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The cornerstone of Gert's philosophy of color is that colors are primitive, objective properties possessed by things in our environment. There are also two crucial qualifications. Colors are *rough* and not *precise*. This means that, for example, while there are blue things there are no pure blue things (pure blue being any shade of blue that has no reddish or greenish tinge). Second, although there are no precise colors, there are precise *color appearances*. A philosophy of color that combines both objective colors and color appearances is what Gert calls a *hybrid view*. The work contains numerous intriguing commitments that go beyond these central claims, including a devotion to neopragmatism, a language-first approach to color, and the endorsement of adverbialism about color appearances.

Stylistically, this book is a treat. Gert's writing is clear and readable, and there is a perpetual "bird's eye view" of various philosophical issues that many will enjoy. While Gert ably discusses relevant results from colour science, that science does not overshadow the philosophical questions that drive the work. In the end some may wish for greater focus on the relevant sciences, but I think Gert has struck a balance that numerous readers will find appealing. Let me turn to Gert's central theses.

Color primitivists assert that colors are *sui generis* properties that are not reducible to physical properties. For Gert, attempts to reduce objective colors to more basic physical properties such as light reflectance profiles or wavelengths of light will fail. There will invariably be different, equally credible reductive bases to choose from (e.g. light reflectance profiles versus relevant microproperties). Additionally, each reductive base possesses a host of properties that have nothing to do with color, giving each base a modal signature that doesn't match that of color. For example, identifying colors with light reflectances yields modal claims about colors (e.g. in worlds where light behaves differently) that we have no reason to take a stand on. These considerations leave a puzzling plurality of possible reductions for what colors actually are, each of which has a different modal profile from colors as we understand them. The correct response, argues Gert, is to recognize that reduction to more basic physical properties is the wrong way to conceive of colors.

Whether one accepts color primitivism or not, Gert is convinced that grass is green and lemons are yellow. For him these are in effect fundamental truths around which we should build our color theory. However, these truths shouldn't be embellished. Our central explanandum in color is the truth of sentences that apply broad, vague color words like 'green' and 'yellow' to objects in our environment. The explanandum isn't sentences like 'That grass is a highly saturated, fairly light yellowish-green'. Instead, for Gert these more color-specific sentences are false. This is another way of expressing Gert's commitment to colors being only rough and not precise. Why hold this view? Gert proposes it to resolve the tension between the objectivity of color and the robust variation of color perception.

Color variation is the extent to which the perceived color of an object varies across perceivers and perceptual conditions. A measurable and significant degree of color variation, even across normal trichromatic humans in normal perceptual conditions, is now widely accepted (though there are still some detractors). It is strikingly illustrated by studies of pure or unmixed colors, where for each pure hue we record substantive ranges of objects being categorized as having it by normal perceivers in normal conditions. Thus, an object one perceiver categorizes pure green might by another be categorized as some distance into the blue category (e.g. a greenish-blue).

It is difficult to preserve the objectivity of pure colors given this result, and thus Gert concludes that there are no objective, precise colors. However, this result doesn't obviously threaten the objectivity of rough colors, for many objects are categorized as having only one broad, vague color like blue or yellow. There are, of course, borderline cases even for rough colors, objects that are for example at the boundary of blue and green. But for Gert this is a familiar outcome of vagueness, and the correct response to the problem is *not* to reject the objectivity of the property in question. For example, there are borderline bald and borderline poor people, but that doesn't mean there aren't objectively bald and objectively

poor people. While Gert doesn't provide a positive, detailed account of vagueness (though he does reject empiricism), it is common to endorse the truth of sentences involving nonborderline cases, and regard the property in question as potentially objective.

It follows that 'That grass is a highly saturated, fairly light yellowish-green' is false (or at least not true) because it applies a precise color term to a sample of grass, and grass only has a rough color, namely green. This is not to say that precise color terms have no correct uses: they can be correctly applied to the color appearance one experiences when looking at things. Thus, when I look at the sample of grass I may experience a highly saturated, fairly light yellowish-green color *appearance*. But we should never confuse the precision of color appearances, which are not objective properties, with the roughness of objective colors.

More generally, color appearances and objective colors have different spaces, or dimensions in terms of which they can be described (111). Color appearances have precise locations in something like the familiar three-dimensional hue-saturation-lightness space. Objective colors are rough or coarse-grained, and are only roughly locatable, and locatable as regions, in a space of basic colors (e.g. blue, green). Neither space of properties is a subset of the other. The two are related: a blue thing will be associated with different precise appearances across different contexts, yielding a one-many mapping from rough colors to color appearances. Further, rough colors aren't identical to mappings from objects to appearances. Rather, rough colors in some sense underwrite or give rise to these mappings.

Gert's commitment to neopragmatism is complete and unwavering. As I understand its application here, 'Grass is green' and 'Lemons are yellow' should be recognized as objective truths roughly because they receive widespread communal acceptance, can be ostensively taught, and can be incorrectly asserted (e.g. in odd circumstances or by persons with deficits in color vision). It follows that colors are real (e.g. grass is green). It is helpful to contrast this neopragmatist approach with 'scientific naturalism' (68), where overwhelming communal agreement about the contextually-stable use of a term is not sufficient to justify the reality of the term's referent. Further investigation is required, typically through the empirical methods of science. Thus, even if there is an objectivity to the meaning of 'green', as revealed by its continued, stable application to grass and cucumbers, there remains a further question about whether or not grass and cucumbers have a property corresponding to 'green'. This further question is to be settled, or at least deeply informed, by empirical investigation. Gert isn't in principle opposed to scientific naturalism – indeed he applies it to the study of natural kinds, thus recommending a methodological tolerance. However, since he maintains that colors are not natural kinds (recall his argument for color primitivism), a neopragmatist conception of truth, reference and realism should be utilized for this domain.

The above gives readers a flavor for Gert's view. I end with a few observations. Although Gert maintains that his colors are objective, they seem response-dependent in the sense that we have no means of specifying or identifying colors without reference to color appearances, which themselves are only specified and identified by reference to perceptual responses from perceivers. For some, what kind of response-dependent view this entails depends on factors such as whether or not the pattern of color appearances that pick out blue in our world do so rigidly (i.e. across all worlds). On this issue Gert maintains that we should take no stand on whether or not to rigidify in such ways, and thus aims to not fit neatly into that debate. It nonetheless remains that Gert's view seems unavoidably response-dependent. It is common in philosophy of color to conceive of response-dependent views as subjectivist, and in this regard Gert's claim that colors are objective stands in tension with this norm. However, it is conceivable that the inseparable link between colors and color appearances that is entailed by Gert's view is due to the response-dependence of color epistemology, as opposed to color itself (cf. C. McGinn, 1996, 'Another look at color', *Journal of Philosophy* 93:537-53). Regardless, further discussion is warranted.

It would help to know more about color appearance space, objective color space, and relations between the two. For example, how precise can objective colors be, and how rough can color appearances be? There are vague notions of hue, saturation and lightness applicable to color space (139), and presumably the collection of (e.g.) blue appearances composes a blue appearance category with vague boundaries. Thus, although the mapping from *objects* with objective colors to color *appearances* is one-many (111), the mapping from objective color *space* to color appearance *space* seems much tighter (e.g. they are defined by similar dimensions, and perhaps there are *onto* mappings in both directions). If pushed far enough, color space would look like a subset of color appearance space. Among other things this would further reinforce the idea that Gert's is response-dependent color ontology.

What are color appearances and how do we perceptually engage them? The question is critical to pinpointing the theories of perception compatible with Gert's color metaphysics. Gert is an adverbialist about appearances in the sense that they are ways of perceiving colors. But one might demand much more than this, even though this is 'the thesis to which [Gert is] least strongly committed' (119). Are color appearances mental properties like qualia, perceiver-independent contextual properties, et cetera? They likely aren't perceiver-independent, given that perceiver-centred color variation is central to motivating the distinction between color appearances and objective colors. Let us suppose color appearances are qualia-like.

We seem to experience color appearances to be on the surfaces of things in our environment (*pace* a naïve adverbialism). For example, when a subject performs sorting tasks and identifies an object as pure blue, she is arguably responding to a precise color appearance that she experience to be on the object. This is difficult to deny, though Gert offers an interesting critique of the transparency of experience (chapter 8). If we experience color appearances to be on objects in our environment and those appearances are qualia-like, then some form of projectivism about color perception appears to follow (even if projectivism about color ontology does not), and our experiential access to colors is in some sense indirect or mediated. There is unfortunately little discussion of these matters in the work.

Finally, I confess to not being a neopragmatist, and to being more inclined to "scientific naturalism". This leaves me wanting to push for more analysis at key places where the neopragmatist advises us the matter is settled. Most centrally, I am not satisfied with Gert's approach to the question of color realism, but instead think that whether or not his objective colors are possessed by thing's in our environment is a live question. That said, I find it valuable and novel to think about these issues through the neopragmatist lens. I think others will too.

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