olive colored object in full sun. A good painter can paint a canvas such that a portion of it will look the same, indoors under incandescent lighting, as a grassy meadow at dawn. In each case the objects in question have different surface color properties and are in different lighting conditions. And in each case we have no reason to think that the viewer’s experience cannot be veridical. But since each pair of experiences is the same in phenomenal character, it must be the case that they share phenomenal content (this was definitional of *phenomenal* content). It follows that phenomenal content cannot consist solely in *what* is represented, such as surface color properties and lighting conditions (both the colors and the lighting conditions of the two objects are different). Sameness in the way things appear does not entail sameness in represented properties.

It might be argued on behalf of the Russellian that when two objects present the same phenomenal appearance but look to be a different color, that this representational difference is merely at the level of perceptual judgment rather than phenomenal content.²³ This is tantamount to holding that the representation of illumination-independent color is a matter of judgment rather than of phenomenal content. But there is substantial empirical evidence that the representation of illumination-independent color is relatively primitive, found (for example) in

²² The argument in this paragraph is an extremely abbreviated summary of arguments in [Author’s article].

²³ Thanks to an anonymous referee for raising this suggestion.

honeybees, goldfish, and toads.²⁴ Such creatures, presumably, are not capable of making the relevant sorts of judgment. And research on the neural substrates of color constancy in humans and other primates supports the idea that the representations in question are genuinely part of visual experience rather than cognitive in nature, with the visual cortex area V₄ playing a central role (Zeki 1983, Komatsu 1998). It thus seems unlikely that the representations in question are conceptual or merely a matter of perceptual judgment.

In the abstract, Fregean theories of phenomenal content promise to be able to accommodate color constancy because they do not entail that for any two phenomenally identical color experiences there must be some properties that both experiences represent. What a Fregean theory does require is that there be some condition on reference that all phenomenally identical color experiences share. The phenomenon of color constancy thus places a constraint on the particular nature of the modes of presentation involved in the phenomenal content of color experience.

One feature that seems to be relevant to the determination of color content involving color constancy is lighting conditions. For instance, consider two phenomenally identical color experiences experienced under two different lighting conditions. One is the experience had while viewing a white sheet of paper in the yellowish sunlight of dawn. The other is the experience had while viewing a slightly yellow sheet of paper under fluorescent lighting. The white sheet of paper will look to be white, despite presenting a slightly yellowish appearance. The yellow sheet of paper will not look to be white, despite phenomenally appearing just like the white sheet of paper viewed at dawn.²⁵ A significant difference between the two appearances is the lighting conditions under which the visual experiences are elicited. And so it might be that color constancy can be accommodated within a Fregean

²⁴ See Neumeyer (1998) for an overview of research on color constancy in animals.

²⁵ Suppose that the lighting conditions are adjusted carefully such that this is the case.

theory of phenomenal content by including lighting conditions as part of the conditions of satisfaction of color experiences. For instance, a red_{27} experience had under lighting conditions p represents the property that typically causes red_{27} experiences under conditions p . A red_{27} experience had under lighting conditions q represents the property that typically causes red_{27} experiences under conditions q . More generally, the experience represents the property that typically causes red_{27} experiences under *these* conditions, whatever those conditions might be.

A problem arises with this suggestion. Suppose that two objects are viewed under different lighting conditions, but where the differences in lighting conditions is undetectable to the subject. For instance, two objects might be viewed on a stage. The lighting throughout the room and on the stage is ordinary incandescent lighting. One of the objects is red. The other object is white, but it is illuminated via a spotlight with a red light. There is no dust in the air that would reflect the red light. And the light is projected in such a way that it does not reflect off of anything other than one of the objects, not even the floor of the stage surrounding the object. Other adjustments might need to be made so that there is no detectable shadow from the red light source, which is hidden from view.

In such a circumstance, it seems that an ordinary observer would have a visual experience that misrepresents the color of the object that is cast with red light. The phenomenal content of the visual experience had while viewing the scene will be such that both the white and the red object appear to be red. But on the suggestion above for accommodating color constancy, the extensions of phenomenal color content vary by lighting conditions. The two objects are viewed under different lighting conditions, and so the respective experiences would attribute different properties to the objects. A red experience had under lighting conditions in which red light is projected onto a white object is typically caused by a white object. And so it seems that the present suggestion would entail that an observer of the unusual

scene would veridically represent the white object as being white and the red object as being red.

The view might be revised in such a way that “these conditions” picks out the same condition for both objects in the example. But this would make many other, and more ordinary, visual experiences misperceptions. We almost always view the world under uneven illumination conditions. Part of the visual scene might be in shadow, or there might be multiple light sources that emit different qualities of light. In order for these experiences to be veridical on the present suggestion, it would be necessary for the demonstrative “these conditions” to pick out different lighting conditions for different portions of the field of view.

One solution might be to make phenomenal color content depend on what lighting conditions a subject *represents* as being instantiated in a scene. After all, the scenario is an unusual one that is specifically designed to make it appear to the perceiver as though there is uniform standard lighting on both objects. So perhaps the phenomenal content of color experience picks out properties relative to the lighting conditions that the subject represents as obtaining. But this solution is unattractive for two reasons. First, it is questionable whether subjects do in fact represent lighting conditions, or at least to a degree of specificity that would be required. Certainly subjects do not consciously represent lighting conditions. We are consciously aware of differences in lighting over time, but this is most plausibly itself due to differences in the phenomenal character of our color experiences. Remember that the kinds of variations in illumination conditions that would need to be represented do not only include changes in brightness (which we do seem to be aware of, as when a bright light reflexively causes one to squint). Color constancy also concerns changes in the quality of light, such as the ratios of various wavelengths of light that are present. We seem to be aware of the latter only derivatively in

virtue of our being aware of the phenomenal character of our color experiences.²⁶ And even then, it does not seem that we usually consciously form representations of lighting conditions, and certainly not with much precision.

Perhaps we unconsciously represent lighting conditions with enough precision to accommodate color constancy. The property represented by a red experience on a particular occasion would depend partly on what lighting conditions the subject represents himself and the objects of perception to be in. Two phenomenally identical red experiences could attribute different properties to their objects if the subject represented lighting conditions as being different in the two situations. But it doesn't seem that a subject need represent lighting conditions in order to have determinate phenomenal color content. We can imagine a subject that does not represent lighting conditions in any way, but who has a visual experience with phenomenal character just like the one I am having now. Remember that on the present suggestion, these representations of lighting conditions are not elements within the phenomenal character of visual experience.

A further problem with making phenomenal color content dependent on lighting conditions, or on the representation of lighting conditions, is that the very existence of lighting conditions does not seem to be essential for veridical phenomenal color content. We can imagine a creature who has color experiences like ours, but for whom those experiences are typically caused by other physical phenomena that bear no interesting relationship to lighting conditions. Perhaps color experiences in it are caused by the radiation of heat from nearby objects. Perhaps they are caused by a sensory system like a bat's echolocation. And thus it does not seem plausible that the phenomenal modes of presentation involved in color experience invoke or are relative to illumination conditions in their conditions of satisfaction. For even in a creature for whom color experiences are caused by

²⁶ A point made briefly by Shoemaker (2000).

radically different sensory systems and environmental conditions, the way the world is presented to the subject as being is just as it is for creatures like the ones we take ourselves to be. This shared content is what we are trying to capture in the notion of phenomenal content.

But perhaps there is another way to accommodate color constancy within a Fregean theory of phenomenal content. Up until now, it has been assumed that the phenomenal content of color experiences is atomistic. That is, it was assumed that phenomenal color properties represent the properties that they represent independently of other phenomenal properties (such as spatial phenomenal properties or other phenomenal color properties instantiated in the visual field). But there is another possibility. Perhaps what a particular instance of a phenomenal color property represents is determined by what other phenomenal color properties are instantiated in the visual field. Rather than invoking lighting conditions, phenomenal modes of presentation for color experiences might be sensitive to properties of the entire visual field in their determination of reference.

For any difference in illumination conditions that might be relevant to the phenomenal content of a phenomenal color property at a particular location in the visual field, there is a corresponding phenomenal difference elsewhere in the visual field. For example, consider two phenomenally identical red experiences caused by viewing objects that are in different illumination conditions (such as mid-day sunlight versus a red light). Insofar as it is correct to say that a white object under red lighting is represented as being white rather than red, there will be a difference in the phenomenal colors or spatial properties instantiated in surrounding regions of the visual field that distinguish the experience from one in which the object is represented as being red. For instance, one would likely veridically represent an object as white if it were cast in red light and the areas surrounding the object also presented a more reddish appearance than other areas (that are not cast in red light).

By contrast, if the white object presented a reddish appearance but the surrounding area did not, the object would likely appear to be red. This was the case in the example discussed earlier, in which we imagined that all evidence of a red light was made unavailable to the perceiver. Part of what is required to create that type of deceptive scenario is that the “hidden” lighting conditions leave no phenomenal trace in other regions of the visual field. The red light, for example, should not reflect off any dust particles in the air between the source and the illuminant. The red light should not reflect off the region surrounding the illuminant, nor should it leave evidence in the form of a shadow. Any of these would result in changes in the phenomenal character of the total visual field of the perceiver.

The key observation here is that although color constancy shows that phenomenally identical color experiences within a single subject can differ in color represented, it does not seem to be the case that phenomenally identical total visual experiences within a single subject can differ in color represented. This means that for any two phenomenally identical color experiences that differ in color represented, there must be some additional phenomenal difference between the total experiences within which they are embedded. This allows for the possibility that what property is represented by a phenomenal color property depends on these other features of the phenomenal character of the total visual experience (including spatial features and what other phenomenal color properties are instantiated in the experience).

On this proposal, what property a color experience attributes to an object depends as a matter of fact on illumination conditions. But this fact about the actual world is derivative on the fact that what property a particular color experience attributes depends on how the phenomenal color property is experienced spatially

and on what other phenomenal color properties are present in the visual field, and where they are experienced spatially.²⁷

6. Fregeanism and Phenomenology

On the Fregean view that has been developed here, “ways of appearing” are not properties things appear to have but are instead modes of appearing that can, due to indexicality and holism, pick out distinct properties for different subjects and in different contexts. The color phenomenal properties that characterize a subject’s perceptual experience are not, on this view, properties that the experience attributes to the external object of perception.

This aspect of the view allows for it to provide an attractive account of inverted spectrum cases and of color constancy. But it is also likely to be the strongest source of disagreement with a Fregean theory of phenomenal content.²⁸ That is, that it purportedly conflicts with the phenomenology of experience. This objection often takes the form of some version of the transparency intuition. According to the transparency intuition, what we are aware of when we introspect on our color experiences are properties that we experience as belonging to the external objects of perception. We do not seem to be aware of modes of presentation of external colors, nor of any other mental features. If phenomenal content is a kind of intentional content that is meant to capture the “way things

²⁷ This view also fits nicely with empirical work on color constancy and simultaneous contrast, most obviously Land’s (1977) retinex theory of color vision.

²⁸ Shoemaker (2006, p. 475) raises this worry explicitly against the Fregean view developed here and by Chalmers (2004). Chalmers (2006) makes a similar point against the present sort of Fregean view, and as a motivation for his “Edenic content”. Similar points have frequently been made, not in opposition to Fregeanism, but in support of versions of a Russellian theory of phenomenal content (Tye 2000). Thanks also to an anonymous referee for pressing on this objection.

appear” in virtue of perceptual phenomenology, then the Fregean view (according to the objection) seems to miss the mark.

These claims about phenomenology seem plausible enough at first glance. But insofar as they are correct, they are compatible with the Fregean view. First, there is the matter of what we are “aware” of in perception. The Fregean theory of phenomenal content need not deny that in having a color experience we are made aware of external colors. And under the sense of “awareness” that makes this true, we are not aware of any sensory intermediaries. We *have* visual experiences with a certain phenomenal character. These experiences have Fregean phenomenal content. By *having* these experiences, we are made aware of external properties of external objects. Our awareness of these properties is not mediated by *awareness* of purely mental properties of the experience. Phenomenal modes of presentation should not be thought of as objects of perceptual representation and awareness in their own right, as a *what* of perception in addition to external properties and objects.

But there is perhaps another way of understanding the transparency intuition. Certain qualities are phenomenologically manifest to us in color experience, and the Fregean theory defended here claims that these properties are *not* represented by the experience to be properties of the external objects of perception. And so perhaps here the transparency intuition is meant to gain a foothold against the present view. For don't these phenomenologically salient properties seem to be “out there” on the surfaces of objects, rather than “in the mind”? And aren't these phenomenally salient properties the very properties that such experiences represent? Phenomenologically, our representations of the colors of things in our environment seems to be direct rather than mediated by modes of presentation in the manner described by the Fregean view defended here.

This apparent phenomenological intuition against the Fregean view is at least partially undermined when one considers the experience of colored objects through time rather than in an isolated “snapshot”. As we move in relation to the perceived object, or as the object’s particular lighting conditions vary, its color appearance will often change. For example, consider the experience of carrying a red apple through a dense forest. As one moves beneath the canopy of trees, the surface of the apple will fluctuate in appearance due to highlights and shadows. The color the object seems to have throughout is a property that lies beyond these myriad appearances. The phenomenology, when reflecting on what it is like to see objects through time, can plausibly be described as that of seeing an object as having a stable color *through* the flux of appearances. This is more in line with the Fregean view, according to which the variations in color appearance in cases of color constancy are variations in modes of appearing rather than in represented color.

More importantly, it should be noted that the objection from phenomenology does not concern merely the *phenomenal character* of an experience, but invokes intuitions about the *intentional content* of an experience. This raises a methodological issue concerning how best to determine the particular nature of phenomenal content. We seem to have direct introspective access to the phenomenal character of our experiences. The notion of phenomenal content is meant to capture how the world appears to the subject, as determined by this phenomenal character. And so it is perhaps reasonable to expect that we also have direct introspective access to phenomenal content. According to the above intuition, in introspecting what the world must be like for one’s experience to be veridical, one does not feel compelled to mention modes of presentation of colors. Rather, one finds that the phenomenally manifest color appearances are themselves attributed to external objects.

In reply, while we do seem to have a kind of introspective access to phenomenal content, *understanding* the conditions of satisfaction of phenomenal content is a more complicated and subtle matter than mere direct introspection. We should not expect an intentional state to “wear its truth conditions on its sleeves”, nor should we expect on a Fregean view for the subject to be introspectively aware of phenomenal properties *as* modes of presentation of represented colours. It is not clear that we are able to directly “read off” the conditions of satisfaction of an experience via introspection, any more than we can do so in the case of thought contents. This is not to deny that we have access to the phenomenal content of our own experiences. But getting at the semantic contours of that content, whose full truth conditions will concern both actual and counterfactual circumstances, requires more than an immediate introspective judgment. A more promising methodology is to consider the veridicality of the experience under different possible scenarios, reflecting on whether those scenarios are ways the world might be that would “make true” or “make false” the experience. That is the strategy I have employed, and I believe that it favors a Fregean theory of phenomenal color content like the one that has been developed here.²⁹

²⁹ The present paper is based on material from my 2003 dissertation, *The Nature of Phenomenal Content*, University of Arizona. I owe a special thanks to David Chalmers for his guidance and encouragement in supervising the dissertation. It was written independently of the material in Chalmers (2006), which explores a Fregean view similar to the one defended here. Thanks also to [...].

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