

Objectivism about Color and Comparative Color Statements. Reply to Hansen*

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Abstract: Nat Hansen builds a new argument for subjectivism about the semantics of color language, based on a potential kind of intersubjective disagreements about comparative color statements. In reply, I note that the disagreements of this kind are merely hypothetical, probably few if actual, and not evidently relevant as test cases for a semantic theory. Furthermore, even if they turned out to be actual and semantically relevant, they would be intuitively unusable by the subjectivist.

If you choose at random two persons with normal color vision, it is very likely that they will disagree about what light from among a comprehensive range of spectral lights in the “green zone” of the spectrum should be called unique green, i.e. green but neither somewhat yellow nor somewhat blue. Subjectivists about color see in this fact the basis for an argument that color properties involve relations to perceiving subjects: if normal perceiver UG calls a light λ “green but neither yellow nor blue” and normal perceiver BG contradicts UG because she sees λ as somewhat blue, with that expression UG must be referring to a property such as *looking green but neither yellow nor blue to UG*, and similarly for BG. The standard objectivist response, namely that both UG and BG refer to the same objective property but there is some unknown fact of the matter determining that no more than one of UG and BG is right (e.g. Byrne and Hilbert 2003), is, it seems fair to say, very unconvincing; it seems fair to say that no difference in the physiology or in the linguistic competence of typical normal perceivers can be expected to yield the result that some are better than others at making judgments of unique greenness. In “Perceptual Variation, Color Language and Reference Fixing” (Gómez-Torrente forthcoming), I offer a more plausible objectivist response (fleshing out an abstract proposal of Kalderon 2007): both UG and BG are right, not because they refer to different subjective properties, but because they refer to different but compatible objective properties of the same thing. This comes about because UG uses “green” by default to refer to a property that involves (roughly) membership in a certain interval in an underlying objective dimension of hues, while BG uses “green” by default to refer to a property that involves membership in a different

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interval in that same dimension, and the same goes for “yellow” and “blue”.¹ The bounds of these intervals are a function of physiological differences between UG and BG, but the intervals themselves and the properties constituted in terms of membership in them are purely objective, don’t involve UG or BG in any way.

The bounds in question can be seen as contextual standards for the use of the corresponding adjectives, and the truth conditions of a statement of the form of *x is green but neither yellow nor blue* can be described in terms of such standards. Abstracting from several complications irrelevant for present purposes,² *x is green but neither yellow nor blue* is true in a context just in case *x* has a hue value in the interval $[h_{G1}, h_{G2}]$ and outside the intervals $[h_{Y1}, h_{Y2}]$ and $[h_{B1}, h_{B2}]$, where h_{G1} and h_{G2} are the contextual standards for “green”, h_{Y1} and h_{Y2} are the contextual standards for “yellow”, and h_{B1} and h_{B2} are the contextual standards for “blue”. UG’s utterance of the sentence *λ is green but neither yellow nor blue* and BG’s utterance of the sentence *It is not the case that λ is green but neither yellow nor blue* are both true because UG and BG pick different default contextual standards for their utterances of color adjectives: *λ* has a hue value in the interval $[h_{G1}, h_{G2}]$ and outside the intervals $[h_{Y1}, h_{Y2}]$ and $[h_{B1}, h_{B2}]$ that UG picks by default for “green”, “yellow” and “blue”, respectively; and *λ* has a hue value in the intervals $[h_{G1*}, h_{G2*}]$ and $[h_{B1*}, h_{B2*}]$ and outside the interval

¹ The assumption that an objective dimension of hues has been singled out by language use is crucial to my account. That a suitable dimension exists is very plausible, as I note in Gómez-Torrente (forthcoming). I believe one can define in purely objective and physically intuitive terms functions from types of light to wavelength values that will be in adequate correlation with hue orderings by normal perceivers. But in the worst case, one can obtain one such function in a somewhat artificial way indirectly, via the colorimetric notion of dominant wavelength. One can identify the hue dimension with the dimension of values determined by the notion of dominant (and complementary) wavelength, taken as a purely extensional function from types of light to real numbers (or tagged real numbers, in the case of complementary wavelength). As usually understood, dominant wavelength is a subjective relation, for it involves reference to perceivers (the dominant wavelength of a light is essentially the wavelength of the spectral light that matches the light’s hue for the average observer); but in this case nothing prevents us from adopting a purely tabular, extensional understanding of the dominant wavelength function, on which no reference to perceivers will be involved. To assume that language use singles out a dimension of this kind as the one underlying color (hue) properties, referred to by color adjectives, appears no more problematic than to accept that it does single out the dimension of temperature as the one underlying properties referred to by thermal adjectives. This said, I should stress that the issue of how some objective color dimensions and phenomena are singled out by language use requires further, extended discussion.

² One of these complications is the need to take into account contextual standards for saturation and brightness in a full statement of the truth conditions.

$[h_{Y1*}, h_{Y2*}]$ that BG picks by default for “green”, “blue” and “yellow”, respectively. The color properties denoted by (utterances of) these adjectives are nevertheless objective, in the same way that the thermal properties denoted by “hot” in different contexts of use, and in fact in contexts of use involving different default standards of temperature intended by different speakers, are presumably objective.

Nat Hansen (forthcoming) argues that, even if this objectivist response can accommodate known disagreements about statements predicating positive color adjectives, it cannot do the same for all conceivable disagreements involving *comparative* color statements. One might think that the truth conditions for x is *greener than* y ³ under an account like mine can be described as follows (again abstracting from several complications⁴): x is *greener than* y is true in a context just in case x has a hue value closer to the contextual unique green hue value than y .⁵ Now since UG and BG disagree about the location of unique green in the objective dimension of hues, their contradictory comparative judgments can be veridical at the same time given these truth conditions: for example, if μ is a light with a hue value in the interval $[h_{G1*}, h_{G2*}]$ and outside the intervals $[h_{Y1*}, h_{Y2*}]$ and $[h_{B1*}, h_{B2*}]$, then UG’s utterance of λ is *greener than* μ will be true (when he relies on his default standards), while BG’s utterance of *It is not the case that* λ is *greener than* μ (and of μ is *greener than* λ) will also be true (under his default standards). However, if UG[#] is a subject who agrees with UG about the location of unique green, sharing all the relevant default standards, UG and UG[#] can still conceivably make contradictory comparative judgments that cannot be veridical at the same time in the relevant default contexts if we accept the mentioned truth conditions. Suppose that ν is a light with a hue value in the

³ Hansen focuses on the truth conditions of comparative statements instead of the specification of the relational property signified by “is greener than”. Strictly speaking, only such a specification bears on the objectivism/subjectivism debate as reconstructed in my paper. But for present purposes we can follow Hansen in focusing on certain descriptions of possible truth conditions.

⁴ Again one of these has to do with the need to take care of saturation and brightness. Strictly speaking, the truth conditions to be given are *prima facie* reasonable only if x and y share values for saturation and brightness.

⁵ Or in other words, closer to the subinterval (h_{B2}, h_{Y1}) of $[h_{G1}, h_{G2}]$, where again h_{G1} and h_{G2} are the contextual standards for “green”, h_{Y1} is the “lower” contextual standard for “yellow”, and h_{B2} is the “upper” contextual standard for “blue”. That closeness to unique green must be involved in some way in the description of objectivist truth conditions for comparative statements is implicit in the truth conditions proposed for statements predicating intensified color adjectives in Gómez-Torrente (forthcoming), note 33. But I don’t propose specific truth conditions for comparative statements in the paper.

intervals $[h_{G1}, h_{G2}]$ and $[h_{B1}, h_{B2}]$, that ξ is a light with a hue value in the intervals $[h_{G1}, h_{G2}]$ and $[h_{Y1}, h_{Y2}]$, and that v and ξ are at the same distance from UG's (or UG[#]'s) location for unique green in the objective dimension of hues. It is conceivable that while UG[#] judges that v is greener than ξ , UG judges that v is not greener than ξ (or even that ξ is greener than v). But given the mentioned truth conditions, an utterance of *v is greener than ξ* by either UG or UG[#] under their default standards will be false; so UG's judgment that v is not greener than ξ will be declared correct and UG[#]'s judgment that v is greener than ξ will be declared incorrect. Based on analogous observations, Hansen suggests that the argument for subjectivism above can be reformulated in the obvious way using comparative instead of positive color judgments, and that the natural complaint against standard objectivism that we also saw above can then be appropriately directed against my theory.

I seriously doubt that Hansen's observations can be the basis for a robust critique of objectivist proposals for the semantics of color language. First of all, it should be stressed that the example of UG and UG[#] is a conjectural one. I am not aware of experimental evidence showing that there are actual disagreements of this very specific kind among normal perceivers, nor does Hansen provide references. In fact, I suspect that, in cases where a yellowish green thing and a bluish green thing at roughly similar distances from a commonly assumed location for unique green are compared for greenness, shared puzzlement and reticent hesitation will actually be more common than vigorous contradictions (or coincidences) in judgment. Therefore, it is unclear to me that the general truth conditions for comparative color statements given above ought to seem even *prima facie* adequate from an objectivist standpoint. For if comparative color judgments involving things with hues "on different sides" of a certain unique hue are not very confident, this may be a sign that the corresponding statements don't have determinate truth conditions. The conditions above would seem to be fairly clearly adequate when restricted to colored things with hues on the same side of the unique hue for the relevant color: of two green things which are also yellowish (bluish), the one, if any, that has a hue closer to unique green will be the greener one. This is in line with the presumable fact that when things with hues on the same side (and with the same saturation and brightness) are involved, questions posed to normal perceivers as to whether a relevant comparative statement is true or not will typically elicit confident judgments. However, to insist, I should expect (based on my own intuitions) that normal perceivers would often vacillate and feel some oddness when asked how a typical bluish green thing and a typical yellowish

green thing compare for greenness. Thus, it might not be implausible for an objectivist to hold that v and ξ are just incommensurable as to their level of greenness, and the same might be said for pairs of a yellowish green thing and a bluish green thing at different but similar distances from an assumed location for unique green.

Compare the case of mildness, mentioned by Hansen. I should expect normal subjects to feel hesitant and somewhat puzzled at the question whether a room at minus 20°C has or has not a milder ambient temperature than a room at 70°C, while there will not be any puzzlement (at least of the same sort) when they are asked whether a room at 40°C has or has not a milder ambient temperature than a room at 70°C.⁶ This similarly suggests that comparative mildness statements involving things at temperatures “on different sides” of the (contextual) neutral temperature may not have determinate truth conditions, even if the truth conditions for comparative mildness statements involving things on the same side are clear and clearly objectivist.

To be sure, in some cases there will be a strong inclination to accept that a bluish thing closer in objective hue to unique green is greener than a yellowish thing far in objective hue from unique green (and vice versa). But this might be reasonably explained on the view that there are no determinate truth conditions for comparative statements involving things on different sides of unique green. In some cases, the explanation will simply be that the thing closer in objective hue to unique green counts as green under the standards of the context while the thing far in objective hue from unique green doesn't count as green under those same standards. In other cases, judgments of this kind could be explained as effects of the fact that the thing closer in objective hue to unique green will count as green under most selections of standards for green, while the thing far in objective hue from unique green will count as green only under fewer and rarer selections; if the speaker is to make a choice, she will go for the claim that the thing with the closer hue is greener than the other thing, simply because it will be clear to her that to call the thing with the closer hue “green” will be more common than to call the other thing “green”.

Even if the disagreements conjectured by Hansen turn out to exist and to be sufficiently robust, they could be expected to be relatively rare. Assuming that coincidences in the location of unique green are rare, disagreements in comparative judgments among speakers who coincide in their location for unique green could be expected to be rarer still. And they might be *very* rare if sufficiently many such speakers turn out to agree in their

⁶ For normal perceivers, the temperature where the ambient air feels neither hot nor cold will not be far from 20°C, so 40°C and 70°C will be “on the same side” of the assumed neutral ambient temperature.

comparative judgments. This will take away much of the force carried by Hansen's objection against theories that take such disagreements to involve mistakes of some sort. For if the disagreements are sufficiently infrequent, it will become unclear that they ought to constitute test cases for a semantic theory; it will become dubious that the disagreements reflect the relevant speakers' observance of general semantic rules rather than some other more localized non-semantic phenomenon.

But Hansen's case for subjectivism is weak even if we grant that the relevant disagreements exist, that they must be taken as test cases for a semantic theory, and thus that comparative color statements must have fully determinate truth conditions. For Hansen's hypothetical disagreements might (if actual) be reasonably explained by the existence of some difficulty inherent to the performance of objective hue comparisons between things with hues on different sides of unique green. That is, the semantic facts might be such as to determine an objectivist semantics for comparative color statements even when they involve things with hues on different sides; and disagreements about comparative statements in these cases might then arise because of the difficulty of the comparison task, which would make some people good at the task and some people bad at the task. Given the availability of this explanation, the objectivist could not be blamed for not accommodating the disagreements directly in the semantics.

That an objectively difficult task might be involved in comparisons of greenness just seems a natural thing to expect, in stark contrast with the case of locating unique green. The grounds for thinking that UG's utterance of *λ is green but neither yellow nor blue* and BG's utterance of *It is not the case that λ is green but neither yellow nor blue* are both true are evidently much more compelling than the grounds for thinking that UG's utterance of *ν is not greener than ξ* and UG[#]'s utterance of *ν is greener than ξ* are both true. As emphasized in the presentation of the subjectivist's argument in Gómez-Torrente (forthcoming), there is really no reason to think or expect that UG's personal partition of the dimension of wavelengths of spectral lights is better in any sense than BG's, nor vice versa. But there are surely reasons to expect, even at a fairly intuitive level, that some speakers may be better than others at comparing distances between wavelengths. Hansen says that to claim that (among speakers sharing a location for unique green) some speakers are better than others at comparative judgments removes "the central appeal of Gómez-Torrente's objectivist response to the argument from interpersonal variation—namely, that it does not require simply overriding the judgments of normal observers with an objective standard of correctness for judgments about color" (p. 6). But surely the appeal of an objectivist

account cannot lie in its ability to accommodate the veridicality of all ordinary judgments, or even of the ordinary judgments of all normal speakers. If anything, it must lie in its ability to accommodate their veridicality in a case where not doing so is unmotivated, for clear and specific reasons, as in the original case developed by the subjectivist. In cases where there is a clear motivation for thinking that some speakers may be objectively better than others at making judgments of a certain type, it will be an account's ability to accommodate this fact that will make it appealing.

As a relevant example, we may recall that, among perceivers who pass all tests of normality for color vision, some can make hue discriminations with an apparently higher level of acuity than others. Suppose one of these perceivers consistently says that there is a difference in color when presented with pairs of slightly separated spectral lights (and says there is no difference when presented with what a physicist would tell us are instances of the same type of light), while the vast majority of normal perceivers say there is no difference in such cases. Then it will not be a defect of an objectivist theory of statements of color difference and identity that the theory says that the vast majority of normal perceivers are wrong while the exceptional perceiver is right. The theory's ability to predict that the exceptional perceiver will be right and the vast majority of perceivers will be wrong will actually be an asset of the theory. To my mind, the case of comparative color (hue) statements is *prima facie* similar to the case of hue differences, there being a fairly clear way in which some normal perceivers might be better comparers: by being consistently better at comparing distances from a certain unique hue (or scaled distances; see below). The case of the location of unique hues, on the other hand, is of a different kind, there being no reason to think that some normal perceivers are better than others at the task.

Let me finish by noting that if there is full determinacy, then the truth conditions for comparative statements will be along the lines of the initially considered truth conditions, but will in all likelihood be somewhat more complicated. As already noted, the truth conditions above would seem to be fairly clearly adequate when restricted to colored things with hues on the same side of the unique hue for the relevant color. But even if there is full determinacy, the conditions don't seem clearly adequate for things with hues on different sides, such as the lights involved in the UG and UG[#] example. For typical normal perceivers, the yellowish greens probably occupy a smaller zone of the objective dimension of hues than the bluish greens. Thus, it is probably not a simple comparison of distances that would matter in comparative statements involving a yellowish green thing and a bluish green thing, but a comparison of the distance of the yellowish green thing's hue (say) with

the distance of the bluish green thing's hue (say) scaled by some suitable factor f less than one. For example, f might turn out to be roughly equal to the length of the interval $[h_{Y1}, h_{G2}]$ divided by the length of the interval $[h_{G1}, h_{B2}]$ (where again h_{G1} and h_{G2} are the contextual standards for "green", h_{Y1} is the "lower" contextual standard for "yellow", and h_{B2} is the "upper" contextual standard for "blue").

Let $h(a)$ denote a 's hue, and let $d_g(h(a))$ denote the distance of $h(a)$ from the contextual unique green hue. The idea would then be (abstracting as always from some irrelevant complications) that *x is greener than y* is true in a context just in case either (1) x and y (are both green in the context and) both are yellow in the context or both are blue in the context, and $d_g(h(x)) < d_g(h(y))$; or (2) (x and y are both green in the context and) either x has a yellow hue, y has a blue hue, and $d_g(h(x)) < f \cdot d_g(h(y))$, or x has a blue hue, y has a yellow hue, and $f \cdot d_g(h(x)) < d_g(h(y))$.⁷ Given these truth conditions, superficially contradictory comparative judgments by people who disagree about the location of unique green in the objective dimension of hues, such as UG and BG, can still be declared true at the same time. On the other hand, in the imagined case of UG and UG[#], an utterance of *v is greener than ξ* will be true just in case $f \cdot d_g(h(v)) < d_g(h(ξ))$, and so it will be true, given that f will be less than zero. So UG's utterance of *v is not greener than ξ* will be declared false and UG[#]'s utterance of *v is greener than ξ* will be declared true.

To summarize: The cases of disagreement on which Hansen builds his new subjectivist argument are, if they are not merely hypothetical, probably few and not evidently relevant as test cases for a semantic theory; in particular, they strongly suggest the possibility that some semantic indeterminacy is lurking. Finally, and most importantly, even if there is no semantic indeterminacy involved, the disagreements in question are not usable by the subjectivist, for they are relevantly different in kind from the disagreements about positive color statements that subjectivists have often employed of late.

⁷ These truth conditions could clearly be determined by some objective relational property R_G signified by "is greener than". It may be worth recalling that, as in the case of positive statements (see Gómez-Torrente forthcoming, n. 21), comparative color statements can certainly be used to mean (non-semantically, by the lights of an objectivist theory) propositions involving subjective color properties. Someone looking at some objects through a green glass that makes things look green may utter *This is greener than that*, meaning that this looks greener (to him, when looking through the glass) than that, even if what he would be saying under the present hypothesis would literally be that *this* bears R_G to *that*.

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