## REALISM, RELATIVISM, ADVERBIALISM: HOW DIFFERENT ARE THEY?

COMMENTS ON MAZVIITA CHIRIMUUTA’S *OUTSIDE COLOR*

Mazviita Chirimuuta’s *Outside Color* is an important book, the first philosophical monograph since Hardin’s *Color for Philosophers* (1988) to carve out deep new channels between cognitive science and the philosophy of visual color. (I use this phrase to disambiguate it from racial color.) Deftly exploiting recent cognitive neuroscience, Chirimuuta argues that color vision is not about detecting color—it is inextricably entwined with other kinds of visual perception and cannot be treated in isolation. Based on this, she makes an ambitious proposal about color ontology: it is, she says, a property of the interaction between a particular kind of perceiver and worldly objects and events. She aptly dubs this theory “adverbialist.” According to her, color modifies visual *interactions*; it is not a property of visual objects.

### Two Ontological Questions About Visual Color

In my view, there is at best a tenuous connection between the ontological proposal and Chirimuuta’s views about entwined function. Her stance is best taken as hortatory, motivated more by a desire to shift the rhetorical focus of contemporary philosophy of visual color than by any real difference with the realist tradition. Chirimuuta’s main points could have been accommodated by the tradition, but to do so would have obscured what she calls the Janus-faced nature of color experience. Aside from this matter of focus and tone, there is no compelling scientific or philosophical reason to take up her way of describing color. But there isn’t anything against it either.

The recent literature on visual color concerns itself with two quite different questions.

*Structure of the Colors* What are the color properties, like *blue*, *yellow*, and *red*, that things appear to have?

*Attribution* Taking into account that things look color-different in different circumstances, what is it for something actually to be some color such as blue, as opposed to merely looking that way?

Color realism has two streams. The question whether *blue* and *red* are mind-independent is different from the question whether their attribution to worldly objects is mind- or observer-independent.

Let me amplify. Some think that the structure of color properties is mind-dependent in the sense because there is no purely world-based counterpart to relations like the opposition of blue-yellow and red-green hue components, and the binary nature of certain hues. (No color is both bluish and yellowish; orange is phenomenally a mix of reddish and yellowish components.) These structural characteristics arise from the way the brain or the mind processes color, not from physics. Questions about the inter-comparability of color properties across species have a bearing on this. Do birds see colors that have the same structure? If not, then since we do, color can’t be independent of perceivers (Matthen 1999).

Relationists like Jonathan Cohen (2009) worry about the second question, attribution. They think that all appearances of objects as colored have equal probity. Things that look orange in good light look brown in poor light, but neither appearance is to be discounted; neither is misleading. To accommodate this, relationists propose that *orange* and *brown* are relations, not monadic properties—things are not brown as such; they are brown *relative to* a particular observer *in* particular conditions of viewing. Relationists hold that things are not really one color or another. But they have no view, as such, about the structure of color properties. Indeed, they often take the named colours for granted; the name of Cohen’s book is *The Red and the Real*.

The questions are independent. You can hold that the color structure is mind-dependent and still hold that objects are brown or red independently of the circumstances in which they are viewed. Conversely, you can hold that the colors are mind-independent, but think that because their attribution to objects is not absolute, they are relations.

It is not clear to me that Chirimuuta clearly distinguishes the two kinds of question. As I read them, her arguments have more to do with the structure question than the attribution question. (See the first paragraph of section VI below; the arguments reported there are entirely about the structure question.) It is because structure depends on visual systems, not because of the “chromatic egalitarianism” of color appearance, that she attributes color to visual interactions. Whether this is right or not, she thinks that color is “Janus-faced” in both respects; color structure and color attribution are both objective in some respects and subject-dependent in others. Her conclusion in both cases is that color phenomenology is a mix of objective and subjective elements.

### A Gloomy Remark

There are serious disagreements in contemporary philosophy about the interpretation of color science, but relatively few fundamental misconceptions about empirical matters. You might think that in saying this, I am praising our community for its deep knowledge. You would be wrong. The reason why philosophers typically get their science right is that they use so little of it. There was an exciting period soon after the publication of Hardin’s *Color for Philosophers* (1988) when it looked like color philosophy would become more informed by color science. Since that time, philosophers have increasingly immunized their theories against empirical refutation. Take a question like this: Are colors “self-locating” properties (Egan 2006)? It’s an elegant proposal, and a framework that I personally find useful, but no empirical fact makes the slightest difference to whether you adopt it. And so Chirimuuta’s valuable discussion of the function of color vision will not, as she hopes, force a reassessment of color ontology. Even if everything she says about visual function is accepted enthusiastically, it will be distorted by some Procrustean bed. (I’ll come back to this.)

### Color Realism and Scholasticism

Chirimuuta begins her book provocatively, attempting to persuade by good-natured mockery. Contemporary philosophers adopt a view of color that was thoroughly discredited during the Scientific Revolution, she says. Following Aristotle, the scholastics thought that color was an independently existing property that is transferred unchanged from external objects to the visual organ. Misled by G. E. Moore’s “common sense,” contemporary color realism recapitulates this thoroughly discredited scholastic world-view. Thus, she suggests, 21st century philosophers cling to the certainties of 11th century North Africa. “The mechanists won the ontological battle, but scholastic realism lives on in philosophers’ ideas about what perception purports to present” (37). The purpose of scientifically informed philosophy is to replace naïve phenomenology with what Wilfrid Sellars called the “scientific image;” yet, contemporary philosophers worship the idols of the tribe.

This is an unfortunate way to frame the question. In the first place, though Chirimuuta is right to identify Descartes as a mechanist who sought to describe “fundamental reality” in quantitative terms, thus needing to exclude pure qualities like color, she doesn’t appreciate how his view was a complete mess. Descartes relied on Kepler’s model of vision (Smith 1987, 8-12), in which the spatial layout of the external world is projected on to the retina by the corneal lens. (Galileo and Berkeley agreed.) But Kepler was addressing a scholastic question: How is the visible form of an external object transmitted to the eye? In Kepler’s time, all agreed that visible form was . . . *color*. Kepler did not dissent. As David Lindberg (1975) wrote: “Kepler attacked the problem of vision with greater skill than had theretofore been applied to it, but he did so without departing from the basic aims and criteria of visual theory established by [ibn al-Haytham] in the eleventh century” (207). Smith (2004) concurs, adding that in al-Haytham’s theory, “what actually radiates from the surfaces of visible objects is luminous color” (183). W. W. Bryant (1920, 32) sums up Kepler’s limitations especially well: he “compared the mechanism of the eye to Porta’s ‘Camera Obscura,’ but made no attempt to explain how the image formed on the retina is understood by the brain.” Descartes did not advance beyond this.

So here’s the thing: the early moderns didn’t find a satisfactory substitute for the scholastic idea of color; their contribution was to mechanize how it gets to the retina. In short, they deciphered the outward looking part of Janus’s visage, but weren’t even aware of the inward-looking question of how color is processed and conveyed to consciousness. Their notion of “secondary qualities” was half-baked, to say the very least. Luckily, it has had more time in the oven since.

The early moderns were suspicious of color for no other reason than that, they thought that unlike “bulk, figure, texture, and Motion” (Locke, *Essay* II 8, 9-10, quoted by Chirimuuta 24), it was not a fundamental physical quantity and so not fit to be a causal actor. We now know that this hesitation was misplaced; electromagnetism is physically fundamental. Right off, this gives the color-realist a scientifically respectable way to elaborate on the quantitative nature of what is transmitted from object to retina. At least since Thomas Young (1802), there has been scope for broadening al-Haytham’s view of vision with the help of physics and neurology; Young identified color sensations with the “vibration” of “sensitive point[s] of the retina.” Note that this still leaves it open how color is “understood by the brain.” This question comes much later. (Zeki 1993)

Now, I don't believe that color is, as such, a property of light; I agree with Chirimuuta that color properties have to be defined relative to visual systems. But come on! Contemporary color realists are not stuck with scholastic sensible forms; most of them identify color with the spectral power distribution (SPD) of light reaching the eye, or with the distal determinants of proximal SPDs, such as spectral reflectance. Interestingly, those who hold such views typically cite color constancy as justification—the fact that things look more or less the same color-wise in a wide range of illuminants. Psychophysicists ask what physical property is shared by things that look the same in different conditions and come up with things like reflectance. Color realists claim this as vindication. Whatever you may think of this reasoning, it is simply wrong to suggest a continuity with the property transfer views of the great Iraqi Cairene. Everybody writing today, with the possible exception of a few naïve realists, knows that perceptual systems are not passive conduits from the external world to consciousness. This much, at least, has gotten through from contemporary science. It gets us nowhere to fold the eye-is-not-a-camera trope into a polemic against contemporary color realists.

### Relationism, Realism, and Paraphrase

I said earlier that color science doesn’t have much impact on color ontology. To illustrate this let’s take a look at color relationism. People like C. L. Hardin (1988), Brian McLaughlin (2003), and Jonathan Cohen (2009) think that there is nothing to choose between differing color appearances in different circumstances—they are all equally valid. They accommodate this “chromatic egalitarianism” by saying that statements like “That is blue” cannot be simply true. (Chirimuuta half agrees: color vision *does* sometimes go wrong, but we should not understand this “in terms of the attribution of the wrong color to an object;” the errors affect and must be understood in the context of other functions of color vision [180]). Hardin concludes that all color attributions are false. Chirimuuta demurs: even “apparently idiosyncratic workings of the visual system manage to inform creatures about the world around them” (45). She is inclined to some form of relationism.

Cohen and McLaughlin are canonical relationists: they accommodate the equal probity of color appearances by making colors disguised relations. They instruct us to stop saying:

(B) Sapphires are blue.

According to them, the logical form of colour attribution is:

(BR) X is blue to a particular observer in specific viewing conditions.

This sounds disconcertingly revisionary. But don’t worry: the situation is not as bad as it sounds. Relationists allow that the following is meaningful:

(LBR) Sapphires are blue to most people in “good” lighting conditions in scenes that contain a statistically normal distribution of reflectances.

(LBR), or something like it, is what relationists say when realists want to say (B). They even allow that (B) can be understood as short-form-LBR. All is well: you don’t even have get your mouth around the official version. A velvet revolution, then.

On the other side of the fence, the realist says that (BR) is meaningless: she thinks that it is literally nonsense to say that something *is* blue “relative to a particular observer.” So the relationist too faces accusations of meaningless talk. But she too is offered the refuge of circumlocution. (BR) has an equivalent in realist talk; substitute ‘looks’ for ‘is’ and you get what the realist would say in circumstances in which the relativist says (BR).

The dispute reduces, then, to a first approximation at least, to a terminological disagreement. Both parties have ways of describing the same situations; they simply use different language. Both agree that there are properties that extensionally approximate those described by (BR) and (B), but they disagree which one deserves the name of ‘color.’ They disagree about what color is, but each has a way of saying anything the other does. This is different from other philosophical disputes about relationism. People in aesthetics disagree whether beauty exists independently of human subjects. Here, the relationist denies that Michelangelo’s David is beautiful period; she feels no pressure to use paraphrase to accommodate the opposition. Similarly, the hedonist’s rejection of prescriptive norms. Bentham simply guts it out: to he who finds it so, push-pin is as good as poetry, “prejudice aside.”

There is no question of scientific or even philosophical fact at stake in contemporary dispute about the ontology of color. The disagreement is not (though it has often been taken to be) factually substantive enough to generate, as Chirimuuta says, “a clash between those who believe that colors belong to the external, physical world and those who think of colors as something generated inside the head” (58). In his *NDPR* review of *Outside Color* [2015.10.21], Jonathan Cohen questions how successful Chirimuuta is in bringing empirical concerns to bear on ontological disputes. My worry is that these disputes are framed in terms that make it impossible to do so.

### The Interactions That Determine Visual Color

Chirimuuta’s contribution is to emphasize, very cogently in my opinion, that color vision is not exclusively for color detection; it is rather embedded in other functions. For instance, color constancy is for (or is really) lightness constancy; color vision is a help to object vision; and so on. Ontological commitment to real colors is, according to her, a failure to appreciate this. But here, she goes too far. For instance:

A difference in color is interpreted as a difference in material. But, in order for this to happen, there need be no attribution of an intrinsic chromatic property to any [surface]. . . . Red and yellow contrast with each other. Because of this we can know just by looking that skins of strawberries and lemons are made of different kinds of matter. All this can be known even if there is no special red or yellow property that strawberries and lemons possess. (95-97)

I am not sure how to assess this claim about color properties. It’s true that there don’t *need* to be “special” color properties for us to make this differentiation, as long as there is always a contrast in appearance. Nonetheless, there *is* a real difference; lemons reflect more of the light that excites the M-cone; strawberries are partial to the L-cone. (Here and elsewhere, I am being quick and dirty in defining color, but by mentioning cone cells, I do want to make it clear that the visual system is relevant in some way.)

Does Chirimuuta deny this? I don’t think so. Perhaps what she contests is the possibility of defining color without some reference to visual systems. If so, the point is well taken, but it is still a real property of ripe tomatoes and strawberries that they reflect comparatively more light that stimulates the L-cone.

It is very important in this context to recognize that the variations of animal color vision systems are irrelevant to this point. Cats have color vision that is worse than ours in terms of differentiating things from one another; pigeons do better than we do. This does not mean that any of these species gets things wrong. There are those who think that if a cat sees as grey what trichromatic humans see as blue, it is misperceiving; blue things are not, after all, grey. Chirimuuta thinks this kind of inter-species comparison is a mistake, and I agree. Humans happen to see blue things as falling into a unitary sensory class because these things excite our S-cones more than the L- and M- cones; cats don’t have the same cone configurations, and so their visual systems don’t classify things in the same way. In view of this, it’s better to say that things that are human-blue (a property that we, but not cats, are sensitive to) are also cat-grey (a property that cats, but not we, are sensitive to). There’s no right or wrong here, just incommensurable (not incompatible) color properties that arise from the adaptation of each visual system to each lifestyle. But property realism is not in question. (For more on this see Matthen 1999; Chirimuuta’s take can be found in 49 n 11. She seems critical, but there’s very little we disagree about.)

This kind of system-relativity does not imply that blue is “Janus-faced,” partly outward, partly inward looking. It just means that since cats and humans and birds have different needs and different visual equipment, our senses sort the world differently. Chirimuuta is inclined to think that each of us brings different color properties into existence (C4, 51). This is not obvious. Arguably, the property of reflecting light that stimulates the S-cone is a property that exists independently of S-cones: it exists for cats, though cats are not sensitive to it. But whether this is right or not, it’s hard to argue that I sense a relational property of myself when I see a blue stone—as Chirimuuta rightly says, I see something that makes me know that sapphires are made of a different kind of material than a lemon. It is, of course, a fact about me that I have a visual system that is sensitive to this particular property; I can *infer* this from my seeing the stone as blue. But this is different from sensing facts about myself. (None of what I have just said relies on the “intuitions” that Chirimuuta reviles in chapter 8.)

### Adverbialism, Realism, and Paraphrase

Chirimuuta reports that Stephen Palmer believes that color is “the result of complex interactions between physical light in the environment and our visual nervous systems” (139). This is the kind of view that lies at the foundation of her adverbialism. “Colors are ways stimuli appear to certain kinds of individuals,” is one way she parses this. Here, she is right: blue and red are ways stimuli look to people like me. But doesn’t she use too many words? Why not delete ‘to certain kinds of individuals’? Presumably, Chirimuuta is pointing to the dependence of our color scheme on how our visual system extracts information from retinal cone cells. There are a number of ways of formulating the system of color properties that trichromatic humans are sensitive to. The Swedish Natural Color System is one example; it is closely related to the opponent processing of color in humans. Is this a simple illustration of the point being made? I think Palmer would say yes. If so, I agree with the general point.

But should we say, as she does, that Palmer’s “interactions” are “the bearer(s) of chromatic properties?” Well, we *could*.Take the class *I*:

*I* = {*x*: *x* is an interaction between MM’s visual system and MM’s environment that results in something looking blue to MM}

This class corresponds to the property that my perceptual experiences of blue share. We *could* say that the color *blue* is *this* property? But should we? The realist emphasizes another commonality, namely that the interactions that belong to *I* have the same intentional content; they are all experiences of blue. According to realist, the property *blue* is the content shared by blue-appearing experiences.

How to decide? Unfortunately, this appears to be another situation where the two antagonists can say all of the same things in different language. Chirimuuta says, “I am having a blue interaction with the world;” the realist responds, “Oh you mean something looks blue to you.” The realist says “Sapphires are blue;” Chirimuuta rephrases: “Oh you mean that sapphires have blue interactions with most people in good conditions of observation.” How are we going to adjudicate this? Well not by looking at the science; questions of ontology may be philosophical life-blood, but what is science’s stake? This is what I meant when I said that Chirimuuta has a hortatory view; her choice of language draws her reader’s attention to the transactional character of color visual states.

Chirimuuta’s book contains a great deal that should be of interest to philosophers. Unfortunately, she presents this material within the scaffolding of contemporary disputes about color ontology. These disputes are much more sterile than she realizes, and she spends more time than she ought to contesting the standing of intuition and common sense. It would have been good just to write a book about visual color and the role it plays in perception. Come to think of it, that’s just what she has done. And a pretty good one at that.[[1]](#footnote-1)

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1. I thank Jonathan Cohen for valuable discussion, both of this piece and of the topic more generally. [↑](#footnote-ref-1)