

## Gert on the shifted spectrum\*

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As Gert says, the basic claim of representationism is that the phenomenal character of an experience supervenes on its representational content. Restricted to color experience, representationism may be put as follows:

- (A) Necessarily, for all  $x$  and  $y$ , if  $x$  and  $y$ 's experiences represent the same colors, then  $x$  and  $y$ 's experiences are alike in color phenomenology.

I will assume that this talk of “representational content”, “phenomenal character”, and “color phenomenology” (as opposed to, say, spatial phenomenology) is tolerably clear.

Although representationists sometimes do not endorse the converse of the *general* representationist supervenience thesis (principally because some representationists think that perceptual experience has object-dependent content), they all—a few exceptions aside—endorse the converse of the specific supervenience thesis (A):

- (B) Necessarily, for all  $x$  and  $y$ , if  $x$  and  $y$ 's color experiences are alike in color phenomenology, then  $x$  and  $y$ 's experiences represent the same colors.

The distinction between (A) and (B) is of some (minor) relevance to Gert's argument against representationism, because his official argument just targets (B), not (A).

### 1. The inverted spectrum

Gert's argument against representationism is supposed to be an improvement on the traditional inverted spectrum argument because, he thinks, the traditional argument faces a dilemma that this own argument does not. On one horn, if the alleged inversion is behaviorally undetectable then “it becomes more difficult to understand precisely what is meant by the claim that the phenomenology is different” (“The Shifted Spectrum”, p. 2). On the other horn, if the alleged inversion is behaviorally detectable, then “it becomes reasonable to suppose that the *representational* content of the phenomenally distinct ‘sensations of red’ are indeed also distinct” (p. 2).

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\* Thanks to David Hilbert for discussion.

However, it is not clear to me—although this may just be the result of Gert’s understandably brief presentation—why this dilemma is particularly serious. Take the first horn first. Admittedly claims about “phenomenology” need clarification, but will this involve constitutively tying phenomenology to behavior? In these post-behaviorist times, one might suppose it won’t. But then why is it difficult to understand the claim that *x* and *y* are behaviorally alike but phenomenally different? (Of course, to *understand* a behaviorally undetectable inverted spectrum scenario is not thereby to concede that it is *possible*—perhaps Gert’s real worry is that the scenario, although intelligible, is not possible.)

As to the second horn, since presumably phenomenology has a role to play in the explanation of behavior (which is not to say that the very idea of phenomenology is explained in terms of behavior), why can’t the difference in phenomenology alone account for the behavioral difference?

## **2. Gert’s argument**

Gert’s argument against representationism can be set out as follows.

### Argument 1

**Step 1.** Suppose (counterfactually) that an otherwise normal person *S* has the peak sensitivities of each of his cone photopigments “shifted by 5 (or 10, or 15) nanometers in the same direction” (p. 4).

**Step 2.** Given the difference in photopigments, we may suppose that the following sort of situation frequently occurs. Normal person *N* has an “experience of unique green” (p. 4) when looking at a certain color patch; *S* does not have such an experience when looking at the same patch in the same conditions (instead, *S* has an experience of yellowish-green, or an experience of bluish-green). And conversely: *S* has an experience of unique green when looking at a certain color patch; *N* does not have such an experience when looking at the same patch in the same conditions (instead, *N* has an experience of bluish-green, or an experience of yellowish-green).

**Step 3.** Assume that colors are physical properties of external objects (surface spectral reflectances, say), and so color experiences represent such properties. In particular, suppose that S's "experience of unique green" represents physical property  $G_S$ , and N's experience of unique green represents physical property  $G_N$ . (At this step we are *not* assuming that  $G_S \neq G_N$ .)

**Step 4.** "Of course there is no generally accepted view of how it is that the experience of unique green in someone such as N manages to represent that an object has [ $G_N$ ]", ditto for S. "But let us assume that it has something to do with the causal connections that hold between instantiations of [ $G_N$ ] and the relevant experiences".

**Step 5.** "On any such view [of the sort mentioned in step 4], it seems that an experience of unique green in the mind of S, whose three photopigments are uniformly shifted, will represent a distinct surface spectral reflectance"; that is, will represent a property other than  $G_N$ . In other words,  $G_S \neq G_N$ .

**Step 6.** "[S]ince everything relevant going on in the brains of N and S is exactly the same, it is very plausible to claim that their experiences of unique green are relevantly phenomenologically the same".

**Step 7.** Since  $G_S$  and  $G_N$  are the colors represented by, respectively, S's experience of unique green, and N's experience of unique green (by step 3), and since  $G_S$  and  $G_N$  are different (by step 5), and since S's experience of unique green and N's experience of unique green are phenomenologically alike (by step 6), (B) is false.

### **3. Some comments on Gert's argument, and a revised version**

First, this argument does not show that (A) is false, and given that (A) is a more central representationist thesis than (B), one might think that the representationist could accept Gert's argument, and simply retreat to maintaining (A). But this would be mistaken. If Gert's argument works, a variant of it can be used to produce a case where N and S have phenomenally different experiences that represent the same color, which contradicts (A).

Second, step 3 has the effect of understating the scope of the argument. The assumption that colors are *physical* properties is clearly not necessary. All the argument requires is the weaker assumption that colors are properties of “external” objects like tomatoes and lemons. Realist primitivists about color, who hold that colors are *sui generis* properties of tomatoes and lemons, have as much to fear from Gert’s argument as do color physicalists.

Third, what does Gert mean by ‘an experience of unique green’? He presumably does not mean *an experience that represents unique green* (or *an experience in which something looks unique green*) because the conclusion of the argument implies that an experience of unique green may well be an experience that represents, not unique green, but another property—a shade of bluish-green, for instance. Instead, an experience of unique green is—or so one would have thought—supposed to be an experience individuated in phenomenological terms. But then step 6 would appear to be unnecessary. If N and S are having “experiences of unique green” (in this second phenomenological sense), then it follows without any further assumption (e.g. about N’s and S’s brains) that their experiences are phenomenologically the same.

Fourth, if Gert’s “experiences of unique green” are (as I shall assume) phenomenally individuated, without prejudice to what colors they represent, then step 4, as stated, is problematic. A *representationist* would not accept that the representational content of an “experience of unique green” depends on (contingent) causal relations between it and the environment. For according to her, it is *necessary* that an experience of unique green represents unique green. If step 4 is not to be question-begging, then it must be recast along these lines:

“Of course there is no generally accepted view of how it is that N can perceptually represent that an object has  $[G_N]$ ”, ditto for S. But let us assume that it has something to do with the causal connections that hold between instantiations of  $[G_N]$  and instantiations of certain brain states.

With these four points in mind, a more compact version of Gert’s argument can be put as follows:

## Argument 2

**Step 1.** Suppose (counterfactually) that an otherwise normal person S has the peak sensitivities of each of his cone photopigments “shifted by 5 (or 10, or 15) nanometers in the same direction” (p. 4).

**Step 2\*.** Given the difference in photopigments, we may suppose that when S and a normal person N look at the same things in the same conditions, they sometimes have experiences that differ slightly in their phenomenology. For example, when N and S both look at a certain color patch P, N has an “experience of unique green” (i.e. an experience of a certain phenomenal kind), and S does not.

**Step 3\*.** Assume that colors are properties of external objects, and so color experiences represent such properties.

**Step 4\*.** There is no generally accepted view of how it is that someone can perceptually represent colors. But let us assume that it has something to do with the causal connections that hold between instantiations of the colors and instantiations of certain brain states.

**Step 5\*.** On any such view [of the sort mentioned in step 4\*], when S and N are looking at P neither is suffering from a color illusion—their experiences represent the same color properties.

**Step 6\*.** By step 2\*, when S and N are looking at P, their experiences differ in color phenomenology; by step 5\*, their experiences represent the same colors. Hence (A) is false.

## **4. Comments on the revised argument, and yet another revision**

First, since existing theories of perceptual content are only broad brush sketches, step 5\* is speculative, to say the least. Certainly no theory is well-enough developed to yield *predictions* about the sort of situation mentioned in step 5\*. Because theories of

perceptual content are wheeled in to derive the conclusion that neither N nor S is misrepresenting P, and since the conclusion is (one might think) independently plausible, it would be simpler to state it as an independent premise.

Second, why is the *counterfactual* scenario described in step 1 necessary? As suggested by fruitless squabbles in ordinary life about whether fabrics are yellowish-green or bluish-green, and confirmed by experiments reported to philosophers by Hardin, there is a surprisingly large variation among “normal perceivers” as to the apparent location of unique green, and Gert himself mentions individual differences in photopigments which show up on sophisticated color matching tasks. So why not run the anti-representationist argument with *actual* cases, as Ned Block does? (In “Sexism, Racism, Ageism and the Nature of Consciousness”.<sup>1</sup>) Gert’s counterfactual person S is supposed (I take it) to use color vocabulary pretty much like the rest of us, but her experiences of unique green are produced in slightly different viewing conditions—and that is exactly the actual situation. Further, there is a disadvantage to employing the counterfactual case, namely that Gert is obliged to fend off the objection that calibration mechanisms would make S, raised in a normal terrestrial environment, into a normal subject. (The inputs to N’s and S’s cones would differ slightly, because on average the amount of light reaching the retina is not uniform across the spectrum.) And—without going into the details of Gert’s imagined example—certainly this is a very complicated empirical issue. In passing, it is worth mentioning that a significant amount of calibration *does* take place. For instance, despite very large differences between normal individuals in their L:M cone ratios (which might be expected to produce differences in red-green perception), it seems that a neural mechanism weights the L and M signals based on experience, with the result that the calibration of everyone’s red-green color channel is basically the same.<sup>2</sup> Similarly, the visual system compensates for changes in the spectral

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<sup>1</sup> <<http://www.nyu.edu/gsas/dept/philo/faculty/block/papers/sexism.html>>

<sup>2</sup> Neitz, J., et al., “Color Perception is Mediated by a Plastic Neural Mechanism that Is Adjustable in Adults”, *Neuron* 35: 783-92 (2002).

composition of the light reaching the retina as one ages (due to the darkening of the lens, among other things), resulting in significant color constancy throughout one's life.<sup>3</sup>

Gert's argument, then, can be distilled even further. Relegating step 3\* (colors are properties of external objects) to a background assumption, the thumbnail version is:

### Argument 3

**Step 1†.** The following sort of case sometimes happens. When two perceivers N and S with normal color vision look at a certain color patch P (in normal conditions, etc.), N has an "experience of unique green" (i.e. an experience of a certain phenomenal kind), and S does not.

**Step 2†.** When S and N are looking at P neither is suffering from a color illusion—their experiences represent the same color properties.

**Step 3†.** By step 1†, when S and N are looking at P, their experiences differ in color phenomenology; by step 2†, their experiences represent the same colors. Hence (A) is false.

### **5. A comment on the final version**

The chief problem with the three arguments we have considered is especially apparent in the case of Argument 3. Step 2† is quite doubtful (in other words, Gert's "misrepresentation strategy" (pp. 7-8) is the correct response to his argument). Unique green is a color: 'unique green' can be defined in terms of 'green', 'yellow', and 'blue' (specifically: unique green is that shade of green that is neither yellowish nor bluish). N and S, we may suppose, both understand the expression 'unique green'. When asked how P looks to them, or what the color of P is, they will give different answers. "It looks unique green", "It is unique green", says N; "It looks bluish-green", "It is bluish-green",

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<sup>3</sup> Werner, J. S., "Visual Problems of the Retina during Ageing: Compensation Mechanisms and Colour Constancy across the Life Span", *Progress in Retinal and Eye Research* 15: 621-45 (1996).

says S. So N and S's experiences represent P *differently*. Notice that this problem, at least, is not faced by the traditional inverted spectrum example, where there is no such verbal disagreement. Of course there is a lot more to say (see, in particular, Block's "Sexism, ..."), but on the face of it Gert's new-fangled shifted spectra are less of a threat to representationism than the old-fashioned inverted spectrum.