



# An Inverted Qualia Argument for Direct Realism

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## Abstract

This essay extends my “invisible disagreement” argument for Color Realism (2017) to formulate an argument for Direct Realism. It uses a variation of an “inverted qualia” thought experiment to show that successes in intersubjectively validating empirical claims about colors is proof that a nuanced version of Direct Realism is correct.

**Keywords** Realism · Direct realism · Inverted spectrum · Color vision

## 1 Introduction

This essay extends my “invisible disagreement” argument for Color Realism in my (2017). That argument (2017) defended a nuanced version of Direct Realism (DR). In essence, I used an “inverted qualia” thought experiment to show that intersubjectively validating empirical claims about colors is proof that a nuanced version of Direct Realism is correct. The order of presentation is as follows.

I first characterize what DR is and how a variation of it is found in the “real realism” (Kitcher 2001) that I previously defended (Sect. 1.1). I then briefly explain how the defended view is related to, and expands on, C.L. Hardin’s well known, though contentious, argument for what he calls “Color Objectivism” (Sect. 1.2). Subsequently, I present the thought experiment and argument that I’d previously presented (Sects. 2, 3), and then explain some nuanced implications and virtues of the defended variation of DR about colors (Sect. 4).

### 1.1 Direct “Real” Realism

The historical mainspring of DR is the work of 18th-century Scottish philosopher Thomas Reid. Reid’s theory of perception and empirical knowledge, “common sense realism” or “direct realism,” was positioned against prevailing subjectivist views of his day. In particular, Reid’s arguments were a response to representational theories of perception, which have it that perception is mediated by mental representations and ideas that are grounded in the mind rather than wholly in objective reality. Reid proposed that our perception directly connects us with the external world, and that we have direct access to the qualities of things out in the world through our five senses. So, in sum, Reid’s view, DR, has it that *our senses provide us with reliable information about the external world, such that we can trust our common sense judgments about reality.*

The question is how and what out in the world makes it so that we can trust our common sense judgements like these. DR says it is because our perception of the world corresponds to ways things in the world actually are. In other words, according to DR, our perceptions are “direct” rather than being perceptions of mental representations or of subjective experiences. Kitcher (2001) defends what he names “real realism,” which is, in my view, a refinement of classic DR.

According to Kitcher (2001), each of our personal biological constitutions and variability in our sensory mechanisms and cognitive functionality shape our personal perceptions, admitting perception distortions. Yet, despite these distortions and limitations, our perception provides us direct, reliable, and accurate representations of at least some properties instantiated out in nature. Following Kitcher, I posited that “causal

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connections between properties instantiated in nature and ourselves ground our references to them even though our conceptions of the relevant properties are perspective relative” (2017, p. 594). As we will see below, the “invisible disagreement” argument for this conclusion is decisive and makes it clear *how* DR about colors can be true. Before rehearsing that argument (in Sects. 2, 3), it is instructive to explain how the defended variation of DR about color is related to a well-known argument for color realism.

## 1.2 Color Realism

One well-known defense of DR about colors is found in C.L. Hardin’s (1988) *Color for Philosophers: Unweaving the Rainbow*. In it he argues against “color dispositionalism,” a physicalist view, that says that colors are reducible to physical properties or dispositions of objects, such as the wavelengths of light reflected or emitted by an object. According to this view, colors exist only as properties of objects, and are not known to us directly in perception; but that we only know the perceptions relevant objects have the disposition to produce within us when we stand in the right relations of perception (cf. Dedrick 1996). In contrast, Hardin argues that when we perceive anything being a particular color, we are directly perceiving an “intrinsic” property of that thing. Hence, according to Hardin (1988), colors are objective features of the world that we can directly perceive.

This view is akin to the variation of DR about color I will defend here, but is, in comparison, rather more underspecified. And the specification that I will add, for reasons that will become clear, is that we have direct access to color properties out in the world in the sense that the same types of causal properties cause the same types of color experience in individual perceiving agents.

So, according to this view, colors cannot be reduced solely to physical properties, as Hardin argues, because, although our subjective color experiences or “qualia” are caused by physical properties, they have “qualitative” aspects that can only be captured by accounting for how physical properties cause those corresponding qualia. My (2017) argument and thought experiment help illuminate that causal story. This argument takes off from the observation of a phenomenon I call “invisible disagreement,” and combining that observation with an ‘inverted qualia’ scenario that serves as an intuition pump for thinking about such disagreements.

## 2 “Invisible disagreement” and ‘inverted qualia’

### 2.1 Invisible Disagreement

We can begin to see straightaway what “invisible disagreement” is by considering variability in the perception of two people with typical eyesight. Consider, for example, two people, each subjectively perceiving the same swatch of paint as being of different shades. Imagine that they each see the same patch as being different, as in the color swatches just below, still both agree that that patch is *the same* color. For instance, they might agree that color #0079 of a specific brand of paint is the same color blue, even though they each personally perceive it differently, as in these color swatches (2017, p. 594).



I claim that “[a]lthough the degree of disparity in each of our subjective mental content may not be as severe as in the above swatches—given biological contingencies and variability—this situation is certainly to some extent indicative of our own” (2017, p. 594). Extensive research in neuroscience provides an abundance of evidence that the phenomenal content of subjective experiences can significantly vary among individuals who perceive the same objects or stimuli. This is evident in cases such as color-blindness and other disorders related to color perception, just two prominent examples of such variations. Additionally, there is a well-documented condition known as synesthesia, where atypical brain activity leads to the perception of character-isomorphic colors, such as perceiving the letter “M” as always appearing red in individuals with this condition. Synesthesia has been documented and explored by Robertson and Sagiv (2004), Byrne and Hilbert (2003). And these “real world” examples further underscore the significant differences that can arise in the subjective experience of individuals, challenging the notion of a universally consistent perception of colors or other qualities.

It is important to note that in my (2017) I focused on adjudicating between the main competing epistemologies of empiricism, rather than just directly formulating an argument for DR. My claim was that the very fact that invisible disagreements occur breaks the alleged “the tie between scientific constructivism and realism” (2017, p. 594; see also Psillos 2013, p. 35). How so? I argue that the phenomenon of ‘invisible disagreements’ can only be accounted for with a realist epistemology, that is, one

according to which individual perceivers intersubjectively validate the empirical claims made in invisible disagreements by accurately tracking properties instantiated in objective reality.

According to constructivists, realist affirmations exceed the necessary evidential support, as argued by Sober (2008, p. 129). Constructivists argue that our justified claims to empirical knowledge pertain solely to our models of the natural world, as there is no evidence to support the realist notion that our empirical claims accurately correspond to an independent reality. Throughout history, this viewpoint has held prominence in philosophy, with Immanuel Kant referring to it as "empirical realism" in his notable synthesis of the ideas of Bishop Berkeley and David Hume (CPR A369-70). This perspective is also widely embraced in both scientific circles and philosophy of science. Stephen Hawking (2011, p. 45) defending a view of this sort, calling it as "model-dependent realism." And in philosophy of science, Bas van Fraassen offered a refined formulation known as "constructive empiricism" (van Fraassen 1980, 1989, 2002).

I attempted to rebut this received stance by arguing that 'invisible disagreements' can only be sufficiently explained with a realist epistemology. They can only be accounted for with an epistemology according to which empirical claims are able to be validated by accurately pointing to properties instantiated in objective reality. But what exactly is happening in cases of invisible disagreement? And how will I argue that they seem to show that DR about colors is true?

My notion of "invisible disagreement" refers to situations where there's a lack of intersubjective disagreement regarding the qualities attributed to objects in the world, despite the presence of intrasubjective (perceiver-specific) disparities. In other words, there may be discrepancies in the subjective experiences of individuals who are validating, agreeing about, empirical claims about the salient qualities, as in the scenario with the color swatches above. The thought experiment presented below illustrates how a community of perceiving beings, just like us, can effectively communicate and navigate the world without explicit disagreements arising from phenomenological disparities like these. The experiment thus sheds light on our interaction with a reality that exists independently of individual perceivers and highlights the grounds for agreement and disagreement regarding empirical claims. Significantly, it reveals that a realist epistemology can account for invisible disagreements, while a constructivist perspective cannot.<sup>1</sup>

<sup>1</sup> My thought experiment has implications for how to formulate realism in the most reasonable manner as well (see 2017; cf. Giere 2006; 1999). The discussion also carries important implications for ongoing debates in action theory, although those fall beyond the scope of this work. For representative works in that area, one can refer to Bradley (2011), Ward et al. (2011), Noë (2004), and Pettit (2003).

Accordingly, I will champion a variation of DR according to which there are causal connections between properties manifested in the natural world and ourselves that serve as the foundation for our references to those properties. However, my version of DR acknowledges that our understanding and conceptions of these properties are inherently perspective-relative. In other words, our perceptions and interpretations of these properties are influenced and filtered through our individual perspectives or points of view. As Philip Kitcher says:

Our purchase on the idea that some objects are independent of some of us (although observed by others) suffices to make intelligible the thought that some objects are independent of all of us, that they would have existed even if there had been no humans (or other sapient creatures), even though, had that been so, there would have been no observation of them or thought about them. (2001, p. 183; see also Sider 2012, p. 165)

To establish as much, I use my 'invisible disagreement' thought experiment as a sort of corroboration argument. It is an argument for realism that shows that there is a way to corroborate that properties in objective reality causally ground our references to them (see Wimsatt 2007, pp. 391–2; cf. Chakravarty 2007, p. 47). This is the crucial move for justifying realism, since the realist's primary claim reduces to the idea that 'determinate relations of reference exist' via "metaphysical pointing," such that that causal connections between us, perceiving beings, and things in nature fixes our references to them (Kitcher 2001, p. 184). Importantly, however, my argument departs from other corroboration arguments that purport to show that well-corroborated and useful empirical claims follow from accurate conceptual models of reality. Rather, the thought experiment glossed in Sect. 3 demonstrates that despite variations in the subjective experiences and phenomenological content of different perceivers, they can still referentially point to and validate the instantiation of the same properties in nature. Another way of putting this is that agreement on the objective existence of properties does not necessitate complete accord in the way individuals perceive and envision those properties within their subjective experiences (see also, (Shoemaker 1975, pp. 293–294).

## 2.2 Qualia and Inverted-qualia

The thought experiment below is a variation of familiar "inverted qualia" or "inverted spectrum" experiments in the vein of Locke (1689 Bk. II, Ch. XXVII; see also Block & Fodor 1972). Yet, since there are inconsistencies in the use of terminology used when talking about such scenarios, allow me to explain the specific and restricted ways I

will use these terms. I will understand "qualia" as subjective aspects of one's personal phenomenological experience. When we engage in intersubjective validation, we are essentially agreeing that a particular type of personal qualia corresponds in some way to someone else's experience. For example, if we were to agree on the color of a salmon-pink stone, we would be acknowledging that we both have qualia associated with it that we perceive as "salmon-pink." Additionally, I will define "qualities" as a subset of qualia that we experience and discuss as properties of things in the world (Heil 2003, p. 14). To use the same example, this means, for example, that I understand "salmon-pink" as the qualia that we associate with and attribute as a property of specific stones. And I understand qualities as a type of qualia, which enables me to differentiate between properties of things in the world independent of observation and properties of things as they are phenomenally experienced. Consequently, I will define "properties" as aspects of nature—entities that exist independently of us, regardless of our observations or experiences (cf. Dancy 1985, p. 181; Campbell 1993, pp. 253–254).

Two further caveats, regarding these uses of 'qualia,' 'qualities,' and 'properties' will also help some readers. First, I should note that, in this project, I'm *not* concerned with whether qualia are identical to properties instantiated in nature. Various philosophers have argued that qualia are nonidentical to the functional processes they arise from. But I will not speculate on the question of such nonidentity or identity here. I align with Boltzmann's assertion that "we can know but little of the resemblance of our thoughts to the things to which we attach them" (1974: 214).<sup>2</sup> And I will simply assume that the qualia we attribute as qualities of things in nature are integral aspects of how we access and ascertain truths about properties of the external world.

Second, due to the significant phenomenological distinctness between qualities of macro-objects and their underlying microphysical components, many have contemplated the idea that qualities exist in an ontologically robust sense, separate from their subvenient microphysical causes. I will also refrain from taking a stance on this ontological question in this project, as it does not bear on the considerations of color qualities as we encounter and know them.

<sup>2</sup> It is possible there are properties similar to our qualities, the subclass of qualia, instantiated in nature. It is even conceivable that there are numerous qualitative properties beyond our realm of possible experience. It's also possible that properties have a multiplicity of potential dispositional, categorical, and qualitative aspects. Since exploring these possibilities also falls beyond the scope of this project, I refer interested readers to Unger (2006: 168), Chakravartty (2007, p. 79), and Heil (2003, pp. 111: 47) for good discussions.

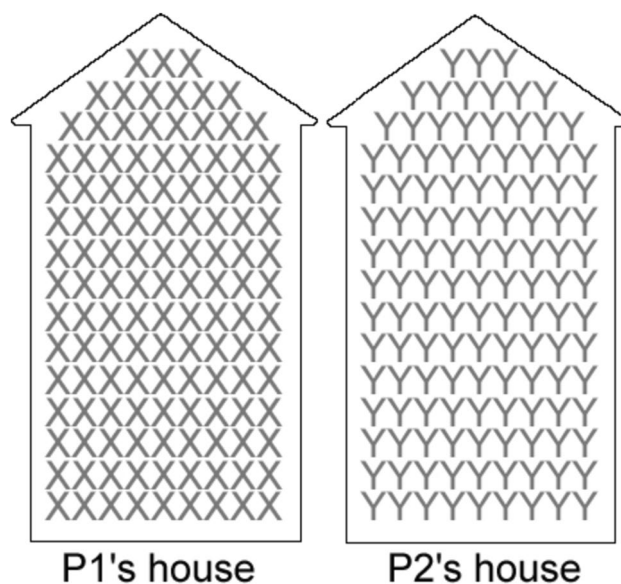


Fig. 1 Two houses, one painted in color X, the other in color Y

### 3 The "Qualia Variation World" Argument for Color DR


Below, I will defend DR about color qualities. I will argue that causal properties instantiated in the world give rise to at least some qualia that perceivers like us attribute as qualities when we are in appropriate perceptual relationships with those properties. Furthermore, I will argue that our diverse and varied ways of perceiving the world, which involve rich qualitative experiences, are most plausibly connected through non-qualitative properties (categorical and dispositional properties) that exist independently of the perceiver. And that such causal properties serve as the foundation for some of our empirical claims about the world—at least, *the ones about surface colors*. The following thought experiment serves to motivate these conclusions.

#### 3.1 A thought experiment: Qualia Variation World (QVW)

I have simplified my earlier presentation for the purposes of this paper but, in gloss, I ask the reader to imagine a possible world, Qualia Variation World (QVW). QVW is inhabited by two beings, P1 and P2, who are like us in terms of their perceptual apparatus and experience of colors. However, in QVW, there are only two distinct shades of color that these inhabitants can perceive, which they have named "X" and "Y." In their respective houses, P1's house is painted entirely with color X, while P2's house is painted entirely with color Y (as depicted in Fig. 1).


Importantly, it is conceivable that P1 and P2 could agree on the colors attributed to their houses and other objects in QVW, despite having different subjective experiences of those colors—as we know we do to greater or lesser degrees in our world. They could consistently acknowledge that P1's house is a specific shade of X and P2's house is a shade of Y, similar to how three individuals might agree on the colors of different houses in our own world. What is intriguing is that these inhabitants could achieve agreement on their references to things being X or Y, even though they have completely different subjective experiences or qualia associated with those colors. That they can have different qualia while still agreeing on the functional relation between their subjective experiences and the properties they attribute as “X” or “Y” shows that they are both tracking something in the world literally without seeing that thing the same way at all.


To get a more complete picture of what’s going on in QVW, imagine that the inhabitants perceive and distinguish five shades of what they label as "X" and "Y." These shades correspond to the different subjective experiences of X and Y that the inhabitants of QVW are capable of having. Here are the color swatches that align with their subjective experiences:

P1 experiences X shades as A1-5 [i.e.  ]  
and

P2 experiences X shades as B1-5 [[i.e.  ].

Each of their experiences of things that they agree to be Y could be:

P1 experiences Y shades as B1-5 [i.e.  ]  
and

P2 experiences Y shades as C1-5 [i.e.  ].

Despite having different subjective experiences of X and Y, P1 and P2 can use these color swatches to refer to and agree upon the shades they perceive. They can have explicit agreements about the specific that cause “X” and “Y” shades, even though their qualia or subjective experiences of those colors may differ. This exemplifies the notion of invisible disagreement, where the differences in subjective experiences are not apparent in their communicative and referential interactions.

Given the more than plausible possibility of physiological differences between P1 and P2, it is even probable they would have distinct qualia associated with their subjective experiences of X and Y. Variations in the structures of their

respective eye-like perceptual organs could account for these differences in qualia. This idea extends to our world as well, where individuals with different physiological processes often perceive and experience colors differently. Yet, despite these disparities in qualia, P1 and P2 could still engage in meaningful communication about X and Y. As I noted, as long as their personal, intrasubjective experiences of X and Y remain consistent for each of them (e.g., the same shade of X always appears in the same way to P1, and the same shade of Y always appears in the same way to P2), they can refer to and discuss X and Y without being aware of the differences in their subjective experiences (2017, pp. 599–600).

Moreover, despite their unique qualia, P1 and P2 would still be able to identify and attribute qualities to the same properties and individual entities in nature. Their attributions of qualities, even if based on disparate personal experiences, can still converge on the properties instantiated in the world. This suggests that the connection between their subjective experiences and the external world is grounded in causal properties that elicit their qualia, rather than the exact phenomenological content of their experiences. Therefore, even in the presence of invisible disagreements and variations in qualia, P1 and P2 (and by extension, individuals in

our world) can successfully navigate and communicate about the properties and qualities of objects in nature.

### 3.2 Implications of the Thought Experiment

What is the nature of the causal connection that allows the QVW inhabitants to reach a consensus on the identification of X and Y? According to the variation of DR I wish to defend here, their converging subjective experiences of qualia result from the causal factors that elicit their experiences of "X" and "Y." In the context of our own world, there are two plausible explanations for the frequent occurrence of

intersubjective agreement concerning the qualities attributed to natural phenomena.

One possible explanation is based on the similarity of our personal experiences. According to this view, our agreement on colors, for example, stems from our comparable physiological traits leading to analogous subjective experiences. Brian Ellis suggests that distinctions between, for example, "red" and "orange" are contingent upon our individual perception of the world and do not possess an independent existence beyond our subjective interpretation (2001, p. 102). However, this explanation would not fully account for the complexities of the situation in QVW and may not accurately characterize our own circumstances unless they resemble those of the QVW inhabitants.

Another plausible explanation is that our agreements regarding the colors of natural objects are grounded in the causal properties present in nature. According to this realist perspective, we attribute specific color qualities to the causal properties of objects. In QVW, the inhabitants validate the causal properties responsible for generating their stable subjective experiences of qualia. Sydney Shoemaker supports this realist viewpoint, suggesting that the relationship between different perceivers and the properties they associate with their qualia holds true intersubjectively because these properties, when instantiated in the same individual, bestow a kind of intrasubjective qualitative similarity (2007: 125).

Embracing this latter realist perspective not only provides an explanation for the situation in QVW but also has implications for how we can reasonably formulate realism. It suggests that our empirical claims about the qualities of objects in nature are grounded in the causal properties that elicit our qualia, rather than solely relying on the similarity of our personal experiences. This perspective acknowledges the possibility of imperceptible disagreements and highlights the importance of causal properties in understanding the grounds of agreement and disagreement about empirical claims. In sum, in my view, the nature of the causal connection in QVW and in our own circumstances points towards a realist explanation, where our agreements about qualities attributed to natural phenomena are rooted in the causal properties present in the external world.

Some may complain that what I have presented in the form of "perspectival realism" just collapses into a form of constructivism, and is not a defense of DR about color. So, let me engage with the most mature argument for "perspectival realism" about color to dispel any such worries. The most mature formulation of perspectival realism incorporates key entailments of constructivism (see Giere 2006, 1999; cf. Chakravarty 2007; Wimsatt 2007). Perspectival realists, as realists, maintain that causal connections between properties instantiated in nature and ourselves ground our references to them, while also conceding to the constructivist that our

conceptions of properties instantiated in nature are perspective relative—or filtered through our theoretical and perceptual perspectives. I submit that this basic formulation of perspectival realism is correct. However, the possibility and occurrence of invisible disagreements implies that certain further claims of perspectival realists are problematic, and that the view should be formulated in a carefully restricted way to remain a kind of realism.

It is problematic that some perspectival realists presume that our subjective perceptions are the same, since this goes beyond what the realists have evidence for claiming. In fact, Giere himself does so in the course of examining color vision experiments that show that our stable subjective color vision (e.g., seeing a certain shade of 'yellow') can be caused by different stimuli. Giere uses these experiments to show that what he calls "objective realism" does not seem to allow for explanation of how we actually experience color. He explains that objectivist realism is the view that empirical claims present a "literally true story of what the world is like" (van Fraassen 1980, p. 8). And he resists this view, arguing that we are only warranted in asserting that our empirical claims approximate objective truths through the lens of our instruments, perceptual faculties, and models—that is, mitigated and distorted by our theoretical and perceptual perspectives. He says that we are therefore warranted only in the claim that the world is "roughly such and such" from a well-validated perspective, and that "objective realism" is too simplistic (Gierye, p. 6). Though I agree with this, I take issue with Giere's implication that sharing a perspective on properties in nature requires having similar subjective experiences of those properties. Examining the color experiments mentioned and the phenomenon of 'metamerism' serves to make clearer why this is.

As Giere explains 'metamerism,' it is:

[P]roductions of the *same* color experience by light with *different* spectral characteristics. For example, monochromatic light with a wavelength around 580 nm projected on a neutral screen will be experienced as pure yellow [...] The same color experience, however, can be produced by an appropriate intensity mixture of two monochromatic lights with wavelengths of 540nm (a greenish yellow) and 640nm (a redish yellow). (2006, p. 21)

Gierye concludes that color is real but perspectival from this result, which initially seems plausible. But upon closer examination, it becomes clear that this perspective cannot adequately explain the situation in QVW. *If one accepts the notion that color is real only from a perspective, it becomes challenging to account for what is happening in QVW.* Given that our situation could be similar to the inhabitants

of QVW and that it is most likely that our circumstances resemble theirs to some extent, Giere's claim regarding the perspectival reality of color, based on the isomorphism of color to a functional perspective, becomes problematic.

The crucial insight highlighted by the QVW scenario is that the similarity of phenomenological content is not necessary for achieving intersubjective agreement about the nature of the world. Therefore, intersubjective agreement can be reached not because of similarities in how we individually perceive the world, but rather because the aspects of nature that we access somehow cause stable intrasubjective qualia when typical perceivers like us stand in similar relations to those aspects of the world. For perspectival realism to truly qualify as a species of realism and avoid collapsing into a variation of constructivism, it must demand more than empirical claims being true in virtue of their grounding in a perspective or accurately describing what is perspectivally real. Realists must adhere to Kitcher's demand that empirical claims are grounded in what he refers to as the "really real." In other words, good empirical claims must be about things that are "independent not just of each but of all of us," free from the beliefs, references, or observations of any sentient beings.

If the inhabitants of QVW reach agreement regarding their tracking of colors, the most plausible explanation is that what they track as X and Y are the properties present in the world, which cause their respective subjective phenomenological experiences. Their validation lies not in their subjective perceptual content or their intersubjective agreement on their subjective experiences of X and Y, as Giere suggests when he claims that colors are at base perspectivally real. His assertion that "without perceivers like us, there would be no experiences of color" (1999, p. 80) is correct in the sense that color vision relies on the presence of perceivers. However, this does not imply that colors are solely perspectivally real. Instead, it suggests that the properties to which we attribute color qualities are not exactly how we perceive them. What is truly real and serves as the foundation for our empirical claims is not perspective-relative in the sense that it exists only from a particular perspective. Rather, the way we detect the real and the formats through which we interface with it, such as languages and models, are perspectival in nature. Nonetheless, what we validate through intersubjective agreement are the properties existing in nature that we detect. This does not necessitate that we perceive them in the same manner, even if we use similar perceptual apparatuses like our eyes. In fact, it is precisely because we validate the "out there" from different partial perspectives that we recognize that color properties may not always align with our subjective perceptions.

We are aware that other biological organisms, such as certain deer species, lack the perceptual mechanisms to see certain wavelengths of light in color, while some insects

can perceive ultraviolet wavelengths that are beyond our capabilities. We also know that individuals can and do perceive the same color properties differently, much like the inhabitants of QVW. These observations highlight the perspective-relative nature of subjective experiences, which is not a novel revelation. However, acknowledging this variation in perspective does not prevent us from identifying color properties. It instead suggests a realist theory of color, according to which what we actually see are the wavelengths of light reflecting the properties instantiated in nature. Fundamentally, empirical claims about colors revolve around properties that exist in nature. In the case of color, "what we intersubjectively validate are not claims about what we see but claims about what properties are instantiated out in nature" (2017, p. 604).

According to the received account of color, what is being validated are claims about the "spectral reflectance" of certain surfaces (Byrne and Hilbert 2003, pp. 8–9). In essence, this means that we are affirming that certain surfaces possess specific textured or patterned microphysical structures, which result in *particular* qualitative experiences when we perceive them from suitable perceptual relationships—because such textures only reflect some wavelengths of light and not others. If we accept some version of this stance, the received view in science, it suggests that perspectival realism should *not* assert that colors are solely perspectival but rather that colors are properties of reflectance, specifically textures, which are interpreted differently from various perspectives. In this view, *colors are not mere subjective projections or illusions but are instead grounded in the physical properties of surfaces and the interactions between light and matter*. The variations in interpretation arise from differences in perspective and perceptual apparatus, leading to distinct subjective experiences of color, while the perceptual interpretations may differ, the underlying physical properties and the way they interact with light remain consistent.

Therefore, perspectival realism, in this formulation of my own here, can recognize that colors are not determined by subjective experiences but are rooted in the objective qualities of reflective properties and textures of surfaces, which can be interpreted diversely depending on the perspective from which they are observed. If perspectival realists admit to this, as I think they should, then the view is a version of DR. And I submit that we should uphold DR because it can explain the many variations of situations akin to QVW that occur in our world, all the time, every day.

## 4 Conclusion

As I said at the outset, I follow Kitcher who argues that the basis for our references to properties in nature is the causal connections between those properties and ourselves,

even though our understandings of these properties can vary depending on our perspectives. Thus, I take it that we actually try to point to things in the world with our scientific models of things in the world. Kitcher's "real realism" is concerned with causal connections between observers and the entities (relata) posited by scientific theories in the world. In this context, "real realism" suggests that scientific realism should selectively focus on the causal relationships between observers and the entities they study in scientific theories. There are three points on which it relates to causal connections. These are well-described as *Selective Focus*, *Observer-Entity Interaction*, and *Causal Realism*.

#### 4.1 Selective Focus

Real realism encourages us to be selective about which aspects of scientific models we consider real. Instead of committing to the entire theoretical framework, it emphasizes paying attention to the entities or aspects of the model that have empirical support and play a causal role in the observed phenomena.

#### 4.2 Observer-Entity Interaction

In scientific investigation, observers interact with and study entities in the world. Real realism acknowledges the causal relationships between observers and these entities. It suggests that we should consider real those entities that have causal interactions with observers and are indispensable for explaining observed phenomena.

#### 4.3 Causal Realism

Real realism, by emphasizing causal connections, aligns with the idea that scientific theories aim to provide a true or approximately true account of these causal relationships. It underscores the importance of understanding how observers interact with and influence the entities they study, and how these interactions contribute to our decidedly scientific understanding of the world.

So, in summary, Kitcher's "real realism"—and the view I am most sympathetic to—is about selectively endorsing the reality of entities and aspects of scientific models based on their causal connections with observers and their role in explaining observed phenomena. It underscores the significance of causal relationships in our assessment of what is real within a scientific scaffolding.

In the QVW scenario, the most reasonable explanation for the inhabitants' intersubjective agreement is that specific properties and property-types in the external world cause their respective perceptions of color qualia. It is highly plausible that these properties are spectrally reflective texture properties. In this interpretation, the inhabitants of

QVW, P1 and P2, validate their access to the same properties in nature by standing in causal relations to those objects, allowing them to receive and process the perceived color qualities.

Notably, this explanation remains compatible with the fact that perceived qualities do not always align with their regular causes. There are instances where we perceive different colors than what would typically correspond to the received wavelengths. For example, observing green color patches followed by white or gray color patches can result in perceiving the latter as green (Campbell 1993, pp. 253–256). Common examples such as color blindness further illustrate how our perception of color can deviate from the regular correspondence with wavelengths (Heil 2003, pp. 201–202).

Despite such deviations, the inhabitants of QVW, and people in our world, apparently still have access to some "really real" properties—as there is a causal pathway from the effects (the qualities in their perception) to the causes (reflective properties). Therefore, their empirical claims about colors are grounded in their knowledge of the same color-causing properties of objects that they perceive as being colored, regardless of what those properties may be like independent of their perceptions and models of reality.

As a result, we can conclude that the grounds of at least some of our empirical claims are grounded by properties instantiated in nature. Those more sympathetic to constructivist stances can only dogmatically assert that this realist conclusion goes beyond what evidence demands, deeming it unnecessary or more than what is required as empiricists. This is because they need to explain why the given defense of DR about color is flawed, and why scientists are wrong about "spectral reflectance." Therefore, Direct Realism (DR) about color allows us to account for what occurs in the QVW scenario and appears to be true in our world. At the very least, the onus lies on the antirealist to explain how a similar situation to our own is both possible and actually is the case in our world, and how we can actually accurately intersubjectively validate claims about surface colors. I do not think the antirealist can provide any such satisfying explanation.

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