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What Constitutes Phenomenal Character?

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Abstract. Reductive strong representationalists accept the Common Kind Thesis about subjectively indistinguishable sensory hallucinations, illusions, and veridical experiences. I show that this doesn't jibe well with their declared phenomenal externalism and argue that there is no sense in which the phenomenal character of sensory experiences is constituted by the sensible properties represented by these experiences, as representationalists claim. First, I argue that, given general representationalist principles, no instances of a sensible property constitute the phenomenal character of the sensory experience that represents them. Second, I argue that, with two very plausible assumptions in place, no sensible property qua universal can constitute the phenomenal character of experiences either. At the end, I offer an alternative picture that is consistent with a naturalist psychosemantics for sensory experiences without embracing phenomenal externalism.

Suppose Sam is intently looking at a blue and round ball (call the ball, Tom) in front of her against a roughly uniform neutral background in good day light. Let's say that Sam is having a veridical visual experience VE1 as of something being blue and round.

Let *B* be the property complex, being blue and round:

$B = \lambda x$ (x is blue & x is round)

B is a type, a universal, and is instantiated by Tom. Call this particular instance of *B, b1*. Sam is seeing *b1* — the instantiation of *B* (by Tom).

Sam is intently and carefully looking at Tom for about 5 seconds. It is natural to say that he is aware of *b1*. This is a direct *de re* awareness, if anything is. Sam's visual experience seems to put Sam directly in contact with *b1* (and with Tom, of course). This experience has an immediate seemingly world-disclosing presentational character, which has a certain phenomenological profile that we may call its *phenomenal character* — there is something it's like to undergo this particular experience which seems to immediately present *b1* to Sam. What is the relation of VE1's phenomenal character to *b1*? Is this relation merely

causal, or rather is it constitutive (partly or fully[1])? If the answer is the latter, I'll say that Sam's experience is instance-involving.

Reductive strong representationalism is meant to be a view committed to a form of phenomenal externalism, according to which the phenomenal character of sensory experiences is constituted by the character of (non-conceptually or sensorially) represented sensible properties. On this view, physical duplicates being in the same state may differ in the phenomenal character of their respective experiences — if these somehow sensorially represent different sensible properties. According to representationalists,[2] the phenomenal character of a sensory experience doesn't supervene on the narrow physical constitution of the experiencing subject. Thus, the represented sensible properties are constitutive of phenomenal character. So, one would expect that a representationalist of this sort would answer the above question by saying that *b1* constitutes the phenomenal character of Sam's veridical visual experience — indeed they often say that the phenomenal character *is identical* to the represented content or feature. First, I will argue that this externalist claim about property *instances* cannot be true given what representationalists have to say about hallucinations. Second, I will show that sensible properties *qua universal* cannot constitute the phenomenal character either. My overall conclusion will be that phenomenal externalism is false, and that if representationalism entails such an externalism, it too is false. In conclusion, I'll offer an alternative picture that is (weakly) representationalist but internalist and naturalist.

1 The role of property instances

Suppose, at the end of the five seconds, God intervenes and takes over the causal route stimulating Sam's brain in such a way that Sam doesn't notice anything when God removes Tom. It's a smooth transition. Sam is now having a subjectively indistinguishable hallucinatory experience, HE1, as of a blue and round ball in front of her. We can extend the thought experiment. Another five seconds pass and God puts a qualitatively identical but numerically distinct ball (call it, Bill) back in where Tom had been when Sam was looking at it and lets Bill take over the causal operation on Sam: Sam is now having a VE2 with another instantiation of *B, b2*. Another five seconds pass and God intervenes again in the same way, smoothly removes Bill while maintaining the neural activity in Sam associated with *B*. Sam is now having another hallucinatory experience, HE2. Finally, we can suppose that after another 5 seconds, God puts Tom back where it was twenty seconds ago and lets the causal stimulation be controlled by Tom again. Sam is now having another veridical experience, VE3, which makes her aware of *b1*. Sam has no clue about what is going on. (The following diagram may help.)

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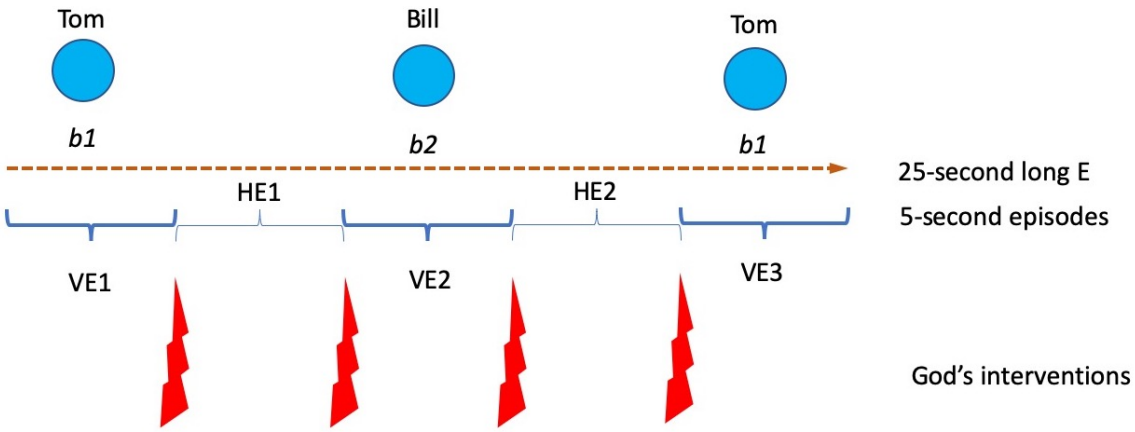
[1] Metaphysical constitution may be partial or whole. I'll omit this qualification from now on except when it matters — see below.

[2] From now on, when I talk about "representationalists" without qualification, I'll have in mind *reductive strong representationalists* in mind such as Dretske (1995) and Tye (2013, 2014), among others.



By stipulation, the phenomenal characters of these smoothly connected experiential episodes (VE1, HE1, VE2, HE2, VE3) are subjectively indistinguishable. Indeed, throughout 25 seconds, Sam falsely but justifiably believed that she was looking at a blue and round ball that remained identical. The Common Kind theorists in philosophy of perception think that the subjective indistinguishability in such cases is to be explained by the presence of positive phenomenology: VE1, HE1, VE2, HE2, VE3 all have the same phenomenal character. These five episodes share a common fundamental phenomenological or experiential kind. Representationalists accept the Common Kind Thesis.

According to representationalists, the phenomenal character of sensory experiences is exhaustively a matter of what sensible properties are represented in the experience, whether or not the experience is veridical. In our example, all the five sensory episodes represent *B* as instantiated, and it is this fact that determines the identity of the phenomenal character of Sam's experience during the 25 seconds she was intently looking at the "ball." This entire experience — call it *E* — is an experience that remains phenomenally identical throughout 25 seconds, where *b1, b2* are the instances causally related to *E* during the first, third and fifth 5-second periods (therefore making VE1, VE2, VE3 accurate), while *E* has no actual objects or instances during the second and fourth periods, which makes HE1 and HE2 hallucinatory. Thus, if *E* has the same phenomenal character throughout, this phenomenal character cannot constitutively involve *b1* and *b2*. So, if the veridicality of VE1 is what partly makes for Sam's awareness of *b1*, the phenomenal character of this awareness (VE1) cannot be constituted by *b1* — similarly with VE2 and VE3. VE1 is not in this way instance-involving. The relation of VE1 to *b1* is *only causal*. So, the phenomenal identity of *E* is not instance-involving at all. In fact, given the way the thought experiment is set up with "external" physical objects and mind-independent sensible properties, we can generalize: for Common Kind theorists who believe that subjectively indistinguishable veridical, illusory and hallucinatory experiences share a common positive phenomenal core,

even in cases where the experiences are veridical, the sensible property instances the subjects are aware of never constitute the phenomenal character of these experiences.

According to representationalists, what metaphysically fixes the identity of the phenomenology of *E* is this: *E* represents *B* (as instantiated)[3]. *E* is veridical when it is sustained by an appropriate causal/informational link to phenomenologically irrelevant instances of *B*, and non-veridical otherwise.

Generalizing, the situation is the same with *all* sensory experiences: their phenomenology is never constituted by the instances of the sensory properties or property-complexes they veridically represent (when they do). Veridical sensory experiences, according to representationalists, are not only not object-involving, but are also not instance-involving.

This result may come as a surprise to some.[4] For phenomenal externalism seems to demand that veridical sensory experiences are instance-involving. But recall the ease with which many representationalists claim that Sam is sensorially aware, *de re*, *of* a (locally uninstantiated) universal, *B*, while having HE1 and HE2.[5] This sounds mysterious and puzzling, but I'll assume that all they mean with this is that in hallucinatory experiences like HE1 and HE2 there is, in an obvious sense, still sensory representation: Sam's hallucinatory experiences still represent a (locally) uninstantiated sensible property complex, namely *B*, a universal — it just *misrepresents it as instantiated*.[6] It is this fact, according to representationalists, that determines the phenomenal character of the hallucinations — no property instances are ever involved. But given the Common Kind Thesis, this phenomenal character is also the *very same character* of the veridical episodes. Thus, even the veridical episodes don't involve instances of sensible properties as the constitutive determinants of the experiences' phenomenal character.

A different way to express the main point is this: whatever the phenomenal character of any sensory experience involves, it involves it *essentially*. But, given what representationalists say about hallucinatory experiences, property-instances are not *essentially* involved in the

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[3] Sensory experiences as of a sensible property *F* are always awareness of *F*-instances when veridical. The non-existence of *F*-instances is what makes *F*-experiences illusory or hallucinatory, i.e., non-veridical. So, *pace* Tye (2014), Sainsbury (2019) and Gottlieb & Rezaei (2021), sensory representation of sensible properties (when deployed in perception rather than, say, imagination) has always assertoric force, thus accuracy conditions.

[4] For instance, Pitt (2017) and Gow (2018) seem to write with the assumption that for representationalists property instances are phenomenology-constituting in veridical experiences.

[5] See, for instance, Tye (2015: 485, 2013: 51–52), Dretske (1999: 107).

[6] In my view, there cannot be a sensory awareness *of* a universal uninstantiated. The function of sensory awareness is to *detect* property instances in the physical (including, bodily) environment — see next section. There is no such thing, properly speaking, as detection of uninstantiated properties. I simply take this talk of sensory awareness of universals as expressing (PC) — see below.

constitution of phenomenal character of any experiences. Hence, no sensory experiences (veridical or not) are ever instance-involving.

2 Phenomenal character as the property '*representing P*'

But then we seem to have a puzzle. If the phenomenal character of an experience of a sensible property *P* is never constituted by the instances of *P*, in what sense is it constituted by the property *P* (*qua* universal)? Indeed, what does it mean to say that the phenomenal character is constituted by *P* but not by its instances? For surely, as pointed out at the start, phenomenal externalism requires that sensible properties themselves are constitutive of the phenomenal character of sensory experiences that represent them. Representationalists keep telling us that it is the represent*ed* properties that constitute the phenomenal character. If it is not their instances, what is it for the sensible properties *qua* universals to constitute sensory phenomenology? It seems to me that the only plausible thing to say at this juncture is this:

> (PC) The phenomenal character of a token sensory experience, *s*, as of a sensible property *P* at time *t* is constituted by the fact that *s* possesses the intentional property of sensorially *representing P* (as instantiated) at *t* — whether or not *s* is veridical.

One might think that the sense in which such a view is phenomenal externalist is that *P* is a property that can be instantiated only by external physical (mind-independent) objects. But there is more to this claim as we will see in a moment. So, no instances of *P* are ever constitutive of sensory experiences as of *P*. All that is needed for a sensory state, *s*, to have the relevant phenomenal character at a time is that *s* be representing *P* (as instantiated) at that time — that is, *s* have the property at *t* of *representing P*. Veridicality, but not the phenomenal character, of *s* comes with the causation of *s* by an appropriately related *instance* of *P*. We may even say that *s* is what makes the subject sensorially *aware of* the relevant instance of *P* when *s* is veridical, i.e., appropriately caused. But the phenomenal character of *s* is not constituted by the relevant P-instance. Representationalists may point out that in veridical cases the subject is aware of the properties themselves *as well as their instances*. But again, the point is that the *phenomenal character* of such sensory awarenesses is *solely* due to the relevant states' *representing* the sensible properties *qua* universals — not due to the particular instances that are merely causally involved in the awareness. This much seems clear given what representationalists say about hallucination and their acceptance of the Common Core thesis.

Note that, if I'm right so far, the phenomenal character of a sensory experience as of *P*, *is* a property *of* the experience: it is the property of sensorially *representing P*. Having *this* property is what metaphysically constitutes the phenomenal character of a sensory experience as of *P*. In whatever sense we have introspective access to the phenomenal

character of such an experience, it is to this property (*representing P*) that we have access, not just to the property, *P*.

Representationalists sometimes also say things like this:

> (PC!) The phenomenal character of a token sensory experience, *s*, as of a sensible property *P* at *t* is constituted wholly by *P* (the represented universal) — or, *is* just P!

It is completely obscure how to make sense of such claims. Suppose the sensible property in question is an instance (b_{16}) of a particular shade of blue (B_{16}) that Sam is aware of during VE1. According to representationalists, this property, B_{16}, is a physical surface property, say, a certain set of surface spectral reflectances, SSR_{B16}. Whether or not Sam is hallucinating during *E*, representationalists claim that the phenomenal character of Sam's (colour) experience remains identical. But if SSR_{B16} *is* the phenomenal character of *E*, it would of course be completely unsurprising that this physical property (*qua* universal) has been self-identical and remaining identical — whatever that means. But of course! Nobody would take this claim to be making a philosophically controversial or even interesting point. Therefore, when representationalists make claims of this sort (PC!), we will interpret them as meaning (PC).

Our next task, then, is to understand what sorts of facts constitute a state's representing *P* (even when *P* is not locally instantiated)? But it would be useful to summarize our discussion so far and draw some lessons before we do that. The most important point to keep in mind is that the phenomenal character of even normal veridical experiences of sensible properties *P* is not constituted by the instances of *P*. The instances are causally/informationally implicated in generating these experiences, and therefore, in this *causal* sense, they determine what experiences with what phenomenal character to be tokened. But the phenomenal character itself is metaphysically constituted by a property that doesn't involve the instances of *P*. The phenomenal character of an experience as of *P* is metaphysically constituted by the experience's having the property of *representing P*, according to representationalists. The instantiation of this intentional property (representing *P*) by a sensory state doesn't metaphysically require the simultaneous existence of any *P*-instances anywhere. Indeed, when Sam is aware of *b1* during VE1, the phenomenal character of her visual experience has, constitutively, nothing to do with *b1* (or, for that matter, with *B qua* being wholly present in *b1*).

Given that Sam is a *bona fide* member of human species, her internal physical/functional constitution is metaphysically sufficient to instantiate sensory states representing *B*, whether or not there are any instances of it around. To this extent, then, Sam's internal constitution is metaphysically sufficient for her to have experiences with the phenomenal character that is here identified with *representing B*. Without any further externalist account of what the possession of this intentional property comes to, we don't yet have a phenomenal externalist position.

3 Naturalistic psychosemantics for '*representing P*'

The project now is to understand how externalism may arise out of the representationalist account of intentional facts. For reductive or naturalist representationalists, the intentional facts (i.e., the possession of the property of *representing P* by sensory states) concern some combination of facts about causal co-variation, indication, teleological function, tracking, etc. For our purposes, a simplified Dretskean version will suffice (Dretske 1995: 14ff):

> (a) The sensory state token *s* has the phenomenal character it has in virtue of the fact that it *systemically represents P*.
>
> (b) *s* systemically represents *P* in virtue of the fact that it's a token of a state type *S* whose function is to indicate (track, carry information about) instances of *P*.

Thus:

> (c) *s* has the phenomenal character it has in virtue of the fact that it's a token of a state type *S* whose function is to indicate (track, carry information about) instances of *P*.[7]

The indication function here is entirely causal/nomological with a certain historical selection condition (depending on how one understands the notion of function involved).[8] Given that the indication function isn't sufficient to make *P*-instances *constitutive* of phenomenal character of *S* tokens *now*, we can ask: is there any reason to think that tokens of *S* have had their phenomenal character constituted by *P*-instances in the evolutionary history during which the state type *S* was selected because its tokens regularly indicated instances of *P*? The answer clearly is *No*. Information transmission works, roughly, by there being a lawful causal correlation between instantiations of two properties, *P* and *S*: when the channel conditions are right, (only) *P*-instances causally determine *S*-tokens. That, then, constitutes *S*-token's indicating a *P*-instance. If any *S*-token throughout the selection process, happened to have phenomenal character, this character wasn't constituted by the *P*-instance that caused it in the circumstance. Recall, as per (c), phenomenal character is constituted only by a state-token's belonging to state type whose function is to indicate P-instances. This type wasn't there, to begin with, in the selection stage.

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[7] More is required here for the emergence of phenomenal character such as the fact that the state type needs to have certain format constraints (e.g., non-conceptual, imagistic, analog, etc.). In particular, the sensory representation types, the *S*'s, need to belong to a sensory *system,* $\mathfrak{S}$, whose state types are systematically inter-defined according to a multi-dimensional discriminability space. And this whole system needs to be coupled to a certain kind of cognitive architecture with conceptual and conative states that extract information for further processing and behavior. I will ignore these sorts of complication and assume that whatever else is needed is in place. I'll sometimes call these 'background' conditions for the emergence of phenomenal character.

[8] Tye gives the following formula: "a sensory state is about a property, *P*, just in case the state is of a type that is Normally tokened if and only if *P* is tokened and because *P* is tokened." (2014, fn.20)

According to representationalists, then, external objects and sensible property instances *never* metaphysically constitute the phenomenal character of sensory experiences.[9] Rather the phenomenal character is constituted by what sorts of state types get to be causally tokened. What is constitutive for the token experiences to have the phenomenal character they do is that they belong to a *state type* whose tokens are under the nomic control of property instances that they track under Normal conditions. In other words, the phenomenal character of token experiences is inherited from the *type* they belong to, not from the property instances these tokens purport to indicate. This state type is a functional type whose tokens purport to indicate and are the realizers of the experiences that represent sensible properties — thus constituting their phenomenal character.

Let me clarify a point about the *causal* determination of phenomenal character. There is of course a clear sense in which the phenomenal character of Sam's experience VE1 was determined by *what* he saw, namely an instance of blue. I argued that this determination was *causal* rather than constitutive. Causal determination of this sort is more like the causal selection of a sensory state from among a system ($\mathcal{S}$) of states already possessing different phenomenal characters — as per (c) above. For instance, if the ball Sam saw were red, instead of blue, VE1 would have a different phenomenal character. Not because the particular instance of red Sam saw would metaphysically constitute the phenomenal character of Sam's visual experience, but rather by causally activating a token of a different sensory state type in Sam's $\mathcal{S}$ that has the function of indicating instances of red.

This kind of causal determination is not relevant to phenomenal externalism that representationalists usually have in mind. What they need to defend is externalism of the constitutive kind. Above we've determined that the most plausible version of the claim that phenomenal character is constituted by "external" universals is given by (PC). And (c) is one way to cash out (PC) in completely naturalistic terms — in terms of Dretskean indication functions.[10] Does it deliver what is needed? I will argue in what follows that it doesn't.

But before I do that, I would like to pause and reflect on the following conditional claim for a moment:

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[9] Compare the robust phenomenal externalism of disjunctivist naïve realists. The phenomenal character of sensory experiences, in the good cases, is metaphysically constituted by physical objects and the mind-independent properties instantiated by these objects (plus perspectives, etc., perhaps). See, among others, Campbell (2002), Martin (2004), Brewer (2011).

[10] I won't bother to try out other naturalist proposals like Tye's or Millikan's. Differences in these proposals won't make a difference in my argument in what follows. Also, although I'm very sympathetic to a Dretskean psychosemantics (see Aydede & Güzeldere 2005), I won't assume here that these sorts of proposals can naturalize perceptual intentionality.

(C) For any sensory experience *s* and any sensible property *P*, and any time *t*, if the phenomenal character of *s* representing *P* at *t* at is never metaphysically constituted by the instances of *P*, then it is not (partly or wholly) constituted at *t* by the uninstantiated universal *P* itself either.

I have argued for the antecedent of this claim so far. In section §5 below, I will argue directly for the consequent. But it is natural to consider why this conditional looks to be very plausible at this point. The phenomenal character of any sensory experience is an episodic and categorical property of the experience that belongs to the "here-and-now" during the experience's occurrence. As such, this character is itself an instance of a certain phenomenal type. Properties (universals) have their causal powers in virtue of their instances that enact them in actual causal processes that surround us. What Sam's VE1 — as a *token* instantiating a phenomenal type during the first five seconds — indicates is an instance of *B*, namely *b1*. But, it turns out, *b1* has constitutionally nothing to do with the phenomenal type of which VE1 is an instance. How is this *actual phenomenal instance* then supposed to be (partly or wholly) *constituted* by an uninstantiated (un-instanced) universal? The mind boggles.

To say that the phenomenal character of Sam's VE1 is constituted by a token sensory representation of *B* but not by the instance indicated, namely *b1*, is to say something that phenomenal internalists may easily accept. This is because, for them, either (i) sensory representation of *B* is an internal affair or (ii) phenomenal character is not constituted (merely) by representation. So, an externalist representationalist must demonstrate how sensory representation can *both* be an external/relational affair *and* constitute actual phenomenal character while at the same time making sensible property instances metaphysically irrelevant to phenomenology altogether. This seems an unlikely project. Representationalists claim that the phenomenal character of sensory experiences as of *B* is constituted by the sensory representation of *B* but never by the detection of B-instances. Strong representationalists promote their agenda by claiming that it has the most promise of naturalizing phenomenal consciousness: it is therefore a mystery-reduction enterprise. So, they need to deny (C) without multiplying mysteries, and it is not clear how to do this given the enormous initial plausibility of (C). If (C) is true, then actually establishing its consequence independently is not needed and I can stop the paper here. But it is instructive to see how it can be established independently.

4 The alleged phenomenal externalism

Representationalists typically argue for their case in the following way. VE1 is a brain state, a certain activation of a set of neurons in the relevant circuitries implementing the quality spaces in color and shape detection. For ease of exposition, let's just concentrate on color and ignore the shape. Let $\mathcal{S}$ be Sam's *color* visual system whose different state types, S_i, implement the relevant neural activations in her visual pathways and cortex — these activations corresponding to registering different specific shades of colors. In

particular, let S_{UB} be the state *type* belonging to $\mathcal{S}$ that has the systemic function of indicating instances of unique blue (UB, the universal). We can say, then, the token state, s_{UB}, is the realizer of Sam's *color* experience *e* (say, during the first 5 seconds) indicating UB, the instance of UB had by Tom.[11] A representationalist can say that even if the phenomenal character of *e* is not instance-involving (hence not constituted by UB), it does involve UB — it systemically represents UB in virtue of having the function to indicate instances of UB. So, UB is what partially but essentially individuates S_{UB} of which s_{UB} is a token.

S_{UB}, the realizer of the experience type of which *e* is a token, is a state type whose historically relevant tokens got selected because they have indicated UB-instances. Although these indication relations have all consisted of particular causal interactions between the tokens of UB and S_{UB}, the result was that S_{UB} acquired the function of indicating UB-instances, thus the power of representing UB (as instantiated) — veridically or not.[12] The individuation of S_{UB} (in fact the whole $\mathcal{S}$) thus essentially adverts to the historical and causal interactions with UB through its instances. This is what systemic representation comes to. *e*'s veridically representing UB/UB is therefore an essentially relational property of *e*. Indeed, in the original example, *E*'s systemically representing *B* (thus its having the same phenomenal character during 25 seconds) is a relational property of *E*. A representationalist would then conclude: change the relation, thus the type-identity of the token state, as per (c) above, you change the representational content of *E*, and therefore its phenomenal character: thus, you change the experience type of which *E* is a token. You've got your phenomenal externalism of the constitutive kind.

Before arguing against this, let me say a few things about Sam's $\mathcal{S}$: Well, it is *Sam's* color perception system. So, *it* doesn't have any historically relevant tokens that contributed to its own selection and passing its blueprint to Sam's descendants. Rather, $\mathcal{S}$ belongs to a type of system $\mathfrak{S}$ that is phylogenetically fixed for the human species. The only known way of phylogenetic development of sensory systems is at the biological level — at the level of the mechanics of biological inheritance (involving DNA replication and expression). At this level, $\mathfrak{S}$ has a fairly robust neurophysiological description whose "system-level analysis", as engineers call it, can be given at the neurofunctional level. So, if representing a sensible property like B_{16} is a relation, it is a relation with two relata: UB and S_{UB} *qua a neurofunctional state type belonging to* $\mathfrak{S}$. Therefore, the state types of Sam's $\mathcal{S}$ acquire their relational character by being of the same neurofunctional system type as $\mathfrak{S}$ — or whatever the descriptive level required by the transmission of a phylogenetic trait may be.

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[11] This is partial realization given that VE1 involves representing other properties. But ignore this for the moment. We'll concentrate on the simpler color case.

[12] It's highly unlikely that it is the individual state types, independently of others, that acquired the function of indicating specific sensible properties. Rather, it is the system type $\mathfrak{S}$ as a whole, whose states are interdependent, that acquired the function of indicating a *range* of sensible properties within a certain stimulus domain.

𝕊 had had millions of more tokens after it'd acquired its function — let's idealized away all the messy variations in this phylogenetic process (we don't have any good account of when the acquisition process is considered over or why it cannot change later). In almost all these cases, the internal constitution of people with 𝕊 who are in S_{UB} metaphysically suffices for them to have a sensory experience with the attendant relevant phenomenal character — whether or not they are veridical. This is not argument against relational individuation of phenomenal character yet, but it's important to keep in mind the robust neurofunctional character of the system.

5 "Shifted" phenomenal character

Scenario 1. Now consider Kim, who is a contemporary of Sam and roughly of the same age. Both are considered to have "normal" color vision. But Kim's colour phenomenal space, although the same as Sam's, responds to a systematically shifted color (hue) spectrum. For instance, the tokens of Kim's S_{UB} are under the nomic control of instances of PB — a slightly but noticeably reddish (purplish) shade of blue. So, Kim's tokens of S_{UB} regularly indicate instances of PB — not UB.[13] What is the phenomenal character of Kim's S_{UB} states? Are they of the same kind as those of Sam's? For a representationalist, the answer depends on whether they are both *representing* the same color property or not. For instance, it may be that Kim is systematically misrepresenting the colors that she sees — she may be systematically misrepresenting an instance of PB as UB (and similarly for the rest of the shifted spectrum). This could be for a variety of reasons. For instance, if, due to a genetic fault, the pigments in her cones have slightly different compositions so their response curves are slightly different, or maybe her eye lenses are filtering some lights due to degeneration or deformation from birth, etc. If this were so, even though the states of her 𝕊 have the same indication function (thus the same representational contents) as that of Sam's, they regularly would fail to perform their function successfully resulting in systematic misrepresentation. In other words, we may think of Kim's 𝕊 not fulfilling its function in the way it was selected for. Kim's 𝕊 may be an anomaly. In such a scenario, Sam's and Kim's experiences realized by S_{UB} would have the same phenomenal character despite their systematically seeing different shades of colour (Kim seeing instances of PB and Sam seeing instances of UB). Of course, it is very likely that, given how widespread the shifted spectrum cases actually are among the normally color sighted people, both Sam and Kim may be systematically misrepresenting colors all the time. No problem so far.

Scenario 2. But let's modify the example slightly. Let's assume that Kim's color vision is not an isolated case. Rather it's the *function* of Kim's S_{UB} states to indicate instances of PB and similarly it is the function of her visual system to respond to the light spectrum in this "shifted" way. So, we are assuming that Kim's visual system came to be where it is now due to an evolutionary process that selected for it. Now there is a question about whether to

[13] Not only that, but almost all her hue circle is shifted slightly compared to Sam's stimuli giving rise to same color experiences. We don't need to assume that the degree of shift is even or thoroughly systematic. There are plenty of actual cases like that.

count Kim's visual system as of the $\mathfrak{S}$ kind. The issue here concerns how narrowly or broadly we should individuate $\mathfrak{S}$. Visual color processing starts with photons hitting the cones and its later stages involve whatever neural circuitry (including opponent processes running through LGN and various parts visual cortex) implements the final discrimination behavior that underlies the color quality space — sometimes known as the three-dimensional color solid. The processing in the cones as well as the retinal and early post-retinal processing may be manipulated without massif differences resulting in the implementation mechanisms of the color quality space. There is no reason to think that among the normally sighted but shifted color spectrum cases people have different color quality spaces. I will just stipulate that $\mathfrak{S}$ be individuated without including these very early processes. It is an empirically plausible assumption that most people with "shifted color qualia" share the same color quality space implemented in more or less neurofunctionally type-identical neural structures. If we individuate $\mathfrak{S}$ this way, then our assumption about Kim amounts to the assumption that Kim belongs to a group of community whose $\mathfrak{S}$-state types have evolved to acquire a different indication function due to some differences in their environment and in their early (pre-LGN) neural processing.[14] So, for instance, while Kim's $\mathfrak{S}(S_{UB})$ has the function to indicate instances of PB, Sam's $\mathfrak{S}(S_{UB})$ has the function to indicate instances of UB. The result is that the two tokens of the same neurofunctionally identified state type $\mathfrak{S}(S_{UB})$ sensorially represent different colors for Kim and Sam.

Now we have reached the kind of phenomenal externalism that representationalists have in mind — the constitutive kind. In this last scenario, Sam and Kim share a neurofunctionally identified $\mathfrak{S}$ whose type-identical states, S_i, represent different colors in Sam and Kim. When Sam looks at the ball, being in $\mathfrak{S}(S_{UB})$ she is veridically seeing an instance of UB. When Kim looks at another ball that is blue$_5$, being also in $\mathfrak{S}(S_{UB})$, she is veridically seeing an instance of that color (PB). Representationalism delivers the result that the phenomenal character of Sam's and Kim's experiences is of different kinds because they represent different color properties (*qua* universals). Thus, despite their neurofunctional type-identity, the phenomenal character of Sam's and Kim's experiences is constituted by different color universals — different sensible properties that are instantiated only by "external" mind-independent entities. We can even think of Sam and Kim sharing all their narrow internal constitution relevant for conscious color processing. Representationalists claim that Sam's and Kim's experiences despite being realized by the same internal physical state — $\mathfrak{S}(S_{UB})$ — have different color phenomenology because they represent different colors. This claim, we have already seen, doesn't entail that the *instances* of these colors, PB and UB, are metaphysically relevant to the constitution of the phenomenal character of their respective experiences. The role the color instances play is merely the causal generation of their respective $\mathfrak{S}(S_{UB})$-tokens that nevertheless differ in their phenomenal

[14] In order for this work, we'll probably need to assume that the communities Sam and Kim belong to have been relatively isolated from each other throughout the evolutionary process — or at least they haven't mixed their lineages much. For the thought experiment to work, all that is needed is the metaphysical possibility that the states of $\mathfrak{S}$ may have acquired distinct indication functions (indicating slightly different spectra) in two different phylogenetic lineages.

character. Similarly, when Sam and Kim look at the same UB ball they have experiences with the same phenomenal character despite the fact that they occupy different states of $\mathfrak{S}$.

Note the difference in the phenomenal character of Kim's experience in the two scenarios when she is looking at the PB ball. In both cases she is in the same physical/functional state — $\mathfrak{S}(S_{UB})$. But the phenomenal character of her experience in the first scenario (when she misrepresents an instance of PB as UB) is different from the phenomenal character of her experience in the second scenario when she veridically represents PB as PB. This is striking. In fact, with some minor adjustments, we can conceive of the two scenarios as involving the same physical *personal* history of Kim with identical internal constitution. Depending on how we conceive of Kim's *evolutionary* history (selection history of her ancestors), therefore, we get *different* phenomenal characters in the counterfactual scenarios despite the type-identity of Kim's internal physical constitution in both.

If you are one of those who think that the phenomenal character of sensory experiences is episodic, categorical, and essentially belongs to the *here-and-now*, you are likely to balk at the representationalist conclusion that Kim's experience differs in its phenomenal character from Sam's, or that Kim's experiences in the two scenarios have different phenomenal character — especially given that no property instances are ever constitutive of phenomenal character.

But we can do better than just having an incredulous look.[15] Let's examine how they will behave when we start testing their color vision under carefully setup laboratory conditions. Suppose we ask Sam to pick a color chip from a bunch of others that she sees as a unique blue (a shade of blue not at all reddish and not at all greenish). We then invite Kim to look at the same chip under the same viewing conditions. We know that when Kim visually experiences the chip, she occupies a state of $\mathfrak{S}$ different than the state Sam occupies. Representationalists would have us believe that Sam and Kim looking at this chip would represent the color of the chip accurately and therefore would have the same phenomenal character. But it would border on the absurd if we refuse to take Kim's report about her phenomenology seriously when she sincerely claims that this chip looks slightly purplish blue, not unique blue. Thus, contrary to the prediction by representationalists, Sam's and Kim's experiences have different phenomenal character despite their both representing the color of the same chip correctly. But then phenomenal externalism of the kind representationalists have had in mind is refuted. The kind of relational individuation of $\mathfrak{S}$'s states does not assign the correct phenomenal character to them. It looks like the

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[15] What follows is a variation of an argument given by Pautz (2006). Pautz doesn't cast his argument in terms of actual shifted spectrum cases. He rather uses a counterfactual scenario in which twin-Maxwell's visual system naturalistically represents the same colors as Maxwell's and yet they differ in phenomenology. Pautz heavily relies on the hypothesized Opponent-Process mechanism of color vision against which there is an increasing experimental literature (see Arstila 2017 for discussion and references). I don't rely on this hypothesis. My assumptions for the actual "shifted-spectrum" cases seem less expensive: all I need are two hard-to-deny assumptions — see below. Nevertheless, the arguments are, no doubt, very similar.

neurofunctional type-identity of $\mathfrak{S}(S_i)$ will trump the relational individuation any time the two schemes come apart.

The structure of the above argument is simple. Two actual "normal" perceivers, Sam and Kim, one having slightly shifted color spectrum relative to the other, are looking at the same chip that instantiates a color property, *C*. Their color experiences represent the color of the chip *accurately*. If the phenomenal character of their respective color experiences were constituted by the color properties (qua universals) they represent, then the phenomenal character of their experiences would be constituted by *C*. So representationalism implies that their experiences have identical phenomenal character. But this implication is falsified by the fact that the phenomenal character of their experiences differs as revealed by Kim's report. We arrive at this conclusion by making two very plausible assumptions. First, in many actual shifted spectrum cases, like in Sam and Kim, the color quality space is roughly the same and implemented by same or similar (more centrally located) neural structures (whatever they are). Second, it is *metaphysically* possible for people with shifted spectrum to have slightly different evolutionary histories so that whatever the naturalistic psychosemantics are needed for errorless representation, they are in place in Sam and Kim.

As far as I can tell, there are two broad venues for reductive strong representationalists to resist this conclusion. One is to insist on the impossibility of the second scenario involving Kim, saying that there can at most be one evolutionary development of human color system that sets the correctness conditions of color experiences. There are plenty of actual individuals living among us with shifted color spectrum.[16] The representationalist ought to claim that none of their kinds (except one, perhaps) could have acquired their shifted color vision through a relatively independent evolutionary process that selected for it. But the modal strength of this claim seems empirical, not metaphysical. Representationalists need to establish this claim as a metaphysical necessity. I don't see how that can be done. In fact, for all we know, it wouldn't be too surprising if it turns out that this claim is in fact *empirically* false. The claim that some people could have acquired their shifted color spectrum through a relatively independent evolutionary process that selected for it is clearly *nomologically possible*, although for contingent factors it may be empirically very unlikely. We just don't know.

The second venue of resistance may come from a suggestion made by Byrne and Hilbert (1997). They claim that the chip is simultaneously and objectively both unique blue and purplish blue. According to Byrne and Hilbert, representable maximally specific shades of colors are sets of surface spectral reflectances (SSRs) and these sets intersect. So, a *particular* SSR can be a member of two or more different such sets. In our case, it can be that the chip that both Sam and Kim are looking at (under the same viewing conditions) happens to have a particular SSR that belongs to both sets to be identified with unique blue

[16] Hardin (1993: 79–80), Kuehni (2004).

and purplish blue (specific hue shades of certain brightness and saturation — call these SSR_{UB} and SSR_{PB} respectively). What determines the set membership for each shade? The intended answer is: normal perceivers in a species where we know there are variations (such as visual shifted color spectra). The rough and a bit idealized procedure would look something like this: let each normal perceiver pick the chip they consider to be unique blue under the same viewing conditions (let's say, out of 40 visually equidistant Munsell hue chips with same brightness and saturation level — see Figure below). This would amount to about seven consecutive chips (7.5PB to 5B inclusive). So, take the set of SSR_{UB} to consist of all and only those particular SSRs that are the metamers of the SSRs of these seven chips. Next, let each perceiver pick the chip they consider slightly purplish blue (by asking them, let's say, to pick what they consider to contain 25% red). It is a reasonable guess that this would give us around seven chips (let's stipulate for the sake of the example that the range is from 10B to 5P). Then the set for SSR_{PB} would consist of all and only those particular SSRs that are metameric matches of these chips. We can follow this procedure for more or less each discriminable shade around the hue circle. This would create sets that significantly intersect with each other. Most any surfaces would then literally have more than one color simultaneously — in most cases, quite a few, depending on the empirical details and the initial stipulation about who counts as normal perceivers.

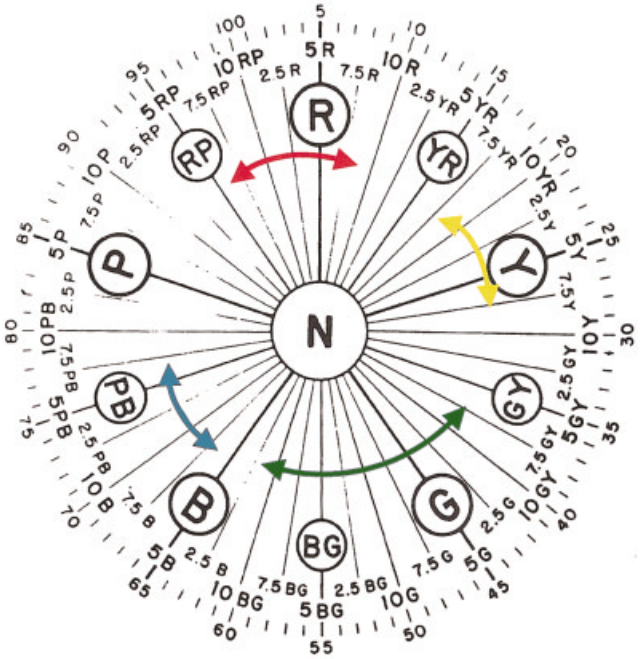

FIGURE. Munsell system perceptual chromatic diagram with inner circle segments (coloured double-arrows) indicating the approximate unique hue ranges among normal perceivers based on viewing color chip ranges. (Kuehni 2004)

Intuitively, the idea is to let the specific phenomenal character of a shade of color for each normal perceiver *select* the range of SSRs that will then constitute the set to be identified

with that color shade, so that the phenomenology doesn't come apart from the represented color (= SSR set). When the selection is found out empirically on the basis of "normal perceivers" of a species (say, by letting them pick Munsell chips), the SSR sets to be identified with specific colors heavily overlap. How much overlap there is is contingent on how much variation exists among normal perceivers. This process can be narrowed down by putting restrictions on the range of "normal perceivers" to allow for misrepresentations. But it is highly doubtful that there is any principled way of doing that.

Representationalists who take this road are now committed to a claim that they would otherwise be very happy not to take on board: objects turn out to have more than one color simultaneously and most of these colors are not visible to many normal perceivers. One might be tempted to tolerate the proliferation of a few simultaneous colors when they are *very* close to each other. But note that 5B is both unique blue and almost unique green, this is because some normal perceivers pick it as almost unique green and some pick it as unique blue — so 5B's SSR belongs to multiple sets. There is a big phenomenal difference between seeing unique blue and unique green.[17] If I turn out to see 5B accurately as unique green, I'm invited to agree by representationalists that 5B *is* also unique blue simultaneously — it's just that I can't see the other color (in fact many other colors it also has). This seems to me to be an intolerable consequence of this sort of representationalist response to the criticism that color universals can't enter into the constitution of color phenomenology. This "selectionist" response is radically at odds with some of our most fundamental beliefs about colors: that, for instance, an object's surface cannot be both unique blue and unique green at the same time under the same conditions. Saying that only one color can be seen by a single perceiver doesn't remove the paradoxical nature of the claim. If phenomenal character is constituted by the objective colors we see, then our grasp of the nature of colors must be fairly direct. On the basis of the grasp we have, here is another fact we seem to know: that there cannot be colors that I can sensorially represent but can't see them on many occasions even under optimal conditions. Denying these intuitively evident truths is a hard bullet to bite.

But more importantly, this particular selectionist proposal is completely *ad hoc* and not workable. To see this, let us ask why I can't see the other colors that 5B has. According to representationalists, what colors I can see is a matter of what colors I can sensorially represent. Being a normal perceiver, I can actually represent all the discriminable colors — so I can experience them all, and so can you. When I look at 5B, the phenomenal character of my seeing unique green is constituted by my experience's representing this color property. What is this color property according to the representationalist? Under the current proposal, it is the set of all and only those SSRs that would strike (most) normal observers (including me) as unique green (UG). Because there are huge variations among normal perceivers, this set will include a huge number of SSRs that will not strike *me* as

[17] In fact, Kuehni (2004) reports that when spectral lights (instead of Munsell chips) are used, the range of unique blue covers some lights that are seen by others as unique green. In what follows, I'll just set up the example for convenience as a case where 5B can be seen as UB as well as UG by different normal perceivers.

unique green — some of these may strike me as almost unique blue, let's say. Similarly, when you look at 5B, you'll accurately see it as, say, unique blue. This is because 5B is also unique blue, that is, its particular SSR is a member of the set of SSRs identified as unique blue (UB) by (most) normal perceivers.

Consider now the chip titled 5PB. This chip looks unique blue to me, because let's say, it indeed is (following the suggestion made by Byrne and Hilbert). The particular SSR of this chip (SSR_{5PB})[18] belongs to the set identified with *this* shade (UB). But this very chip SSR_{5PB} will look to you accurately, let's say, as purplish blue, because it also belongs to the SSR set identified with *this* slightly reddish (purplish) blue (PB).

The phenomenal character of my visual experience is constituted by UG when I look at 5B, because the neural state type S_{myUG} that my visual system $\boldsymbol{S}_{me}$ is in, as a result of causal interaction with SSR_{5B}, represents UG. The phenomenal character of your visual experience, on the other hand, is constituted by UB when you look at the very same chip 5B, because the neural state type S_{yourUB} that your visual system $\boldsymbol{S}_{you}$ is in, as a result of causal interaction with SSR_{5B}, represents UB. 5B is indeed both UG and UB (and many other nearby colors). If you and I belong to the same species with the same evolutionary history, the system of representation $\boldsymbol{S}_{you}$ realizing the color quality space in you and the one $\boldsymbol{S}_{me}$ realizing mine are tokens of the same system type $\mathfrak{S}$ that has been selected for its function. $\mathfrak{S}$ is what characterizes the relata of the representational relations (between the particular state S_{UB} you are in and UB on the one hand, and between the particular state S_{UG} I am in and UG on the other). As before, the consequence of assuming a phylogenetically sustained evolutionary selection history is that $\boldsymbol{S}_{you}$ and $\boldsymbol{S}_{me}$ are neurofunctionally type identical (more or less) and so are their particular state types, S_{yourUB} and S_{myUB}. So, we may as well talk of particular neural state type $\mathfrak{S}(S_{UB})$ representing UB and neural state type $\mathfrak{S}(S_{UG})$ representing UG among normal perceivers.

If SSR_{5B} is an instance of both UG and UB, we may ask: in virtue of what does your visual system select UB whereas mine select UG when we are causally interacting with the same SSR_{5B}? In other words, what makes it the case that SSR_{5B} causes *you* to enter the neural state $\mathfrak{S}(S_{UB})$ that has the function to indicate instances of UB, but causes *me* to enter a distinct state $\mathfrak{S}(S_{UG})$ with the function to indicate instances of UG? More perspicuously, what makes it the case that my situation is correctly described as accurately seeing the color of 5B (its being UG) rather than as failing to see other colors it has, say, its being UB — in other words, as a case where my particular $\mathfrak{S}(S_{UB})$ fails to detect the color of this chip (i.e., its being UB)? Is there a principled answer to this question that is also consistent with representationalists' preferred psychosemantics? I fail to think of any.

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[18] And its metamers — I'll omit this qualification in what follows. We can take SSR_{5BG} to name the metameric equivalence class. Similarly with the particular SSRs of other chips.

Note that when we both look at 5PB, I enter the state $\mathfrak{S}(S_{UB})$ that correctly represents UB, and you enter $\mathfrak{S}(S_{PB})$ that correctly represents purplish blue (PB). We both can represent UB, and when we do, we represent them with (more or less) the same neural state $\mathfrak{S}(S_{UB})$. But you and I cannot see the same color when we both look at the same chip (token object). The other colors of this chip magically become invisible to us — we fail to detect them. (Of course, I know the phenomenal character of your color experience when you look at 5B, which is different than mine when I look at 5B — assuming I've been in state $\mathfrak{S}(S_{UB})$ before.) So, our respective systems (tokens of $\mathfrak{S}$) fail to deliver full information by detecting at most one color among the many colors that an arbitrary object usually has. On anybody's story, this would be a failure rather than a success story about the function of our color systems. How could such a system manage to have evolved in our species?

The move to proliferate colors that an object can have simultaneously was an attempt to make sure that phenomenal character and representational content (colors) don't come apart where it is implicitly acknowledged that phenomenal character goes along with neurofunctionally type-identified states that belong to $\mathfrak{S}$. The question then becomes what makes the case that each particular state $\mathfrak{S}(S_i)$ represents what it does. The answer is that each has the function to detect a set of SSRs. But these sets heavily intersect because not all the members of a set cause a normal perceiver to enter the same state of $\mathfrak{S}$ (≈ see the same color). Thus, this suggestion makes magic out of how each of us manages to see the color we end up seeing rather than failing to see other colors. The relations like 'sensorially *representing UB*' become very difficult to understand on any naturalistic psychosemantics.

I conclude that a Dretskean psychosemantics doesn't deliver the kind of phenomenal externalism for which the view has been advertised. As I said, I will generalize this conclusion, without argument, to all extant naturalistic proposals (versions of informational and/or teleological psychosemantics) about what it is a for a sensory state to *represent* a sensible property. This is because, it seems to me, whatever naturalistic conditions are required for sensory states to represent sensible properties, they can be met in such a way that not only metaphysically but also nomologically allows for errorless representations of a single shade of color with demonstrably different phenomenal characters, or for there being the same phenomenal character correctly representing different "shifted" colors.

6 Conclusion and an alternative internalist picture

So, we still don't have phenomenal externalism. This conclusion shouldn't be all that surprising. It is difficult to fathom a philosophical account of sensory perception that accepts the Common Kind Thesis and offers a truly phenomenal externalist position. Non-reductive representationalism has been uniformly phenomenal internalist. It would have been somewhat perplexing if reductive representationalism of the Dretskean sort had turned out to be phenomenal externalist. If you have sympathies for phenomenal externalism you should look at the naïve realist or disjunctivist camp — although I would not hold my breath for their ability to successfully deal with shifted spectrum cases either. For my

money, the overall conclusion to draw is that phenomenal externalism is just false. If reductive strong representationalism entails phenomenal externalism, then, it too is false. In fact, once it is realized that, for representationalists, instances of sensible properties we are sensorially aware of play no constitutive role (as opposed to a causal role) in determining the phenomenal character of our sensory awareness, the job of finding a constitutive role for a sensible property (*qua* universal, in terms of sensorially representing it) becomes somewhat obscure, and as they say, "academic." But a naturalistic story about how this intentional property (sensorially 'representing *P*') is acquired doesn't deliver a constitutive role for the universal either: Sam and Kim are related to the same shade (universal) when they look at the same chip and accurately represent its color but their experiences have different phenomenal character. Once the role of property instances is reduced to causal but not constitutive determination of phenomenal character, all the intuitions start crying out for an internal contribution to the metaphysical determination of color phenomenology. A naturalistic psychosemantics, as we have seen, doesn't change this at all. Phenomenology follows internal structure rather than external representation. (This is in fact the source of the temptation to proliferate simultaneous colors of objects.)

Note that the argument so far hasn't been against some form of intentionalism *per se* about sensory experience, or even against some naturalistic psychosemantics for such intentionalism. Rather it has been against the claim that (broad) representational content constitutes phenomenal character; more accurately, against the claim that the phenomenal character of a sensory experience *s* as of *P* is constituted by *s*'s 'representing *P*'. It is left open that *s* sensorially represents *P* while its *particular* phenomenology is constituted by internal structures functioning in the service of delivering information about *P*.

As an alternative, I offer the following picture, which is naturalist, intentionalist, but phenomenal internalist. Let's treat $\mathfrak{S}$ as before having internally interdependent state types, S_i, purporting to indicate instances of most determinate color shades along the axes of the color quality space. $\mathfrak{S}$ is a genetically transmitted and neurofunctionally specifiable system with an informational function (with an overall a functional/computational profile). I will just say that the particular states of $\mathfrak{S}$ — $\mathfrak{S}(S_i)$ — all *purport to indicate* instances of colors. This *general* fact (if it's a fact) may be necessary for *any* particular state to have *some* phenomenal character (with the background conditions in place). But what *particular* character they each will have may be (at least partly) internally determined at the level of engineering. And what instances of particular color shades each will purport to indicate may vary in different people having tokens of the same $\mathfrak{S}$ — whatever empirical accommodations are required to explain the widespread phenomenon of "shifted color qualia." We can think of each of the S_i as a sensory predicate belonging to a *system* of analog representations ($\mathfrak{S}$) — each attributing a specific shade of color to what is seen. These states would be the color predicates of a color representational system. In other words, the particular states of $\mathfrak{S}$ may be taken as parts of syntactically structured representational vehicles whose semantic values are assigned according to local laws and

whatever naturalistic psychosemantics is in place.[19] They would still have the job of indicating/representing colors, yes, but without this fact metaphysically determining the *particular* phenomenal characters each may have. But one can still maintain that sensory systems having an indication function for a range of magnitudes for sensible properties is a necessary condition for sensory phenomenology to arise. In the older jargon, in other words, one may allow for the possibility of inverted or shifted qualia without *ipso facto* allowing for the possibility of absent qualia. Such a view needs to elaborate what it is about informational functions and the way they are imbedded in a larger, richer, and more complex information processing architecture that allow them to reductively explain phenomenal character.[20,21]

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[19] See Aydede (2019, §6) for more of this sort of line.

[20] See Aydede & Güzeldere (2005) for a comprehensive attempt. Representationalists also typically accuse phenomenal internalists of violating perceptual transparency and of having implausible views about introspection. But these are relatively separate worries, and have satisfactory resolutions anyway: see Aydede (2019, 2020) for internalist explanations of transparency and introspection.

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