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Projectivist Representationalism And Color

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Two topics that have recently received a great deal of attention—the nature of color and the felt character of experience—form a troubling partnership when considered together. According to *strong external representationalism*, which is one of the more promising accounts of phenomenal consciousness currently on offer, the phenomenal character of experience is a certain kind of representational content and the relevant representational content is determined by a tracking relation between states of a creature’s perceptual systems and features in its environment.¹ However, the long-standing and still widely accepted view of color is that there is no type of objective, physical property suitable for identification with colors and thus color realism is false. That objects appear to be colored “is an invention of natural selection” (Cosmides & Tooby, 1995, p.xi) and colors exist only as subjective qualities in perceivers’ experiences. It would appear that, for the representationalist, in color experience we are subject to a persistent illusion on a grand scale; our color experiences systematically get things wrong by representing objects as colored while there are no color properties for them to track.

The project of this paper is to answer the question, what might a plausible account of color experience look like, if representationalism is true and color realism is false? The answer to this question is important at least because one prominent representationalist (William Lycan) has stated that representationalism is incompatible with the denial of color realism and another (Michael Tye) has gone to great length to try to salvage a form of color realism that is consistent with representationalism.² The strategy of what follows is to first motivate, but not decisively

argue for, independent acceptance of both representationalism about phenomenal consciousness and subjectivism about color. I am taking the truth of both as my starting point and simply want to present reasons on behalf of my assumptions. Once that is complete, I will address Tye's attempt to reconcile color realism and representationalism, concluding that his form of color realism is unacceptable. The way will then be clear to give a positive account of color experience and subsequently respond to objections Tye and Lycan have made to the general approach to color I advocate.

The view I will develop has it that, instead of being instantiated in objects, the color qualities included in the representational content of experience are projected onto things in the world and objects come to be classified as colored a certain way based on the subjective reactions they cause in perceivers. Nothing is actually colored, but due to our experiences misrepresenting objects as having qualities that are never actually instantiated anywhere, the world around us looks to be colored.³ One of the main challenges for my position, one that I address at the end of the paper, is to ease the worries raised by the massive error theory that follows from projectivism. To that end, my goal is not to rescue a commonsense approach to color, for that is lost as soon as one endorses projectivism, but rather to argue that denying color realism does not compromise color experience's critical role as a reliable guide in navigating our surroundings.⁴

1. Representationalism and Qualia Theories

According to the leading form of theories competing with representationalism, which I will refer to as *qualia theories*, the phenomenal character of experience is not fully captured by its representational content. Typically, qualia theories are motivated by various thought

experiments aimed to show that phenomenal character and representational content can come apart; i.e., there can be a change in one without a corresponding change in the other.⁵ The conclusion we are supposed to be led to is that the phenomenal qualities with which we are acquainted are intrinsic, subjective modifications of our experiences. For example, the redness I am aware of when looking at an apple is not any quality out in the world represented in my experience, but is instead a property of my experience itself. Take Paul Boghossian and David Velleman's claim that

visual experience cannot be adequately described without reference to intrinsic sensational qualities of a visual field; and ... intrinsic colour properties of the visual field are the properties that objects are seen as having when they look coloured.... this account has the result that the intentional content of visual experience represents external objects as possessing colour qualities that belong, in fact, only to regions of the visual field.(Boghossian & Velleman, 1989, pp. 94-5)

On this view, which is a form of *projectivism*, color qualities, shape qualities, texture qualities and so forth are non-representational, intrinsic features of our experiences and there is no claim that phenomenal character is tied to direct acquaintance with objective, physical properties. Our color experience is subject to a massive error, but that error is not in its phenomenal character, since the color qualities we are aware of are by themselves not the kind of thing that could be right or wrong about anything. The content of experience represents objects as having qualities they cannot have, as those qualities exist only as modifications of our experiences. Thus color discourse in which we attribute colors to objects and reflection on color experience in which we take the color qualities we encounter to belong to objects are also rife with error.

Not wanting to get taken too far astray and also recognizing that Boghossian and Velleman's view is not the only qualia theory available, it is worth pointing out that qualia theories often seem to hazard turning into sense data theories.⁶ Although they are put forth as responses to different worries, it is easy enough to see how qualia theories could border on being sense data theories or at least be interpreted as such. Talk of the direct awareness of subjective qualities naturally leads to wondering in what medium those qualities are instantiated. What is the vehicle by means of which we become aware of these qualities? The only available answer would appear to be some sort of subjective object of awareness, which immediately raises concerns about sense data. Certainly this is true of Boghossian and Velleman's account, which takes the visual field to be an object of awareness having properties of its own, of which we have direct and, presumably, infallible awareness. Making sense of how qualia are instantiated, how we manage to become acquainted with them in experience, and the relationship between qualia and properties of objects are significant obstacles that any qualia theory has to overcome.

Representationalism has it that phenomenal character is exhausted by how things are represented in experience. The qualities we are aware of in experience are those that are instantiated in the world around us and included in the contents of our experiences. For example, the spherical and orange qualities I am aware of when viewing a tangelo are properties of the tangelo itself. This account fits well with the much-discussed transparency of experience, the observation that whenever one tries to focus one's attention on some intrinsic property of one's experience, one's awareness invariably "slips through" the experience itself, back out into the world and onto the properties and objects that one's experience is an experience of.⁷ However, cases in which the qualities we are aware of are not actually present in the world around us, such as illusion, hallucination, and phantom pain, typically present no problem for

representationalism. It is open for the representationalist to claim that qualities such as an amputee's pain in a limb that was long ago left on the surgeon's table and a detoxifying drunk's pink elephants exist only in the representational contents of their subjects' experiences in the same way that the fishing boat I dream of one day owning exists only in the contents of my thoughts and desires. What is essential to the representationalist's view is that there are no properties—representational or nonrepresentational—intrinsic to experiences themselves that provide for the phenomenal character of experience.

Despite representationalism's facility for handling illusion, the massive collective illusion of color experience—the way the raw feels of experience lead to the overwhelming misrepresentation of color properties as instantiated all around us—would likely seem so extreme to some that they would take it to form a sufficient reductio of representationalism. Unlike misrepresenting experiences such as the oar in the water that appears bent and the waterfall that appears to flow upwards, color experience is part of our everyday lives; when our eyes are open and the lights are up, we are flooded with color experience. Color experience is so intimately tied to our ways of knowing the world and we as a group agree on so much in our talk about color that color experience seems to be a poor fit for being treated as a special case of massive error. Assuming that one opts for representationalism over qualia theory, the representationalist owes a satisfactory explanation of the relationship between colors and color experience. Either something has to be done to avoid a massive error theory or the massive error theory has to be presented in a way that can make sense of the pervasive illusion in color experience. In the second half of this paper, I will pursue the strategy of the latter disjunct. Prior to that undertaking, however, I will examine efforts to make color realism work.

2. Why Deny Color Realism?

The claims that objects are not really colored and that color qualities exist only in our experiences are not new ones, in both philosophy and science. Newton, Galileo, Locke, and Descartes are just a few of the historical figures who took the qualities encountered in color experience to not have any counterparts in the objective world. It is not as though contemporary color science cannot tell us that certain physical properties are closely related to color experiences of a certain kind. Research on color vision has unraveled many of the mysteries of the physical basis of color experience and we know that certain receptors in the eye are sensitive to particular wavelengths of light and that certain surface spectral reflectance profiles are associated with particular kinds of color experiences. Nonetheless, color realism is frequently dismissed as incompatible with the results of empirical research on color.

Offering a decisive refutation of color realism is a demanding task that goes beyond the scope of this paper. It will do for present purposes to note what is likely the most prominent current form of color realism and a substantial difficulty that can be brought against it. Assuming that an acceptable form of color realism must be reductively physicalist in nature, one can choose between nonrigid and rigid versions.^{8 9} These versions of realism differ over how color terms refer, but what they have in common is the claim that color properties are reducible to physical properties. In the past, it was typically thought that the relevant physical properties would be wavelengths of light, but that view has been discredited. A more appealing candidate physical property is surface spectral reflectance, which is the disposition to reflect a certain percentage of incident light.^{10 11} The spectral reflectance profile of an object is given by specifying the percentage of incident light reflected by that object at each wavelength or over particular bandwidths.

As I will explain further in a moment, the basic concern about any form of color realism that identifies colors with spectral reflectances is that such a theory would seem to result in the denial of causal efficacy for color. Since a plausible necessary condition of seeing colors is that they cause color experiences, this would have the unfortunate consequence for reductive physicalism of entailing that colors are physical properties of objects, but we cannot see them.¹² Giving up the idea that colors cause color experiences is too high a price to pay for realism about color. We would be left with the onerous task of trying to make sense of how it is that one has a red experience when looking at a red object while the red object is causally irrelevant to one's experience; i.e., having a red experience without seeing the redness of the red object before one's eyes. At a minimum, color realism at the cost of not seeing colors would only create a new problem, forcing the realist to provide a further story about just what it is one does see when one has color experiences, if not the colors of objects.

Spectral reflectances are dispositional properties, the disposition to reflect a certain percentage of incident light at each wavelength or over particular bandwidths. By itself, this is sufficient to disqualify spectral reflectance profiles for identification with colors, since dispositions do not cause anything; it is the categorical bases of dispositions that are causally efficacious. Since dispositions are multiply realizable (i.e., a disposition could have any number of categorical bases), there also is no objective, physical, causally efficacious property with which the causes of their manifestations could be type-identified. Identifying colors with the heterogeneous categorical bases of spectral reflectances would make colors out to be idiosyncratic disjunctive properties that would be poor candidates for causal efficacy.¹³ Further compounding the difficulties for attempts to identify colors with spectral reflectances is the phenomenon of metamerism. Metamers are stimuli having (possibly very) different spectral

reflectance distributions that produce the same experienced color. So, not only are spectral reflectances multiply realizable dispositional (and thus causally powerless) properties, there are multiple multiply realizable spectral reflectance profiles that could be associated with any given color, none of which need have anything in common with each other besides the effect their categorical bases produce in perceivers. In that case, what objective, physical property is redness to be identified with? There is nothing in common between all the possible causes of red experiences that one could point to as identifiable with redness and the same is true for all the colors. Thus color realism is false.

It should be noted that interesting proposals have recently been made for handling metamerism within color realism.¹⁴ A successful response to the problem of metamerism would be a significant stride forward for color realism, as it is the standard objection that is brought against realist theories grounded in spectral reflectances. However, I will not examine those proposals in this paper since even if the problem of metamerism can be answered, the problem of the causal inefficacy of dispositional properties has not been addressed. Metamerism makes the problem of causal inefficacy worse for the color realist; it is not the source of the problem. I will have more to say in the next section about Tye's handling of causal efficacy, as he has attempted to deal with it head-on.

3. Tye and Color Realism

In an effort to avoid a massive error theory of color experience, the representationalist Michael Tye has argued for realism about color. Tye (2000, p.159) considers several available realist strategies and settles on a version of reductive physicalism that identifies color properties with spectral reflectance profiles. As was discussed in the previous section, however, spectral

reflectances seem unsuitable for identification with color properties. Tye is aware of the difficulties attached to spectral reflectances, but claims they can be overcome. It seems unlikely, though, that his efforts to rescue color realism will prove successful.

While granting that it is true in many cases that one cannot perceive dispositions, Tye (2000, pp.161-2) contests the claim for others. He brings up as a supporting example the case of hardness, which is a dispositional property (viz., the disposition to retain shape against applied pressure). When grasping a lump of granite, Tye (*ibid.*) claims that “[it] seems to me not at all obvious that one does not directly experience the hardness of the granite.” Considering the intuitions this example attempts to draw on (intuitions which I do not share), I take this to be an appeal to a commonsense theory of hardness. Tye goes on to extend the example of hardness to color, to the effect that, although colors are dispositional properties of objects, we are able to directly experience them. The conclusion we are to draw from the alleged direct experience of hardness is that dispositional color properties are compatible with color realism after all.

When examined closely, the appeal to the direct experience of hardness proves to be of no benefit in making a case for spectral reflectances being suitable for identification with colors. Although his response to the problem of causal inefficacy hangs on it, the notion of direct experience is left unexplained by Tye. Nonetheless, whatever “directly experiencing” is supposed to be, it cannot cash out to anything involving a causal connection between the disposition itself and a subject’s experience, at least not without being supported by further argument for why some dispositional properties have causal powers and others do not. This point is crucial, given the causal requirement discussed in the previous section (a requirement which Tye himself accepts). I am not denying that, in some loose sense, the spectral reflectance of an object can be represented in color experience; our visual systems are able to gather enough

information about the intensity and wavelength of reflected, incident, and ambient light to recover the spectral reflectance of a viewed object.¹⁵ Since I am unclear on how the notion should be understood, I am (for the moment) not even denying that we can directly experience dispositional properties. My point is that however it turns out that we should understand the notion of direct experience, whether or not dispositional properties can be directly experienced is irrelevant to the issue of identifying colors with spectral reflectances, unless one also provides a compelling argument for the causal nature of dispositional properties, which is no easy task.

Information about spectral reflectance might somehow be carried by one's color experiences, but that is not to say that one can see an object's spectral reflectance, that it is something one can experience. Contrast our experience of color with our experience of the 3-D shapes of objects, which are represented as such in our experience due to mathematical transformations on two sets of 2-D data. Thus far the case of 3-D shape looks analogous to that of spectral reflectance. The important difference, though, is that not only is information about the 3-D shape of objects included in my experience, but my 3-D shape experiences are causally dependent on the 3-D shapes of objects. It is for this reason that one's 3-D shape experiences are experiences of the 3-D shapes of objects; i.e., one sees the 3-D shapes of objects. Similar remarks do not apply to spectral reflectance and color—one's color experiences are not experiences of the spectral reflectances of objects.

Without a causal connection between experience and properties in the world, the tracking relation essential to the representationalist's account of phenomenal character breaks down, resulting in systematic misrepresentation in color experience. Thus we still have on our hands an error theory, albeit one that claims to be realist about color. Even if we further grant Tye that direct experience does involve a casual connection between an experience and the feature it

represents, it is certainly not enough to say that since commonsense reflection on hardness portrays it as directly experienced, we actually have experiences caused by hardness. The color subjectivist is in the business of disputing the results of commonsense reflection on color experience, so why should the example of commonsense reflection revealing that we directly experience hardness make any difference to the issue? In the absence of a compelling argument for there actually being a causal connection between hardness and the experience of resistance to applied pressure, the color subjectivist could maintain that commonsense reflection on hardness is just as mistaken as commonsense reflection on color and that we do not actually directly experience either quality.

In the example of the granite's hardness, Tye himself does not dispute that it is the categorical basis of the granite's hardness—which has to do with its microphysical structure—that causes the experience of resistance to applied pressure. The granite manifests hardness only because of its microphysical structure and the presence of an activating condition (e.g., squeezing it in one's palm). Since dispositions are not to be identified with their categorical bases, there is no room for saying that hardness itself has any role in causing the experience of the manifestation of the granite's hardness. Furthermore, nothing has its causal powers because it has a certain disposition; dispositions are second-order properties that arise *from* their causally efficacious categorical bases. The cited example does not advance the case that colors are causally efficacious and thus gives us no reason to accept that colors are what our color experiences track. Unless an objectivist account of color that agrees better with representationalism is provided (which I do not want to altogether rule out), I see no reason for Tye or any other representationalist to not be a subjectivist about color. Whether one opts for subjectivism or realism, we are ultimately led to a theory of color experience that does not fit

well with commonsense reflection on experience, so the appropriate maneuver at this point is to respect what science tells us about the nature of color and endorse some form of subjectivism.

4. The Projectivist Account

Considering the difficulties realist accounts have repeatedly encountered, I submit that, with respect to color, the representationalist should embrace a form of subjectivism that includes the following claims:

1. Color experiences are, in normal circumstances, caused by the physical nature of the objects we perceive.
2. Colors cannot be type-identified with any physical structure and thus objects are not really colored.
3. The color qualities we experience are not properties of or modifications of our experiences that we project onto the objects we experience.
4. Color qualities exist only in the representational contents of our experiences and our experiences misrepresent objects as being colored.
5. In our everyday use of color terms and concepts (e.g., saying that the wall is blue, thinking that the mug is green), we mistakenly attribute color properties to objects.
6. Despite the fact that objects do not have colors, there is a sense in which color attributions are legitimate; e.g., it is not a conceptual error to think that the wall is blue. Color terms are defined in terms of subjective reactions to the physical structure of the objects we experience. For example:
 - a. x is red =_{df} x has a physical structure that causes experiences representing x as red* in normal perceivers in normal circumstances.

- b. red* = the property represented when a normal perceiver in normal circumstances has a color experience with a phenomenal character that falls within the range of a similarity class of phenomenal character exemplified by color experiences caused by viewing objects such as rubies, strawberries, blood, McIntosh apples, and the like.
- c. Red* actually only ever appears in the representational contents of color experiences, but it is pervasively projected onto the objects of experience as a physical property of them.

These claims form the basis of a version of *projectivist representationalism* about color. Tye (2000, p.166) is on record as rejecting such a view, however I do not think he provides adequate reasons for his rejection of it. While I do not believe that the representationalist should adopt projectivism across the board, it is an appropriate measure for handling “secondary qualities” such as color, which generate massive error in our experience. On the view adumbrated above, color experiences are illusory, but the color illusions we are subject to represent the world to us in ways that are extremely helpful in navigating our surroundings. Let us turn now to some comments about each of the core claims of projectivist representationalism.

I take the claim that color experiences are, in normal circumstances, caused by the physical nature of the objects we perceive to be consistent with a sort of physicalism that claims that the microphysical facts determine all the facts. For any color experience, it is the microphysical facts about the perceiver, the object seen, and the setting in which the object is viewed that determine what kind of color experience the perceiver will undergo. In a world microphysically identical to the actual world, my doppelganger’s experience will have the same phenomenal character as mine when we look at a lemon. The important difference between

projectivist representationalism and representationalist theories that take colors to be objective, physical properties of objects is that projectivist representationalism has it that objects do not have the color properties experience represents them as having. I agree with Tye (2000, pp.148-50) that reductive physicalism is the only option worth pursuing for the color realist, but in claim 2 I disagree with him about the prospects of getting the required reduction for the reasons that were provided in sections 2 and 3. There is no type of physical property—including spectral reflectances—currently on offer that is a suitable candidate for identification with colors and color science points us in the direction of subjectivism. The result is physicalism with respect to color experiences and anti-realism with respect to color properties.

Claims 3 and 4 are a rejection of the kind of projectivism held by Boghossian and Velleman, a projectivism that has it that the colors we experience as covering the surfaces of objects really are properties of subjective fields or our experiences themselves. I see such theories as being patently unacceptable for a variety of reasons (some of which were brought up in section 1) and I take representationalism to be the best way of accounting for the qualities we encounter in experience. However, I do think endorsing a form of projectivism, one that is representationalist in nature, is the proper move to make in accounting for color experience. If there are no colors and we have experiences that represent objects as being colored and phenomenal character is a kind of representational content, then the only kind of existence for color qualities is in the representational content of experiences. Although the color qualities projected onto objects never have any actual bearers, this form of projectivism avoids the problems attached to the subjective medium of instantiation required by qualia theories while also keeping representationalism in line with what is revealed by color science.

The point of claim 5 is that we have no choice but to think of and refer to objects as actually having the colors our experiences represent them as having, even though those color qualities exist only in the representational contents of color experiences. Unless one comes to know the results of scientific research on color, all that one has to go on in forming beliefs about color is how things are represented in color experience. Thus everyday talk of and thought about color are infected with the same error that everyday experience of color is; they are, strictly speaking, systematically false. However, it is undeniable that such ways of speaking and thinking are quite useful to us and that they are essential to the conception of the world we form on the basis of reflection on our color experiences. In many instances, our ability to discriminate color can improve our odds of survival (e.g., the mnemonic “red and yellow kills a fellow, red and black is safe for Jack” when trying to differentiate between poisonous coral snakes and similar looking, non-poisonous snakes) or improve our chances of reproducing (e.g., noticing the pink blush of arousal on a potential mate’s face). How color discrimination could be of any benefit when nothing is actually colored might appear peculiar to some. I will return to this topic in the following section when addressing concerns about projectivist representationalism.

Claim 6 is intended to capture the relation between color experiences, their physical causes, and the color qualities we mistakenly attribute to objects. Our everyday conversation and thought are filled with color attributions and it is incumbent on the subjectivist to provide an account of our color utterances and color thoughts. When someone says, “The wall is blue,” there is something that person clearly means to be saying about the wall and no one in the room at the same time would claim to have a problem understanding what is being said about the wall. The other people in the room judge the color attribution to be right or wrong on the basis of what they themselves experience when looking at the wall. Someone might say that the wall is green

and not blue, but no one is going to challenge the color attribution by pointing out that nothing is really colored.

If everyday color attributions are going to be taken seriously despite the fact that nothing is actually colored, there must be in place standards governing color attributions that are (more or less) consistent with how the person on the street uses them. Clearly, commonsense color attributions are of great value, as noted above, but not just anything should count as an appropriate color attribution. The “normal perceivers in normal circumstances” clause in 6.a is included because what justifies talk of objects being red is that (with the notable exception of borderline cases) all perceivers having more or less the same perceptual equipment, situated in the viewing conditions in which that perceptual equipment was designed by nature to operate, would classify the same things as red; namely, those objects which cause in them red*-representing color experiences. Furthermore, those same perceivers would be able to make discriminations and build strategies based on their having classified certain objects as red that are useful to their survival, procreation, and overall well-being. Although the claim that the wall before me is blue is, strictly speaking, false, nothing is to be gained by correcting the claim in the normal course of things. It is not the sort of claim that should be challenged by anyone interested in whether my representation of the world around me can serve as the basis for behavior and reasoning that enable me to thrive in my environment. Further still, it is not the sort of claim that should be challenged on the grounds that it involves a confusion about how the world can be.

‘Red*’ is used instead of ‘red’ in the example in claim 6.a in order to remain consistent with the claim that nothing is actually colored; i.e., redness is never instantiated. What we have instead is a property that exists only in the representational contents of experiences, although if

the world were otherwise, it could be tokened in the world; i.e., it is not a necessary fact that color properties are never instantiated. Given a different set of microphysical laws or properties, objects could actually be colored, making the color properties represented in experience the same as those possessed by objects. In that case, red* and red would be identical. What would the world have to be like for something to actually be red? One possibility, of course, would be that all red things share a microphysical property that is type-identifiable with the (typical) causes of red* experiences. There likely are a great many other circumstances in which color realism could turn out to be true. I leave exploring the conditions under which objects actually would be colored as an interesting question that goes beyond the scope of this work.

Another reason for using 'red*' is that the account would fall prey to concerns about circularity, if 'red' figured in both sides of the biconditional in claim 6.a. The need to eliminate reference to redness in the analysis of what it is for an object to be red is brought out in several discussions of dispositionalism.¹⁶ An important difference between the current proposal and standard dispositionalist accounts is that dispositionalism is put forward as an account of the color properties of objects. Dispositionalism takes seriously that objects are colored and explains color in terms of the disposition to cause subjective reactions of a particular sort. The account proposed in this paper denies that anything is actually colored and makes use of subjective reactions only to account for how color terms (and concepts) are to be understood, to set limits on their proper application. Thus ostending to a similarity class of phenomenal character is sufficient for explaining what it is for an object to be colored, in this very loose sense, since color attributions are grounded in how things look to perceivers in color experience.

The alternative proposed in claim 6 to taking color terms to refer to objective, physical properties of objects is to define color terms by reference to subjective reactions to physical

stimuli and to countenance everyday talk of objects being colored, so long as the appropriate conditions are met. On this view, an object is (for all practical purposes) red if it causes experiences of a certain sort in a suitably identified class of perceivers. The definition offered in claim 6.a echoes disjunctivist responses sometimes employed by color realists.¹⁷ Since there are difficulties in unifying disjunctive color properties in a way that makes them causally efficacious, disjunctivism is unsuitable for the realist's requirements. However, disjunctivism would do quite nicely for a subjectivist account of the sort currently under discussion. To say that something is red is not to say that it has *the* physical property that causes red* experiences, it is to say that it has *a* physical property that causes red* experiences. Redness, according to projectivist representationalism, is a causally inefficacious disjunctive property that is built up out of all the heterogeneous possible physical properties that would cause red* experiences in normal perceivers in normal circumstances. This is acceptable for the proposed account because redness itself is not expected to do any work in explaining how red* experiences are caused and it simply provides a useful means for grouping together stimuli that elicit the same response.

5. Objections to Projectivist Representationalism

While evaluating theories of color he characterizes as “at odds with common sense,” Tye raises a complaint against a projectivist form of representationalism. He contends that it leaves us

no satisfactory way of explaining *how* our experiences represent [color] qualities as instantiated If, for example, nothing really is red, then what would it take for something to have redness? What conditions would a physical surface (or volume or film) have to meet to be red? I can see no satisfactory nonarbitrary answer to this question. So, it appears the conclusion to which this form of projectivism is driven is that

redness *could* not be instantiated in a physical surface (or volume or film). (Tye, 2000, p.166. His emphases.)

Tye concludes that this result is squarely at odds with our concept of redness as a quality instantiated in objects and that projectivist representationalism is incoherent.

I agree with Tye both about our everyday concept of color and that there is a tension between that concept and what projectivist representationalism tells us about color and color experience. However, my response is to not worry about this conflict. It is perfectly understandable that our everyday concept of color would be of a property that is instantiated in objects, since that is how our experience represents colors. Restricted to what our experience tells us about color, it is unlikely that we could come to any other concept of color. However, commonsense reflection on experience does not have the last word on the nature of color; that belongs to empirical research. Commonsense reflection on color experience tells us that something needs to be explained; in this case, what it is about objects that accounts for them looking to be colored. Projectivist representationalism takes the phenomenon identified by commonsense as a starting point and, based on the results of empirical research and philosophical investigation, comes to a conclusion that disagrees greatly with the explanation offered by commonsense. The fact that projectivism's claim that color qualities are not instantiated in the world does not fit well with our ability to conceive of colors as qualities that inhere in objects is not sufficient for labeling projectivism incoherent. What we should instead conclude is that our commonsense concept of color, while it accurately captures how things are represented in experience, is flat wrong when it comes to the actual nature of color. The way we have been designed by nature has left us all subject to the same grand illusion when it comes to our color experience. There is nothing at all incoherent about an appearance/reality distinction

of this sort and the distinction does not degrade or disregard the role of commonsense in directing us towards a phenomenon that requires explaining.

My suggestion is not that we should revise our commonsense concept of color to fit better with what science tells us, nor should we jettison it altogether. Such a demand is unrealistic and, given how well the commonsense concept works in daily life, without purpose. Projectivist representationalism simply requires that, from a theoretical standpoint, we re-interpret everyday uses of color terms, which on their face imply an objective claim, as being subjective in nature. Considering that we already do so for other phenomena (e.g., the apparent rising of celestial bodies; relations such as “to the right of,” which on its surface appears to be a two-place relation, but actually is a three-place relation), this does not appear to be an intolerable consequence.

Despite Tye’s claim otherwise, there is nothing at all arbitrary about how objects come to be classified as red on the projectivist representationalist account. The “normal perceivers in normal circumstances” clause in claim 6.a can be further filled out in terms of adaptation, survival, and conditions of thriving in much the same way that the optimal conditions clause of Tye’s account of how experiences represent is.¹⁸ Although the fact is that there are no objective color properties, we have a perfectly understandable condition, based on the way things are represented to normal perceivers in experience, for what it is for an object to have a subjectively characterized color property. While the view denies that it is an objective fact that objects are colored, it does not conflict with our abilities to think and talk about color in the commonsense ways that we do.

Another hurdle projectivist representationalism must face is explaining the value of having a perceptual system that invariably feeds us false information about our environment.

Prima facie, any view that denies color realism would also seem to deny what is an obvious fact about color experience, that it is an important guide for us in navigating our way through the world. Behavior based on reasoning involving color attributions tends to help us avoid danger, satisfy desires, and solve vexing problems. How could this be so, one might wonder, if color experience is nothing more than a massive illusion? If color experience were systematically wrong in the way projectivism entails, one would expect that reasoning based on it would eventually lead to our demise or thwart our attempts to satisfy our desires, since our color beliefs would not match up with how the world really is.

The most straightforward answer to this sort of worry is that color vision bestows on an organism certain advantages with respect to survival or reproductive success, independent of whether anything in the world is colored. Even those who deny that objects are colored readily admit that objects reflect light with different properties (e.g., wavelength, intensity) and that physical properties of an object (as well as illumination and ambient conditions) determine the nature of the light reflected. Instead of informing us about the colors of objects (since there are no such things), color experience tracks other properties of objects by means of properties of the light they reflect. The information (indirectly) acquired about those properties of objects enables a creature to better meet the challenges its environment presents. Representing objects as colored is simply a product of the constitution of our visual systems, invented for the purpose of making easily available to the perceiving subject veridical information about distal objects that has been recovered by means of processing of acquired information about reflected light. Organisms have taken advantage of this, such as fruits that have evolved to disclose their ripeness visually by means of surface physical properties that reflect light in a certain way and conspecifics that have evolved to indicate their readiness to mate by rushing blood close to their

skin in areas such as the face, genitals, and rump. However, the fact that organisms have evolved physical natures that take advantage of color vision for their own purposes does not entail that anything is actually colored.

C.L. Hardin (1992) has addressed this very issue, noting that color vision provides advantages over achromatic vision in the areas of object detection, object recognition, and the acquisition of biological information. Any system that allows a creature to improve its performance in these tasks can provide a clear advantage to that creature and an even greater advantage to the creature if it can accomplish the tasks better than its competitors. For example, a creature's abilities to break down the camouflage of prey and identify conspecifics are greatly enhanced by color vision (Regan, 2000, pp.207-10). Limited to only one kind of visual receptor cell, a creature cannot solve the problem of distinguishing an object from its surroundings in cases in which the object and its surroundings both reflect light at the same intensity. However, if multiple kinds of receptor cell were present, each of which is maximally sensitive to a different wavelength of light than the other, the creature's visual system could pair together the receptor cells and, for each pair, compare the outputs of each member. This would facilitate comparing the outputs of each pair, thereby allowing the creature to discriminate an object from its surroundings by means of differences in the composition of the wavelengths of light each reflects (Hardin, 1992, pp.372-5). None of this requires that the object or its surroundings actually be colored, but simply that the physical nature of each is such that it leads to them reflecting light of a particular wavelength composition.

A color vision system's sensitivity to wavelengths of light enables the encoding of valuable information about a creature's surroundings. The way evolution shapes how this information is encoded for each type of organism depends on the environmental pressures that

must be dealt with; e.g., the competition between the need for greater image resolution and greater color discernment when there is a limited amount of space in the retina for the receptors that are used to accomplish each, only so much available bandwidth in the optic nerve, and a finite number of ways in which information can be usefully categorized. Color vision offers an economical way of providing information to the perceiving subject about the surface properties of objects by means of the format in which it represents wavelength information, providing an ingenious solution to the problem posed by the following circumstances:

1. A need for greater facility in object discrimination, objection recognition, and acquisition of biological information.
2. Limited bandwidth, processing power, and room for receptors within the visual system.
3. Greater reproductive or survival value placed on the detection and recognition of some physical properties of objects than others.

Given the restricted resources of our visual systems, nature has responded by equipping us (and other creatures with chromatic vision) with a system that delivers valuable information about the world around us in a visually conspicuous format that lends itself to easy and effective use in other tasks, such as belief-formation and decision-making. Even if that information is not represented in a format entirely faithful to the objective nature of what is tracked and a type-type matching between the physical properties tracked and their representation in experience is not possible, what is central to the utility of color vision is that that information is represented at all in our experience. The “illusory format” of color experience and the potential for a one-to-many relation between kinds of representational contents and kinds of physical states of objects are irrelevant, so long as the information color vision makes available to cognition leads to reasoning

and behavior that further the ends of the organism. A simplified way to think about this is that, from the standpoint of survival, it's very important that "There's a tiger over there hiding in the brush" is true and less important that "The tiger is orange and black and the brush is green and brown" is true, so much so that if the false information of the latter can be used to convey the true information of the former, it would be justified in terms of the benefits provided to the "deceived" creature.

One final challenge to projectivist representationalism needs to be addressed, a worry with roots in the concerns about dispositionalism mentioned earlier. William Lycan has complained that the partnering of representationalism with the denial of color realism threatens circularity, claiming that the representationalist

explicates color qualia in terms of real- (and unreal-) world colors of physical objects; 'yellow' means the objective, public property inhering in physical objects. One could not then turn around and explicate the ostensible colors of physical objects in terms of color qualia (e.g., as the disposition to produce yellow qualia in normal human percipients). (Lycan, 2001, p.20)

This objection can be defused by pointing out that the account proposed in this note has it that the individuation of the phenomenal representational content of color experience is determined by external factors (viz., our evolutionary history shaping our visual systems to systematically deceive us in certain ways in response to physical properties of objects) without making any reference to colors of physical objects. Furthermore, Lycan is correct to claim that 'yellow' is used at the commonsense level to pick out an objective, physical property of objects, but we have already discussed how commonsense color attributions are to be re-interpreted in order to make them consistent with there being no color in the world. The property picked out by

commonsense ‘yellow’ is not to be identified with an experience’s yellow phenomenal character, although it likely does figure in a higher-level description of a perceiver’s color experience; viz., in describing how a subject takes her experience.

Due to our evolutionary history and causal interactions between our visual systems and our environment, our color experiences represent objects as bearing properties that (contingently) only ever appear in the contents of our experiences. It is those properties that are to be identified with the phenomenal character of color experience and it is by reference to those properties that color attributions are explicated. Circularity never enters the picture, because projectivist representationalism does not need to appeal to colors of physical objects in accounting for the phenomenal character of color experiences. Thus none of the tenets of strong external representationalism are violated; color qualia are one and the same as a certain kind of representational content and the individuation of that content is dependent on external factors.

6. Conclusion

The dispute between color realists and anti-realists is over how we are to understand the physical nature of objects, whether any of the properties science tells us objects have are suitable for identification with colors.¹⁹ So, it is not as though color realists and anti-realists have to disagree over whether or not color experience tracks physical properties of objects and, if so, which properties are tracked. The disagreement is really over whether the properties tracked qualify as colors. Thus it is perfectly intelligible for the anti-realist to maintain that color experiences track certain properties of objects, that the representation of those properties in our experience as colors is of value for survival, reproduction and so forth, and that nothing is actually colored. The only point the realist could object to is not classifying those properties as colors, which,

while interesting, does nothing to make the anti-realist's position incoherent or compromise projectivist representationalism's ability to account for color experience's valuable role in our cognitive economies. What we know from empirical research also makes it unlikely that the realist's objection to that point would be successful.

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8. Notes

¹ See Dretske (1995), Lycan (1996, 1998, 2001) and Tye (1995, 2000). In what follows, I will refer to strong external representationalism simply as *representationalism*.

² See Lycan (2001, p.20), Tye (2000, chapter 7), and Bradley & Tye (2001).

³ I limit my comments to objects for reasons of simplicity. Similar remarks would apply to other apparent bearers of colors, such as volumes, films, and light emitters.

⁴ Emmett Holman (2002) has recently covered some of the same ground that I do in this paper. However, this work differs from Holman's in at least two important respects. The first is that Holman argues that maintaining both physicalism and color eliminativism leads to representationalism, whereas my strategy is to keep separate the arguments for representationalism and against color realism, and subsequently demonstrate that there is no

conflict in embracing representationalism about sense experience while denying that colors are out in the world. Secondly, and more importantly, this work includes a positive account of what would result from endorsing both representationalism and color eliminativism. This, of course, is not to downplay the merits of Holman (2002), but simply to point out that our projects are not the same.

⁵ See Block (1990, 19996, 1998) for central examples of thought experiments intended to motivate qualia theories.

⁶ Although Ned Block's (1990, 1996, 1998) version of qualia theory is likely more prominent than that of Boghossian & Velleman, their view is discussed here because it provides a useful contrast to the representationalist form of projectivism that is developed in this paper. I have argued against qualia theory in general, including Block's view, in Wright (under review). The main complaint lodged against qualia theory in that paper is that identifying the felt qualities of experience with intrinsic properties of experiences interferes with phenomenal character's role as a mechanism of belief fixation.

⁷ See Tye (1995, p.30) and Harman (1990, p.39) for endorsements of the transparency of experience. Block (1996, pp.27-9) denies that experience is always transparent.

⁸ See Tye (2000, p.148) for discussion of why reductive physicalism is the only strategy that holds any promise for color realism.

⁹ Nonrigid, reductive physicalism is the view of Frank Jackson & Robert Pargetter; see Jackson & Pargetter (1987) and Jackson (1996). For Jackson & Pargetter, color terms are non-rigid designators having subjective definitions, but colors are primary, physical properties of objects in

the same way that shape and motion are. One particularly attractive feature of the nonrigid view is that, if it succeeds, it can resolve much of the tension between pre-theoretical reflection and empirical research, each of which exerts a strong pull on how we think of color. Commonsense understands colors to be out in the world, as properties of objects that cause our color experiences. However, the conclusion of empirical investigation into the nature of color is that the causes of color experiences are highly variable, depending on the constitution of the perceiver, the physical structure of the object perceived, and the conditions in which the object is viewed; see Hurvich (1982, p.67) and Gregory (1997, p.134). *Prima facie*, the highly variable nature of the causes of color experience makes it hard to see how there could be an objective, physical property of objects that can be identified with, for example, redness. Jackson & Pargetter respond by claiming that color properties are objective, physical properties of objects that are causally responsible for our color experiences, but the determination of which physical property is which color is a subjective matter, depending on who is doing the viewing and in what conditions; see Jackson & Pargetter (1987, p.79) and Jackson (1996, p.206).

Rigid, reductive physicalists also take colors to be objective, physical properties of objects, but claim that color terms are rigid designators for physical properties. Unlike Jackson & Pargetter's view, rigid, reductive physicalism has it that the determination of which physical property is which color does not vary from context to context (or across possible worlds). This view is particularly attractive to those who are not comfortable with the subjectivist strain present in nonrigid, reductive physicalism. Rigid, reductive physicalism has been defended by a

variety of philosophers, including Alex Byrne & David Hilbert (1997c and forthcoming), J.J.C. Smart (1975), Michael Tye (2000), and Michael Tye & Peter Bradley (2001).

¹⁰ See Byrne & Hilbert (1997c, forthcoming), Hilbert (1992), Tye (2000), Bradley & Tye (2001) for examples of identification of colors with spectral reflectances.

¹¹ I have argued in Wright (2003) against Jackson & Pargetter's (1987) alternative to spectral reflectances, which is to identify colors with microphysical properties. My main argument in that work is that Jackson & Pargetter's claim that it is a conceptual truth that color properties should be analyzed in terms of the causing of color experiences ultimately results in color properties being wildly and excessively disjunctive, making them causally inefficacious. I also criticize Jackson's subsequent attempt to defend his and Pargetter's primary quality view by calling on spectral reflectances to unify the disjunctive properties of Jackson & Pargetter (1987); see Jackson (1996, pp.214-17).

¹² See Tye (2000, pp.149, 161, and 167fn.2), Bradley & Tye (2001, p.471fn.6), Jackson & Pargetter (1987, p.69), Jackson (1996, p.201), and Byrne & Hilbert (forthcoming, section 3.1) for examples of color realists who endorse the claim that any acceptable realist account of color must identify colors with the (typical) causes of color experiences. Tye (2000) uses this condition to rule out two competing realist theories (emergentism and brute, nonreductive physicalism) and Jackson & Pargetter use the causal requirement to undermine dispositionalism. Following these authors I take it that not only is causal efficacy a reason for holding a realist view of colors (since *a fortiori* subjectivist or eliminativist views make colors causally impotent), but that it is a necessary condition of any plausible realist view. If our color experiences are not

experiences of the colors of the objects of experience (which would require that color properties themselves figure in the causal chain upon which one's color experience depends), it does little good to still insist that objects are colored.

¹³ I have argued against the causal efficacy of idiosyncratic disjunctive properties such as Smart's (1975) snarkhood and Jackson & Pargetter's (1987) color properties in Wright (2003). The basic complaint raised is that there is on offer no adequate unifier for snarkhood or disjunctive color properties that would explain their alleged causal powers (*pace* Jackson (1996, p.215)) and it is implausible to suppose that a disjunctive property can "inherit" the causal powers of its disjuncts by the simple maneuver of insisting that inclusion of a property in the disjunction demands that that property cause such-and-such. It also cannot be a brute fact that a highly disjunctive property has the causal powers attributed to it.

Consider Smart's example of snarkhood. If we were good psychiatrists and wanted to know *why* snarkhood caused Smith's odd behavior, we would be at a loss. Nothing about snarkhood itself would satisfactorily explain Smith's odd behavior; there would always remain a question of why it was snarkhood, and not some other highly disjunctive and idiosyncratic property, that causes Smith to stand on his head and go red in the face. To get a satisfactory explanation in this case, we would have to instead look at the nature of each of the disjuncts individually (i.e., bulldozerhood, bishophood, etc.) and determine what it is about them that causes Smith to act as he does when he sees them. Snarkhood looks explanatorily impotent and thus is an unlikely bearer of causal powers. The same would appear to be true for colors that are identified with disjunctive properties.

¹⁴ See Byrne & Hilbert (forthcoming) and Bradley & Tye (2001).

¹⁵ I owe this point to an anonymous referee of this journal.

¹⁶ See McGinn (1996, pp.543-4) and Boghossian & Velleman (1989, pp.86-90).

¹⁷ See Smart (1975), Jackson (1996), and Jackson & Pargetter (1987).

¹⁸ See Tye (1995, p.151) and Tye (2000, p.138).

¹⁹ See Boghossian & Velleman (1991, p.105).

9. References

BLOCK, N. (1990). Inverted Earth. In J. TOMBERLIN (Ed.) *Philosophical Perspectives*, 4.

Northridge, CA: Ridgeview.

_____. (1996). Mental Paint and Mental Latex. In E. VILLANUEVA (Ed.), *Philosophical*

Issues, 7. Atascadero, CA: Ridgeview.

_____. (1998). Is Experience Just Representing? *Philosophy and Phenomenological*

Research, 58,663-70.

BOGHOSSIAN, P. & VELLEMAN, D. (1989). Colour as a Secondary Quality. In A. BYRNE & D.

HILBERT (1997a).

_____. (1991). Physicalist Theories of Color. In A. BYRNE & D. HILBERT (1997a).

BRADLEY, P. & TYE, M. (2001). Of Colors, Kestrels, Caterpillars, and Leaves. *Journal of*

Philosophy, 98, 469-487.

BYRNE, A. & HILBERT, D. (Eds.). (1997a). *Readings on Color, vol. 1: The Philosophy of Color*.

Cambridge: MIT Press.

- BYRNE, A. & HILBERT, D. (Eds.). (1997b). *Readings on Color, vol. 2: The Science of Color*. Cambridge: MIT Press.
- BYRNE, A. & HILBERT, D. (1997c). Colors and Reflectances. In A. BYRNE & D. HILBERT (1997a).
- BYRNE, A. & HILBERT, D (forthcoming). Color Realism and Color Science. *Behavioral and Brain Sciences*.
- COSMIDES, L & TOOBY, J. (1995). Foreword to S. BARON-COHEN, *Mindblindness*. Cambridge, MA: MIT Press.
- DRETSKE, F. (1995). *Naturalizing the Mind*. Cambridge, MA: MIT Press.
- GREGORY, R. (1997). *Eye and Brain: The Psychology of Seeing, Fifth Edition*. Princeton: Princeton University Press.
- HARDIN, C.L. (1992). The Virtues of Illusion. *Philosophical Studies*, 68, 371-82
- HILBERT, D. (1992). What is Color Vision? *Philosophical Studies*, 68, 351-70.
- HOLMAN, E. (2002). Color Eliminativism and Color Experience. *Pacific Philosophical Quarterly*, 83, 38-56.
- HURVICH, L. (1982). Chromatic and Achromatic Response Functions. In A. BYRNE & D. HILBERT (1997b).
- JACKSON, F. (1996). The Primary Quality View of Color. In J. TOMBERLIN (Ed.) *Philosophical Perspectives*, 10. Cambridge: Blackwell Publishers.
- JACKSON, F. and PARGETTER, R. (1987). An Objectivist's Guide to Subjectivism about Colour. In A. BYRNE & D. HILBERT (1997a).
- JACOBS, G. (1981). *Comparative Color Vision*. New York: Academic Press.
- LYCAN, W. (1996). *Consciousness and Experience*. Cambridge, MA: MIT Press.

- _____. (1998). In Defense of the Representational Theory of Qualia (Replies to Neander, Rey, and Tye). In J. TOMBERLIN (Ed.) *Philosophical Perspectives*, 12. Malden, MA: Blackwell Publishers.
- _____. (2001). The Case for Phenomenal Externalism. In J. TOMBERLIN (Ed.) *Philosophical Perspectives*, 15. Cambridge: Blackwell Publishers.
- MCGINN, C. (1996). Another Look at Color. *Journal of Philosophy*, 93, 537-53.
- REGAN, D. (2000). *Human Perception of Objects*. Sunderland, MA: Sinauer Associates, Inc.
- SMART, J.J.C. (1975). On Some Criticisms of a Physicalist Theory of Colors. In A. BYRNE & D. HILBERT (1997a).
- TYE, M. (1995). *Ten Problems of Consciousness*. Cambridge, MA: MIT Press.
- _____. (2000). *Consciousness, Color, and Content*. Cambridge, MA: MIT Press.
- WRIGHT, W. (2003). A Dilemma for Jackson and Pargetter's Account of Color. *The Southern Journal of Philosophy*, 41, XXX.
- _____. (under review). Phenomenal Experience and the Fixation of Belief.