Gert, Joshua. *Primitive Colors: A Case Study in Neo-pragmatist Metaphysics and Philosophy of Perception*. New York: Oxford University Press, 2017. ISBN 9780198785910 (Hardcover).  Pp. ix + 237.

Review by Nicholas Danne

The subtitle of *Primitive Colors* best characterizes Joshua Gert's philosophical defense of color primitivism.  In neo-pragmatic form, the book steadfastly declines to analyze color in terms of the "truth" and "reference" (3) of the empirical property ascriptions germane to what Gert calls "scientific naturalism" (2).   Rivals to color primitivism include reflectance physicalism, reflectance-basis physicalism, dispositionalism (properties induce experiences), eliminativism (*qua* subjectivism), projectivism (attributing mental properties to objects), and relationalism (colors as multi-part relations between objects, light, and perceivers).  *Pace* these views, the primitivist concludes "that 'red' refers to the property of redness, and — importantly — that this is the end of the matter" (3).

Such is not to say that redness is ephemeral or ineffable.  Primitive redness is a property "*of objects*," Gert claims in Chapter 1, but a property that is both "*sui generis*" and accessible even to children (9, first emphasis mine).  Gert's opening argument for primitivism recalls one of Paul Benacerraf's arguments about numbers.  Just as numbers need not *be* a Zermelo sequence of the nested null set any more than numbers need *be* a successor relation of power sets, so Gert argues that reducing color to a non-primitive base (from the list above) is both arbitrary and generative of "too many modal properties" for the colors (15).  One such property is the "dimensions of similarity" that reflectance physicalism grants the colors (28).  Reflectance physicalism equates

colors with surface spectral reflectance (SSR) profiles, or ranges (400-800 nm) of electromagnetic reflective efficiency at a surface. The 'similarity' problem, therefore, is that two *profiles* "might" (28) be more similar (blue to yellow) than the profiles of *hues* that humans *experience* as similar (blue to another blue). Additional discrepancies between profiles and perceptions motivate Gert to reject reflectance physicalism.

To systematically forego all color reductionism, Gert introduces his linguistic neo-pragmatism in Chapter 2. He calls his account "naturalistic" (46), since it features "human subjects as natural beings in a natural environment" (47). Rather than assuming, however, that all meaningful properties reduce to empirically demonstrable, scientific "essence[s]" (50), Gert maintains that humans learn the meaning of color terms by ostension. He contrasts water, for example, whose meaning as $H_2O$ serves to protect humans from poisoning by other clear liquids, with color, whose "superficial appearance" (49) all but exhausts its meaning.

More strongly, Gert claims in Chapter 3 that what he calls "precise" colors *cannot* be physical reflectance profiles or other reduction bases, and indeed cannot obtain at any "surface or volume" at all (57). Precise colors, on Gert's account, are to be distinguished from "rough" colors (57). Rough colors include red, yellow, green, blue, "'yellowish'" (63), "navy blue" (138), "bluish-green" (80), "'dark brown'" (219), and the like. Precise colors, on the other hand, include unique green — the hue of green containing neither more blue than yellow, nor vice versa — and any other "maximally specific location" (56) in hue-saturation-lightness (HSL) color space. While rough colors are primitive properties of objects, precise color language pertains only to the "*appearance* of a color, for a particular viewer from a particular perspective . . ." (57). Gert calls this rough/precise distinction the "separability thesis" (57).

Gert's argument for the separability thesis follows from his linguistic neo-pragmatism. Empirical evidence indicates, for example, that "two people with normal vision are very likely to locate unique green at quite different locations on the spectrum," and from this premise Gert concludes that "we have no reason to favor one over the other" (58). The conclusion is not that a majority of perceivers in agreement correctly ascribes properties *qua majority*. Rather, by the tenets of linguistic neo-pragmatism, a "sufficiently overwhelming agreement" among perceivers sets the context in which ostension "can often be expected to yield a referring term" (65), and importantly, a *useful* term (66). The problem for unique green, then, is that no one reliably *can* teach it by ostension. As Gert points out, the *appearance* 'unique green' may be learned or taught after *merely* ostending the rough colors 'blue', 'green', and 'yellow'. In my opinion, however, some implications of the separability thesis clash with common sense. For on Gert's account, the Sherwin Williams product "Lemon Twist" is not a color, it is a "*paint*," and so Lemon Twist cannot be taught by ostension as a precise color (80).

Chapter 4 reinforces the separability thesis with additional terminology. Color appearances, for Gert, are adverbial properties of "visual *experience*," properties neither of objects, nor "of a visual field or of a sense datum or quale . . ." (88). The neo-pragmatist thus distinguishes "apparent color" (the objective, rough color an object appears *to have*, but might not have) from "color appearance" (the "*way*" some objective color looks to me in my circumstances) (89). Neo-pragmatists need this distinction because they hold that color appearance could be of something that is not a color (unique green), and because color constancy (judging that a surface color remains constant while its illumination changes) is an empirically documented human phenomenon. To be clear, Gert holds that "*no* color appearance is identical to the objective color of a surface" (111), just as no 2D appearance of a cube *is* a 3D cube.

With these basics of color primitivism in place, the second half of the book engages various, competing theories. Chapter 5 scrutinizes the role of color constancy, for example, as a premise in arguments for non-primitivist color realism. In turn, Gert assesses Jonathan Cohen's *anti*-realist rejection of constancy, and finds it wanting. As Gert parses Cohen, each part "of a uniform surface" could possess two (or more), relational properties (136). Assuming that two different illuminants ($I_1$, $I_2$) would yield two relational colors ($C_1$, $C_2$) at the surface, then *each part of the surface* could possess both "$C_1$-under-$I_1$" and "$C_2$-under-$I_2$" (136). This state of affairs preserves the phenomenon of constancy (we perceive that two differently illuminated parts *would* look like each other under switched illuminants), but no *single* C-property responsible for constancy obtains across the surface (136). In his extensive reply, Gert remarks that such a theory could generate a high number of "counterfactuals" for "our visual system" to represent (137). He ultimately defends apparent color (versus color appearance) as the sort of uniform property underpinning constancy.

Chapters 6 and 7 review, in the following order, Cohen's relationalism, some alternative pluralisms, Keith Allen's rival primitivism, and Derek Brown's puzzle of viewing "a green book through a glass of amber beer" (181). Against Allen, Gert objects that unique green cannot be an objective color, and he criticizes what he takes to be one of Allen's guiding assumptions: "that agreement in rough color across human beings supports the notion . . . [of a] best perceiver" (176, quoting Gert). Gert counter-argues from an analogy to movie genres. Does widespread but imperfect agreement about what counts as horror and comedy imply "that there are precise but often unknowable facts about the correct classifications" of movies (177)? Not according to Gert. He closes the book with Chapter 8 (and a subsequent conclusion), defending a "modest

representationalism" (194) about visual perception, and rejecting any notion of "transparency" that undermines the separability thesis (210).

Overall, Gert provides a clear and succinct criticism of the dominant realist position on color (reflectance physicalism) with a remarkable economy of technical verbiage and diagrams (as in *zero* diagrams). That said, the book is not one for learning human physiology or for assessing scientific controversy firsthand; it is trenchantly philosophical. Much of the text consists of Gert responding to published criticisms of his earlier work, so supporters of reflectance physicalism anticipating 200 pages of fresh, anti-SSR polemic may be disappointed. The book has strengthened my thinking on this issue, however, and I recommend it for those seeking a digest of recent sources on color.

My only criticism concerns Gert's main argument against SSR reductionism. He claims, "Of course there *could be* something special about 503 nm that *would* convince us — to our great surprise — that this spectral location ought to be regarded as the true home of unique green" (68). That claim is fair, but elsewhere he seems to contradict it. He says things like:

- non-primitivist accounts of color commit us to *controversial* and *pointless* modal claims. (40)

- What possible evolutionary advantage could there be in having a phenomenal experience that represented *precisely this extremely narrowly specified spectral reflectance*? What objects in the world have such specific reflectances and keep them over time? The answer to both of these questions is: None. (78)

- What is the relevant difference between shape and color? It is that the causal powers of shapes go well beyond the production of appearances. (90)

- There is no motivation even for saying that there is an answer [about which Munsell chip is unique green] — even an unknowable one. (98)

My point is that for all of Gert's frequent analogizing of color to shape, he seems to have overlooked that SSR is also a property of laser mirrors (the mathematical principles of optics being

strikingly shape-like). Hence a conspiracy theory falsifying all of the above bullets proves easy to generate. If there were a large population of humans who saw reflections from a surface with SSR profile centered at 503 nm as unique green, and if this profile happened to be an essential specification in the design of a massive death-laser (whose beam looks unique green), and if humans who could see unique green were selectively exterminated as part of a government coverup concerning the existence of the superweapon, and if aliens somehow made this part of our evolutionary history in *this world* (Gert appeals to alien thought experiments in Chapter 3), then we would have not only a neo-pragmatic reason to identify unique green with its SSR profile, but also an evolutionary reason to ascribe a surface property whose 'effect' or 'causal power' transcends its appearance. I do not find the conspiracy theory plausible or motivated, but it is not categorically impossible, even if its implementation as construed would be 'unknowable'. To avoid begging questions about what SSR really is, therefore, Gert's best claim may be his least critical: that a successful color reduction to SSR could prove 'surprising'.