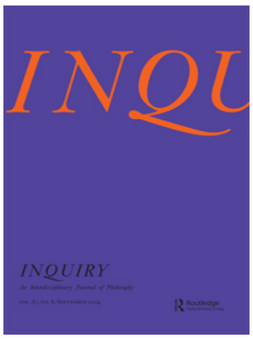

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Perception and illusion: replies to Sethi, Speaks and Cutter

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ABSTRACT
I reply to comments on my book *Perception* (Routledge 2021) by Umrao Sethi, Jeff Speaks and Brian Cutter. Sethi objects to my representational view of perception on the ground that that having an experience of a color or shape can enable you to know what that color or shape is like only if it is actually present in the experience. Speaks has a very interesting discussion of my puzzle of the laws of appearance for the representational view. And Cutter asks what I have against 'neural sense datum theory'. In my responses, I try to take the discussion forward. At the end, I develop a new argument against reductive physicalist theories of sensible qualities.

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KEYWORDS Perception; illusion; representation; laws of appearance

I thank Umrao Sethi, Jeff Speaks and Brian Cutter for their incisive and challenging comments on my book *Perception* (Routledge 2021). I think that they take the discussion forward.

Sethi raises some serious objections to my representational view of experience. She objects that having an experience of a color or shape can enable you to know what that color or shape is like only if it is actually 'present' in the experience. She also objects that the representational view cannot handle perceptual variation.

Speaks raises a question about my case for a 'Galilean' or 'illusionist' form of representationalism. He also has a very interesting discussion of a new puzzle I developed for representationalism, which I called 'the puzzle of laws of appearance'. One of his points is that it may be a puzzle for *every* theory of perceptual experience.

Cutter wonders whether my illusionist form of representationalism might imply that practically everything we believe about anything is

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false and it's the end of the world. He also asks why I reject the 'neural sense datum view', which I gave short shrift in the book.

So I have my work cut out for me. I will identify some issues where I am unsure what to say. In other places I will try to advance the discussion. For example, in response to Cutter's good question about what I have against 'neural sense datum view', I will briefly sketch a new argument against reductive physicalist views of sensible qualities.

1. Sethi's objections to representationalism about experience

1.1. Sethi's first objection

To illustrate Sethi's first objection to my representational view, let's consider a real-life example discussed in the book. Buddy Burmester has 'Charles Bonet Syndrome'. He has hallucinations are so vivid that he is often deceived. Here is a drawing he made of a purple flower he once hallucinated (Figure 1):

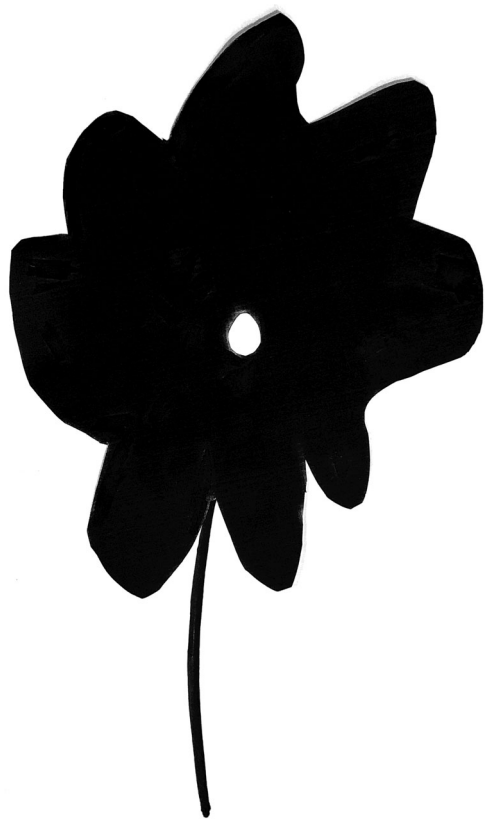

Figure 1. Buddy Burmester's drawing of the flower he hallucinated.

Let f_{17} be the apparent, irregular shape of the flower. And let *purple*$_{42}$ be its apparent color. Thanks to his hallucination, Buddy has a special kind of cognitive access to these properties. He can now have a belief that is true just in case something has determinate shape f_{17} and determinate color *purple*$_{42}$. And he knows what it would be like for something to have flower-shape f_{17} and color purple$_{42}$.

Sethi favors the following:

> **Actualism**. In order to explain the character of Buddy's hallucination, and how it can afford Buddy a kind of cognitive access to the properties *having shape* f_{17} and *having color purple*$_{42}$, we must suppose that he is acquainted with an actual object that has these properties.

This amounts to a 'sense datum' view of hallucination. So it is not surprising to find that in supporting Actualism Sethi appeals to the same kinds of intuitions that motivated early sense datum theorists like H. H. Price (1932, 3, 63). She says that 'it *seems* that sensory experience gives us access to properties in virtue of those properties actually being present in experience' (my italics), where 'a property can only be present in an experience via its instances' (compare Price 1932, 103). She adds that 'the actual presence of properties would also provide a straightforward, non-revisionary explanation of why properties seem present and instantiated in experience'.

The crux of Sethi's first objection to my representational view is that it is inconsistent with Actualism. On my representational view, when Buddy hallucinates, there need not be any actual object that has the flower-shape f_{17} or the color purple$_{42}$. It only *seems* to him that these properties are 'present'. In my view, this is enough for Buddy to gain cognitive access to the properties. Sethi says it is not enough: they must actually be present, in the sense Buddy must be acquainted with an instance of them.

What is my response? In the book, I said that I take Actualist intuitions seriously and I think that they count for something (30–31, 129–130). To that extent, I agree with Sethi. I even flirted with a new form of Actualism that I called 'sensa representationalism' (134–135).[1]

But in her comments Sethi neglects my argument against such Actualist intuitions (50–56, 107–108, 129–130):

1. If Actualism is true, then when Buddy hallucinates, there must exist an actual *non-physical sense datum* with the flower-shape f_{17} and the

[1]Pages references are to *Perception* (2021) unless otherwise noted.

color purple$_{42}$ that he experiences (because there is no such *physical* object in the vicinity).[2]

2. There are serious traditional problems with non-physical sense data. There are problems about their indeterminacy: if Buddy were to have a degraded, dream-like hallucination of a flower, how many petals does the sense datum have? And there are problems about where they might be located. Does Buddy's brain 'shoot out' the non-physical, flower-like sense datum into physical space?
3. So even if intuitions may provide some reason to accept Actualism, there are stronger reasons to reject it ('rebutting defeaters').

It is true that Buddy's hallucinatory experience affords him a special kind of cognitive access to the flower-shape f_{17} and the color purple$_{42}$ – this is just a pre-theoretical, empirical fact. But the above argument undermines Sethi's Actualist intuition that in order for this to be so he must be acquainted with an actual object that has flower-shape$_{17}$ and color purple$_{42}$. It is enough that these properties *seem* to be present to Buddy. That may be somewhat counterintuitive, but it is just something we must learn to live with.

So my reply to Sethi's objection to my representational view is that we should just reject her Actualist intuitions (and perhaps explain them away: 201–202). But even if we do not outright reject them, they cannot be the basis of a strong argument against representationalism, because there are serious reasons to doubt them.

Let me make two additional points about Sethi's discussion of Actualism.

First, although in her comments Sethi neglected my argument against Actualism, her other work makes it clear how she would respond. She accepts step 1: in cases of *illusion* and *hallucination*, she accepts non-physical sense data distinct from physical objects (2020, 589). (By contrast, in the perhaps rare cases of perfectly veridical perception, Sethi advocates a naïve realist view according to which the 'sense data' we experience are identical with physical objects themselves; she develops an ingenious and

[2]It may be thought that Sethi's Actualism does *not* imply that Buddy is related to a non-physical sense datum with flower-shape f_{17}, because she says that it is also consistent 'naïve realism' and the 'qualia view', which typically reject non-physical sense data in hallucination cases. But I think that it does imply a sense datum view of hallucination. The reason is that Buddy's hallucination affords him cognitive access to the flower-shape f_{17}. (As I discuss in the book, certain qualia theorists (86–87) and naïve realists (213–214) might reject this, but I think it is just an empirical fact – Buddy is an actual person.) Given Actualism, this requires that this shape is instantiated *at the time of his hallucination*. Since at this time there is no *physical* instance of shape f_{17} in the vicinity, the instance must be a non-physical sense datum. As I am about to discuss, Sethi herself accepts this implication.

highly original account of how this might be so.) So Sethi would presumably reject steps 2 and 3. She would presumably say that there are good answers to the traditional problems for non-physical sense data concerning their indeterminacy and location. But in her other work she does not address these problems. So it is unclear what her answers are. If Sethi came up with good answers to problems for non-physical sense data, I might be inclined to agree with her that we should reject representationalism and instead accept a form of Actualism positing non-physical sense data.[3] As I said, I feel the pull of Actualist intuitions, and I have an open mind on this issue (see my reply to Speaks in §2.2). But, in the absence of such answers, I think it is fair to continue to assess the case against Actualism as stronger than the intuitive argument for it.[4]

Second, Sethi suggests that, if we reject Actualism and accept the representational view, then we must accept that 'when experiencing an irregularly shaped flower, Buddy stands in [a perceptual relation] to the universal [flower-shape f_{17}]'. And she objects that 'it's not clear how one can ostend an uninstantiated universal in Platonic heaven'. She finds this counterintuitive.

I think that here Sethi is attributing to representationalists a claim that they do not need to accept. As I emphasized (129), it is possible to reject Actualism and accept the representational view, without believing in 'uninstantiated universals' at all. A representationalist could be a *nominalist* who altogether rejects the existence of properties or universals. True, they must use predicates like 'is purple' and 'is flower-shaped' to

[3] I would accept an 'across-the-board' form of the sense datum view according to which we always experience non-physical sense data distinct from physical objects, rather than Sethi's (2020) alternative view that we are aware of non-physical sense data only in nonveridical cases and in normal cases the sense data we experience are identical with physical objects themselves. This is because across-the-board sense datum view would be required by my rife illusion view about sensible qualities. In addition, I think that Sethi's alternative faces a Leibniz's law objection arising from 'seamless transitions' (2020, 607ff, especially footnote 39). And it faces the 'missing explanation problem' (Pautz 2011). For instance, if what olfactory sense data creatures evolved to experience are independent of the alleged objective olfactory qualities that were out there before they evolved, it is hard to explain why for all creatures they should normally coincide with those objective qualities.

[4] I think that, in the case of the experience of motion, Sethi herself may need to reject Actualism. Suppose Buddy hallucinates an orange *moving slowly to the right* (see also see Sethi 2020, 608, fn. 37). On her view, in this case, there is only a succession of *stationary* numerically distinct sense data at different places (or 'instances') – in her view, the sense data do not endure and move. Sethi suggested (in discussion) that the fact that it seems to Buddy that something is moving is explained by the fact that he experiences these momentary sense data. But there are many problems with such a 'snapshot' or 'cinematic' view of motion perception (Dainton 2023). So she is under pressure to hold that its seeming to Buddy that something is *moving* is a *sui generis* state that cannot be explained in actualist terms. But if one accepts such a non-actualist account of Buddy's hallucination of *movement*, then why not join representationalists in applying the same kind of non-actualist account to his hallucination of *color* and *shape*: it *seems* to him that an orange and round thing is there, but no such thing actually is there (no orange and round 'sense datum').

characterize how things seem to Buddy (how he 'experientially represents' things). But, as Quine emphasized, using predicates does not automatically commit one to universals. A *nominalist representationalist* will describe Buddy's situation like this: for Buddy to have his hallucinatory experience is for it to seem to him (for him to 'experientially represent') that something is flower-shaped and purple. (Here the nominalist representationalist will take 'Buddy experientially represents that … ' to be a *sentential* operator, rather than taking 'experientially represents' to refer to a relation between subjects and propositions.) Because it seems to him that something is flower-shaped and purple, Buddy can think that something is flower-shaped and purple, he can know what it is like for something to be purple and flower-shaped, even though no flower-shaped and purple thing is in the vicinity. This form of representationalism does not require what Sethi finds objectionable – that Buddy 'ostends an uninstantiated universal in Platonic heaven'. Again, this is a nominalist version of representationalism on which there are no universals at all.[5]

True, there are *property-based representationalists* who believe in properties understood as abstract items or 'universals'. They hold that in having his hallucination Buddy experientially represents that something has the properties *being flower-shaped* and *being purple*, even though nothing in her vicinity instantiates these properties. I formulated representationalism along these lines for ease of exposition (97).

However, I noted in the book (98) and in previous work (Pautz 2007, 507–508) that even property-based representationalists do not need to accept the strange claim that Buddy literally *sees* and *ostends* 'a universal in Platonic heaven' (even if some of them do say this kind of thing). True, they need to reject Actualism, but they do not need to accept this strange alternative claim. Instead, they only need to say that certain color properties and spatial properties *characterize how things appear* to Buddy. And that is not such a strange thing to say.

[5]Sethi might have a different objection against nominalist representationalism. We representationalists do not explain *why* Buddy's experientially representing that there is a purple thing enables him to know what it is like for something to be purple (even when he is not acquainted with any *actual* instance of purple). We must take this as a brute explanatory connection; it just 'lies in the nature of experientially representing'. (We have an *argument* for this claim, but not an *explanation*: see 206–207.) But I don't think Sethi could consistently object to the representational view on the grounds that it requires a brute explanatory connection. After all, she must also accept such a connection: on her view, Buddy's being *acquainted with* an actual instance of purple enables Buddy to know what it is like for something to be purple, but this presumably has no deeper explanation – it just 'lies in the nature of acquaintance'.

1.2. Sethi's second objection to representationalism: perceptual variation

Sethi raises a second problem for representationalism involving perceptual variation. This is a familiar issue for representationalism, but Sethi adds a twist.

Suppose that Barry sees a purple flower at midday and then at dusk. Sethi notes that *one* possible representationalist account of this case is that Barry's first experience consists in his experientially representing the state of affairs *that the flower is purple and under high illumination* while his second experience consists in his experientially representing that *that the flower is purple and under low illumination*. Call this the *illumination account*.

Sethi objects to the illumination account on the following grounds:

> If the entities [we experientially represent] are no longer perceptible properties as is typically understood – colors, shapes, tastes, smells etc. – but complex states of affairs involving illumination conditions or perspectival conditions – then it becomes far less plausible to hold that [experiential representation] is a relation that gives subjects cognitive access to all entities that are at the other end of the relation. We do not get insight into the nature of illumination conditions or complex perspectival conditions that influence the character of our experiences just in virtue of those conditions affecting the character of our experience. [This] took centuries for the science of optics …

So Sethi's point is that, on the illumination account, Barry should have 'insight' into the nature of light and light-sources, simply based on his visual experiences of the flower. But that is not so.

I have four points in reply. First, in addition to the illumination account, there is also what David Chalmers calls the 'simple account' (2006, 85–86). I will not go into details, but suffice it to say that it avoids Sethi's objection.

Second, seeing a purple flower under varying illumination is not a threat to representationalism for a general reason (109, 116). In such a case, there is an ostensible difference of some kind (and this is consistent with the fact that 'the flower seems to have the same color'). On any view, it may be difficult to theoretically characterize this ostensible difference (e. g. it is unclear whether the illumination account or the simple account is right). But, whatever account is right, the representationalist can say that the difference is represented.

Third, examples like Sethi's are an issue for all theories of perceptual experience, not just the representational view (113). For instance, Sethi is herself a naïve realist about normal experience. (As noted in §1.1,

when it comes to illusory and hallucinatory experience, she is a sense datum theorist.) So she needs a naïve realist account of the phenomenological difference between seeing a purple flower under different conditions of illumination. Whatever account she proposes (the illumination account or some other account), a representationalist could co-opt it.

Fourth, although I do not myself accept the illumination account (I am neutral), I think that Sethi's objection to it may have a good answer. Proponents of this view hold that Barry experientially represents the flower as having different properties at midday and at dusk (even if he also experientially represents them as having the same color). As a matter of empirical fact, those different properties are identical with properties involving illumination from light-sources (and perhaps ultimately involving the reflection of photons). But Barry himself may not have access to (or, to use Sethi's language, 'insight into') this identity based on his visual experiences alone.

2. Speaks on the illusion view of sensible qualities and the laws of appearance

2.1. Speaks on the illusion view of sensible qualities

Jeff Speaks and I both accept a representational view of experience. For instance, for you to have a tomato-like experience is just for it to experientially seem to you (for you to 'experientially represent') that something out there is red and round. And for you to have a floral-smell experience is just for it to experientially seem to you (for you to 'experientially represent') that there is a floral odor out there.

Representationalists like Speaks and myself face two big questions. What in the world are the sensible qualities, like the quality red or a floral smell? And how did we come to experientially represent such qualities? As Speaks notes, there are different possible representationalist 'packages' differing in how they answer these questions.

One popular package (associated with Tye, Dretske, Byrne and Hilbert) is this:

- response-independent realism about sensible qualities
- externalist representationalism

On this package, sensible qualities (traditional 'secondary qualities') like *floral* and *red* are *response-independent properties* of things that were out there before we evolved. And our brains enabled us to

experientially represent these pre-existing qualities in the world by *causally detecting* their occurrence (just like a thermometer represents temperatures). So the explanation of phenomenal character resides in the external physical world.

I presented arguments against this package (Chapter 4). They are not based on the usual intuitions or thought-experiments; they are firmly rooted in empirical research.

In particular, I argued against response-independent realism about the sensible qualities on the grounds that there is what I call 'bad external correlation': a giant mismatch between the structure of sensible qualities and the structure of response-independent physical properties. This is an old style of argument, but I added to it (161–164, 215–220). A nice example concerns the perception of speech. If the 'voice onset time' of a speech sound is gradually changed, then at a certain point there will be a categorical change in the qualities you experience, from /da/ to /ta/. However, the categorical change in the qualities corresponds to no categorical change in the stimulus. (For a recent defense of this argument, see Cutter 2023; for criticism see Epstein 2022.)

Instead of response-independent realism, I defended a *neo-Galilean*, *illusionist* form of representationalism. The sensible qualities are neither instantiated in the external world nor in the mind/brain. Both sides of the traditional debate are wrong. The sensible qualities are not instantiated at all. They only live in the contents of our experiences. So, for instance, the audible qualities /da/ and /ta/ only live in the content of your auditory experience of speech sounds. In the same way, the quality *red* only lives in the content of your experience of a tomato.[6]

The illusion view of sensible qualities goes with *internalist representationalism*. The brain does not need 'help from the world' to experientially represent sensible qualities. Instead, the brain has a kind of innate capacity to experientially represent a range of sensible qualities, even if they did not exist in pre-sentient nature.

I gave another argument for internalist rather than externalist representationalism: the *argument from internal dependence*. I illustrated the

[6]I admit that externalist representationalism is more natural when it comes to our experience of 'primary qualities' (e. g. shape and size), because there is *good* 'external correlation' in some cases (160). But, when it comes to our experience of primary qualities, there is evidence for 'good correlation' as well as 'good external correlation' (Kayaert, Biederman, and Vogels 2003; Murray, Boyaci, and Kersten 2006; Op de Beeck, Torfs, and Wagemans 2008.). So I think that the correlational evidence is more or less neutral between internalism and externalism for our experience of primary qualities. My view is that *other* considerations tip the scales in favor of internalism for our experience of primary qualities (187, note 14). (Thanks to Umrao Sethi and Peter Epstein for pressing me to clarify my thinking here.)

argument with a series of 'coincidental variation cases'. Two individuals can detect exactly the same physical properties in the world, but experientially represent different qualities due to internal neural differences.

In sum, I defend the following package:

- illusionism about the sensible qualities
- internalist representationalism

On my view, sensible qualities did not exist within pre-sentient nature. They only appeared in nature when sentient creatures evolved. Our brains are inventive; they enabled us to experientially represent a range of wholly novel qualities that had never before appeared in the world.

It may seem mysterious that the brain has an innate capacity to enable us to *experientially represent* (and 'get in touch with') a range of sensible qualities, even if they did not exist in pre-sentient nature. I agree that it is mysterious. It adds a new element to the mind–body problem. Why does a certain brain state ground the *representation of* a specific irreducible color? But I argue that it is mystery we must live with (182ff). Also, if colors are irreducible, realists must live with an analogous mystery: why does a certain reflectance ground the *instantiation of* a specific irreducible color (191, 217–220)?

Now Speaks wonders what I think about a different package, one that I barely discussed in the book:

- response-independent realism about all sensible qualities
- internalist representationalism

On this package, sensible qualities or 'qualia' (tastes, smells, colors) are response-independent properties of things that really were out there before we evolved. Even before we evolved, a cloud of hydrogen sulfide objectively had a certain smell quality; the sky objectively had a certain color quality; and so on. Then we came to experientially represent these things as having certain sensible qualities. But what sensible qualities we came to experientially represent were fully grounded in our neural responses; the ground had nothing to do with the actual sensible qualities of things.

On this package of views, long-term illusion under normal conditions is possible. For instance, it may be that hydrogen sulfide is objectively floral, but we still came to experientially represent it as rotten because it is dangerous to us. And it may be that the reflectance (or 'productance')

of the sky is actually objectively associated with *yellow*, but we still came to experientially represent the sky as *blue*. In that case, whenever we look at the sky, we are having a giant color illusion.

Speaks asks why I reject this package. My central reason is that I reject its first claim – the response-independent view of all sensible qualities. As I already mentioned, in the case of sensible qualities like sound, smell and color, I reject the response-independent view on the grounds of 'bad external correlation and good internal correlation'. There are many uncontroversial examples (*pace* Epstein 2022). Sometimes molecules that are mirror images smell different; sometimes they smell similar. Typically, increasing the concentration of molecules increases the intensity of smell, but sometimes it results in a giant shift quality. And, as Bohon et al. (2016) note, 'The spectrum is continuous and linear, whereas color is categorical and color space forms a circle'. The best explanations for all these facts are not to be found in the response-independent world; they are to be found in the brain. So we should not locate the sensible qualities in the response-independent world. They were not out there before we evolved.

Speaks says, 'if this is [Pautz's] central reason for giving up on response-independent realism about [sensible qualities], it seems to be independent of the truth of internalist representationalism'. This is correct. I accept internalist representationalism, but it does not play a role in my central reason for rejecting response-independent realism about sensible qualities.

I briefly gave another, less central reason for rejecting the package of response-independent realism about sensible qualities and internalist representationalism (181–182). And this other reason *does* depend on internalist representationalism. As I already noted, given internalist representationalism, response-independent realism about sensible qualities implies the possibility of long-term illusion a possibility. So the proponent of this package views must explain why isn't actual. Why should the qualities that the brain 'made up' be anything like any of the qualities that were already out there? I think proponents of this package of views cannot provide a good explanation (in particular, they cannot provide an evolutionary explanation). We might call this the *missing explanation problem* (Pautz 2011; for criticism see Epstein 2022).

Speaks questions my missing explanation problem for the package of response-independent realism about sensible qualities and internalist representationalism. But his interpretation of it differs from what I intended.

On Speaks' interpretation, the problem goes like this. To illustrate, suppose you are looking at a tomato before you know any philosophy.

Because you experientially represent that there is a red and round thing out there, you have a reason to believe that such a thing is out there. But now suppose you do some philosophy and you come to accept internalist representationalism (and let's suppose you have a pretty good justification for accepting it). That is, you come to accept that you only experientially represent colors because of how the brain works – it has nothing to do with what is really out there. (Compare: you only experience pains because of how the brain works, not because they were out in the world beforehand.) This may seem to *undercut* (discredit or remove) your experience-based justification to believe that a red thing is out there. You no longer have much reason to think that a red thing is out there. (Analogy: if John tells you that all the electricity powering the internet weighs the same as an apricot, but you know that he often makes things up, this tends to remove your testimonial reason to believe what he says.) Call this the *undercutting justification problem* for the package of internalist representationalism and response-independent realism about sensible qualities.

So Speaks equates my 'missing explanation problem' for the package of response-independent realism about sensible qualities and internalist representationalism with the 'undercutting justification problem'. Then he criticizes it on the grounds that it may lead to a more general skepticism. He holds that, even after you learn the truth of internalist representationalism, you have a reason to think that a red thing is before you.

But my missing explanation problem is not the problem about undercutting justification that Speaks discusses. Roughly, the problem is just that proponents of this package cannot easily explain something that they need to explain, namely, the general veridicality of our experiences. I continue to think that is a problem for this package of views.

I agree with Speaks that response-independent realists do not face the 'undercutting justification problem'. I agree that, even after you learn the truth of internalist representationalism, you have reason to think that a red thing is before you when you look at a tomato – that reason is not 'undercut'. I still reject realism about colors because, as I just mentioned, I think you have even stronger, empirical and philosophical reasons to think that no red thing is before you. I think of these considerations as 'rebutting defeaters', rather than undercutting defeaters. They do not remove your experience-based reason, but only oppose it.

Let me elaborate on these points. Although I was not explicit about this in the book, I favor a very strong form of 'dogmatism' about perceptual justification. When it experientially seems to you that a red and round

thing is there, you have a reason to believe that a red and round thing is there, and that reason can *never* be fully 'undercut' in the sense of being entirely removed.[7]

My acceptance of a strong form of dogmatism is related to something I emphasized in the book and also mentioned in my response to Sethi in §1.1: even if I ultimately reject Actualism about experience, I agree that it is intrinsically plausible. Here I follow H. H. Price (1932, 3). When you look at a tomato, you have a *strong but nonconclusive reason* to believe that a red and round thing is there, and that it determines how things appear to you (not 'certainty' as Price suggests). Further, I agree with Price that what you have reason to believe is *neutral* on the ontological category of that thing. For instance, it is neutral on whether the thing is a physical tomato, or a three-dimensional sense datum that you mistake for a physical tomato. This neutrality is related to my claim that your experience-based reason to think that a red and round thing is there cannot be 'undercut' or removed. For instance, suppose that it experientially seems to you that something is red and round, but the Oracle of Philosophy tells you that how things experientially seem to you is not at all reliably connected to how *physical* things are. In my view, you still have reason to think that how things experientially seem to you is necessarily connected to how *some* things are (as it might be, non-physical sense data). So you may still have just as much reason as ever to believe that *something* is red and round.[8]

So, I think that your experience-based reason to believe that a red and round thing is there cannot be removed. But it can be opposed. In this section, I mentioned empirical reasons to think that there is no red *physical* thing there. In §1.1, I mentioned other reasons to think there is no

[7]Rather than explaining perceptual reasons in terms of updating on evidence and reasonable prior probabilities, I favor the view that they are bedrock (see Hawthorne and Lasonen-Aarnio 2021, Section 3.3 for discussion). I think this is gets a little support from the following analogy. It's arguably a bedrock fact that if you are in severe pain you ought (*pro tanto*) *desire* to get rid of it. Assuming a uniform view, facts about what you ought to *believe* given your experiences are likewise bedrock facts. (And just as I think that basic perceptual reasons cannot be removed but only opposed, I think that your reason to get rid of the pain cannot be removed but only opposed – say, if an authority convinces you the pain is needed to atone for sin and get into heaven.)

[8]Let me address an objection to the kind of view of perceptual justification I favor. Suppose it appears to you that something is red_{17}. The objection is that you do not have a strong reason to believe that something is that exact shade of red, red_{17}, because you must take seriously the hypothesis that the *physical* object is actually red_{18} but it appears to you that something is red_{17} because there is not complete reliability in the causal process (Hawthorne and Lasonen-Aarnio 2021, Section 3.3). I think that this objection fails because following Price (1932) I think that when something appears red_{17} to you by far the most intrinsically plausible explanation is that this is *constitutively* and not merely *causally* determined by your experiencing something that actually is *that very shade*, red_{17} (where this may turn out to be a *sense datum* rather than a physical object).

even a red *sense datum* (the traditional problems with sense data). Although it vividly appears that something is red, nothing in reality is red.

2.2. Speaks on laws of appearance

Although I favor a representational view of experience, I raised a new puzzle for representationalism: the puzzle of the laws of appearance (Chapter 3). There are various constraints on how things can appear, and some seem to be 'metaphysically necessary'. I belatedly admitted that I could not see how representationalists might explain these constraints.

Speaks has an extremely helpful and interesting discussion of the laws of appearance. One point he makes is that, when it comes to explaining certain laws of appearance ('content restriction laws' and 'inclusion laws'), rival views as much trouble as representationalism. I agree with this (Pautz 2020). To that extent, the puzzle of the laws of appearance is a puzzle for everyone.

However, when it comes to explaining the 'exclusion law', I do think that an Actualist view has an advantage over the representational view. For example, it is metaphysically impossible that it should appear to someone that something is both pure red and pure green, or both round and square. I think that Actualist theories of experience might provide a neat explanation of this exclusion law. It is part of such theories that, if it experientially appears to you that something is *F*, then there is an actual *F* thing that you experience (even in hallucination). If so, the fact that nothing can appear round and square derives from the generally-accepted fact that nothing can actually be round and square. Because representationalists reject this Actualist principle (they explain experientially appearing in terms of experientially representing), they cannot accept this natural explanation. If appearance is unconstrained by reality, why can't you drink too much beer and hallucinate a round square?[9]

In my reply to Sethi in §1.1, I said I agreed with her that Actualism is intrinsically more plausible than representationalism. Now we see that Actualism also has an *explanatory* advantage over representationalism:

[9]The exclusion law says that it cannot 'experientially appear' to anyone that something is both pure red and pure green, or both round and square. I am assuming that this is a pre-theoretical datum that can be accepted by representationalists and anti-representationalists alike. So I am assuming for the sake of discussion that 'experientially appearing' is a theory-neutral notion in good standing, even if it does not perfectly correspond to any ordinary English idiom.

it can explain the metaphysical necessity of the exclusion law while representationalism cannot. When there are multiple lines of support for a view, we have to take it seriously. I continue to think that on balance representationalism is superior to Actualism. But I am not totally confident about this.

Speaks makes an interesting suggestion here. True, Actualism can explain the exclusion law. But Speaks suggests that perhaps representationalism can also explain the exclusion law after all – but in a very different way. For the sake of *reductio*, suppose that the exclusion law is false, so that you can experientially represent the impossible proposition *that something is round and square*. Given 'intensionalism' about propositional content (modally equivalent propositions are identical), an impossible proposition like *that something is round and square* will be identical with the conjunction of that proposition and any other proposition. Given that *experientially representing* distributes over conjunction, it would now follow that you experientially represent every proposition! Call this result 'perceptual explosion'. But perceptual explosion is weird, maybe impossible. So: given intensionalism about perceptual content, the distribution principle, and the impossibility of perceptual explosion, you cannot experientially represent *that something is round and square*.

But, as Speaks himself points out, the intensionalism about perceptual content required by this explanation is 'unattractive'. Let me mention three problems with intensionalism. (i) When you see a two-dimensional array of dots as grouped in columns and then as grouped in rows, the total contents of your consecutive experiences change but (contrary to intensionalism) those contents are accurate with respect to the same (centered) worlds. (ii) Given intensionalism about perceptual content and the distribution principle, it follows that when you have an experience you experientially represent every necessary proposition – which seems wrong. (iii) For various reasons, we representationalists need the idea that the content of an experience might be 'about' or 'involve' a certain object or quality. But it is hard to recover this idea if contents are unstructured sets of worlds. At the very least, some of our 'intuitions' about aboutness will be false. For instance, contrary to what you might think, the content *there is a red thing there* and the content *there is a red thing there and 2 + 2 = 4* will be about the same things because they will be identical.

So we are back to where started. Actualism can explain the exclusions law, but representationalism cannot. This supports Actualism over representationalism.

As Speaks notes, at this point, we representationalists might 'push back against the intuition that the laws of appearance are necessary'. If the exclusion law is not necessary but only contingent ('contingentism'), then we can turn the tables on Actualism! For if in in some other 'possible world' it could experientially appear to someone (perhaps an alien) that something is round and square (in general, if it can experientially appear to someone that *p*, where *p* is impossible), then Actualism cannot be right, because nothing (not even a sense datum) could actually be round and square. By contrast, we representationalists could happily accept this possibility. Since representationalism is a non-actualist theory, we can allow that in another world it could appear to someone that something is round and square even if nothing really could be round and square. True, we representationalists would still need to explain why the exclusion law tends to hold here in the actual world among humans. But we could say that there is bound to be some neural-computational explanation of this – say a format explanation, or an architectural explanation.

But I think there is no strong, theory-neutral reason to accept contingentism about the exclusion law. One might argue that it is a contingent, *ceteris paribus* special science law on the grounds that, when we view Escher-stye impossible figures or hear the 'Shepard tone', we experientially represent inconsistent propositions. But Speaks points out – and I agree (Pautz 2020) – that this is not obviously the right account of cases.

On the other hand, there are reasons to reject contingentism and accept necessitism about the exclusion law. First, it is just very counterintuitive that it could experientially appear to anyone (even an alien) that something is round and square. Second, if contingentism is right, then our justification for believing 'all things that appear round fail to appear square' would have to be based on enumerative induction, like our justification for believing 'all emeralds are green'. But this is an incorrect prediction. You don't have to go out and have a huge number of experiences of round things before you have any reason to believe the generalization 'all things that appear round fail to appear square'. You have a strong reason to think this from the armchair.

In sum: the exclusion law of appearance is metaphysically necessary and we have justification from the armchair for accepting it. Actualism can explain these facts (assuming Actualism is necessary and we have justification from the armchair for believing it). But representationalism cannot.

For these reasons, I remain puzzled by the laws of appearance. I continue to accept representationalism, but I am unsure how to answer this puzzle.

3. Cutter on global error theory and neural sense datum view

3.1. Global error theory?

As I already discussed in my response to Speaks (§2.1), I accept an illusion view of color and other traditional 'secondary qualities'. When you see a tomato, it seems to you that a red thing is out there. You 'experientially represent' that a red thing is there. But the physical tomato is not red-as-you-see-it. True, the tomato has a 'reflectance', but it is nothing like red-as-you-see-it. The quality red exists, but it only lives in the content of your experience.

I briefly flirted (in Chapter 4) with the much more radical position of *global perceptual illusion*. This view generalizes the illusion view from 'secondary qualities' to traditional 'primary qualities'. The more we learn about the physical world, the more alien it looks. In quantum mechanics, the fundamental elements are not things like particles and their positions in a familiar three-dimensional space of our experience, but a 'wavefunction' in a high-dimensional 'configuration-space' that evolves according to Schrödinger's equation. As David Albert says, this suggests that 'whatever impression we have of living in a three-dimensional space … is *flatly illusory*' (1996, 277). As Ted Sider (forthcoming: Section 8) says, it may turn out that our plight is akin to those stuck in 'the Matrix'.

On the global illusion view, the physical tomato is not how it appears in *any* way. It is not even round-as-you-see-it. It has a certain arcane quantum mechanical property. But the arcane quantum-mechanical property is nothing like round-as-you-see-it, just like a reflectance property is nothing like red-as-you-see-it. Space-as-we-experience is just as much an invention of the brain as color and pain. Shapes-as-we-experience them may have some kind of structural correspondence to shapes-in-the-physical-world, but they are totally different.

The global illusion view is consistent with the fact our experience of the world is a good guide to the causal powers of things. Compare how the icons on your computer's desktop are radically different from what's inside your computer, but they are a good guide to what is happening inside your computer.

Most contemporary philosophers will not take the global illusion view seriously because they are reluctant to veer too far from common sense. I

myself find it hard to believe. But we must be open to it if it is supported by our best physical theories. And if we are open to an illusion view of color-as-we-see-it, we should be open to a parallel view of space-as-we-see-it.

Like me, Cutter is an internalist representationalist who is open to global perceptual illusion. In fact, his recent paper 'Perceptual Illusionism' (2021) has significantly advanced the case for it.

Cutter's comments on my book assume global perceptual illusion. The first question he raises is whether global perceptual illusion implies *global error theory*. In particular, does it imply that an error theory for ordinary claims about the 'primary qualities' of things, such as 'tomatoes are round'?

To begin with, I do not definitely accept global perceptual illusion, even if I think that internalist representationalists like myself are under considerable pressure to accept it. I am also open to a less radical Lockean view that, although 'secondary qualities' are not out there, 'primary qualities' are out there (even though our *experiences* of primary qualities are just as internally determined as our experiences of secondary qualities). For instance, although the tomato is not red-as-you-see-it, it is round-as-you-see-it. I'm genuinely undecided between global perceptual illusion and this Lockean alternative. In fact, this is one of the big unresolved issues that I mention in the conclusion of my book. If I end up with Lockean view, I will avoid global error theory. I could happily accept 'tomatoes are round'.

However, for the sake of discussion, let us grant global perceptual illusion. Would this imply that a global error theory? I take a hardline view: global illusion implies that many of our ordinary spatial beliefs and statements are *false* (here I disagree with Chalmers 2006). But, in some cases, they might be 'close to true'. It depends on how extreme the illusion is.

To illustrate, suppose it turns out that there really are things corresponding to middle-sized objects of the manifest world, but they don't have shapes-as-we-see them. Instead, they have arcane quantum mechanical properties nothing like shapes-as-we-see them. Then I would say that 'the tomato is round' is false but close to true. I think we use 'the tomato is round' to express our belief that the tomato is categorically round-as-we-see-it *and* also 'dispositionally round' – roughly, it acts like a round thing. On the hypothesis we are considering, the categorical component of our belief is false – the tomato is not round-as-we-see-it – but at least the dispositional component is true. So 'the tomato is round' is still close to true. At least, it corresponds to reality in a way that 'the tomato is

square' does not. There are tomatoes, even if they differ from how they look.

Let us now turn to a more extreme hypothesis about physical reality: the single-particle hypothesis recently discussed by Ted Sider (forthcoming). On this bizarre hypothesis, physical reality contains nothing but *single particle* moving in a high-dimensional space. So it is not the case that 'there really are' tomatoes and other things corresponding to the middle-sized objects of the manifest world. Cutter will now ask: might our ordinary beliefs nevertheless be true, or at least 'close to true', if this more extreme hypothesis is correct?

Surprisingly, Sider himself says that our ordinary beliefs still might be true. Suppose, for instance, you enter a room and say 'there are many things in the room'. Sider accepts 'quantifier variance', and he thinks that the truth-conditions of 'there are many things in the room' depend on how physical reality turns out to be. Suppose it turns out that we live in a *many-things world*: a world where 'there really are', in the 'joint-carving sense', many things in the room (e.g. what Chalmers 2006 calls an *Eden world*). In that case, Sider presumably holds that 'there are many things in the world' is true just in case there really are many things in the room in the joint-carving sense. Now suppose that it turns out that we instead live in a *single-particle world*. Then, according to Sider, when you experience many things in the room and say 'there are many things in the room', this does require that 'there really are' many things in the room in the joint-carving sense; it only requires that there is a single particle in state *X*, *Y* or *Z*. So it still manages to be true. In his comments, Cutter briefly considers a simple 'charity' or 'truth-maximization' constraint on interpretation. This might support Sider's quantifier-variance view.

Against this view, I think that, if it turns out that the single-particle hypothesis is correct, then your statement 'there are many things in the room' is just plain false and not even close to true. In my view, the truth-conditions of 'there are many things in the room' do not depend on how the world turns out to be in the way suggested by Sider. This is because, as Cutter notes, I hold that the content of our most basic thought and talk about the world is inherited from the content of experience. Whether you live in a many-things world or a single-particle world, you 'experientially represent' that there are many things in the room *in the joint-carving sense* – that is how things seem to you.[10] So you

[10]A quick argument: if you occupy a many-things world where there are really many things in the room in the joint-carving sense, then the content of your experience of the room is *that there are many things* in the *joint-carving sense*. If on the other hand you occupy the single-particle scenario, the phenomenal

believe that there are many things in this sense, and you conventionally use 'there are many things' to express this belief. That is why, if it turns out that there really is only a single particle, there is an obvious sense in which *the world is very different from how it seems*. And that is why, if this is how the world is, your statement 'there are many things in the room', is just plain false, contrary to Sider.[11] At best, it can be systematically 'mapped onto' a truth: say, a truth about the single particle in the high-dimensional space, or a phenomenalistic truth about what kinds of experiences you have if you enter the room. But those truths are not very close to the real content of your experience, belief, and statement.

3.2. Neural sense datum theory

Like me, Cutter favors a representational view of perception. But he plays devil's advocate. He invites me to say more about why I reject alternative that I only mention in passing in the book: the *neural sense datum view*.

To understand the neural sense datum view, start with a hallucination case. You hallucinate an orange moving slowly to the right. On the neural sense datum view, there *is* an orange and round thing that is moving to the right. Furthermore – and this is what makes the view so strange – it is a *pattern of neural activity* in your own brain. This neural pattern has all the apparent properties: it is *orange-as-you-see-it*, *round-as-you-see-it*, and even *moves to the right!* In §1.1, I raised a question for Sethi's sense datum view of hallucination: in such a hallucination case, just where is the sense datum? This 'neural sense datum view' provides an answer: it is literally in your brain – in fact, it is a part of your brain.

Let's turn to a 'good case' where you are really seeing an orange. The neural sense datum view applies the same account to this case that they apply to the hallucination case. *Everything* in your field of vision exists, and it is exactly *as it seems*. It all exists inside your brain. Somewhere in there, there is a *three-dimensional screen* with all these objects – like a little dollhouse. Further, the three-dimensional screen is identical with a pattern of neural firing. Thus, orange-as-you-see-it, round-as-you-see-it, and three-feet-away-as-you-see-it are all neural properties instantiated in your own brain. You are some kind of physical thing yourself. And you are

character of your experience of the room is the same as it would be in a many-things world. So, given representationalism, the content must be the same: *that there are many things* in the *joint-carving sense*.

[11] Sider (forthcoming: Section 8) himself concedes a lack of 'match', but unlike me doesn't explain this in terms of the content being false, so it is unclear what he means.

'acquainted with' the three-dimensional screen in your own brain, where that is perhaps some causal process between you and the screen. The neural sense datum view is a Cartesian theater view, taken *very* literally.

Of course, you have no idea that the three-dimensional round and orange thing you are acquainted with (and everything else in your visual field) is a pattern of neural activity. You think it is a physical object in the external world. As a result, you accept naïve realism, but you are massively deluded.

So far, I have been discussing visual experience. But the neural sense datum view can be applied to other experiences. For example, if you chide your friend for smelling bad, the joke is on you, because the bad smell is a property of your own nervous system. H. H. Price (1932, 127) called the neural sense datum view 'very singular', but this was an understatement.

So that is the neural sense datum view. It is obviously very different from the representational view. It is an act-object theory. If you hallucinate an orange moving to the right, there really is an orange and round thing moving to the right (in your brain). By contrast, on the representational view, there only seems to be such a thing.

I did briefly mention the neural sense datum view (86, 91, 92), but I agree with Cutter that I did not say enough about why I reject it.

Now you might be thinking that it is obvious why we should reject the neural sense datum view and favor the representational view. If a neuroscientist peers into the 'visual' areas of your brain while you are looking at an orange on the table, it will not appear to the neuroscientist that there is in those brain regions any three-dimensional screen with a round and orange thing on top of a table-shaped thing. The neuroscientist will just see a bunch of neurons in soggy gray matter.

But Cutter notes that, if we accept the 'global illusion' view of perception, this argument against the neural sense datum view is too quick. On the global illusion view, the physical brain, like everything else in the physical world, is very different from how it appears. So maybe when a neuroscientist looks at a pattern of neural activity in your brain, in reality that pattern of neural activity *is* a screen with a round and orange thing moving to the right, even if it looks nothing like that to the neuroscientist.

Since I am open to the global illusion view, I need other reasons for rejecting the neural sense datum view in favor of a representational view. I have *three* such reasons.

First, I think that the representational view accommodates *essential external directedness*, while the neural sense datum view is inconsistent with it. Cutter addresses this argument. He asks: what's the interpretation of essential external directedness that makes it inconsistent with the neural sense datum view?

Let us go back to the case where you have a vivid hallucination of an orange moving to the right. Call this *the orange-experience*. Here is how I understand essential external directedness in this case:

> *Essential External Directedness*. The genuine spatial features *round* and *moving-to-the-right* will show up in a "real definition" of the orange-experience, *where such spatial properties could be instantiated in a Newtonian space*.

So I would reject a very strong version of what Cutter calls 'Humility' – a version according to which we have *no* insight at all into the nature of these spatial properties. I think we have at least *some* insight into their natures: we at least know that they could be instantiated in Newtonian space. For instance, distance-as-we-experience-it could be instantiated in a Newtonian world in a basic way. I think Cutter himself would agree. In his recent essay 'Perceptual Illusionism', he says that the spatial features *round* and *moving-to-the-right* presented in the orange-experience 'would at home in Newtonian world' (2021, 14, 18).

The neural sense datum view is inconsistent with essential external directedness when interpreted in this way. This is because it is a form of 'the internal physical state view'. The only properties that show up in a real definition of the orange-experience are neural properties instantiated in your own brain. So, on this view, it is *not* the case that the genuine spatial features *round* and *moving-to-the-right* will show up in a 'real definition' of your moving orange hallucination, where such spatial properties could be instantiated by regions of a Newtonian space in a basic way.

Notice that the argument from essential external directedness against the neural sense datum view goes through even if we are subject to 'global perceptual illusion'. Even if it turns out that the spatial features involved in the moving-orange experience are not instantiated in the external world because some radical quantum ontology is correct (they are 'Edenic'), they at least *could* be instantiated in the external world in a basic way (e.g. in a world where space is Newtonian). That modal claim is enough to undermine the neural sense datum view: it implies that the spatial features involved in the moving-orange experience

cannot be identified with neural features instantiated in the brain, contrary to that view.[12]

By contrast, a representational view of the orange-experience is consistent with essential external directedness. For you to have the hallucination is for it to seem to you (for you to 'experientially represent') that there is a thing before you that is *round* and *moving to the right*, where these are genuine spatial features that would be at home in a Newtonian world. The idea is that neural processing in the head grounds having experiences of spatial properties that are instantiated (if they are instantiated at all) outside the head.

A *second* reason for preferring the representational view to the neural sense datum view concerns the familiar phenomenon of 'perceptual imprecision'. For instance, imagine that an orange slowly moved from the center of your visual field to your peripheral vision. There is a reduction of perceptual precision. The representational view very well predicts and explains the fact that experiences can vary in precision. Your visual experience is a representational state, and representational states can be more or less precise. By contrast, the traditional sense datum view does not so nicely predict and explain perceptual imprecision – as noted in my comments on Sethi's sense datum view of hallucination (§1.1). And the neural sense datum view does not do any better. To explain perceptual imprecision, the neural sense datum theorist would need to say that either sense data are perfectly precise but we are somehow only imprecisely aware of them, or that sense data can become 'metaphysically indeterminate'. These options are just as bad on neural sense datum view as they are on traditional sense datum view. What impresses me is not only that the sense datum view poorly explains perceptual imprecision; in addition, the representational view very neatly predicts and explains it. Together, these points support the representational view over the sense datum view.

My *third* and final reason for rejecting the neural sense datum view in favor of a representational view concerns *sensible qualities*, like color qualities and audible qualities. I will call it *the argument from qualitative closure*.

[12]While essential external directedness is inconsistent with the *neural* sense datum view, it is consistent with *traditional* sense datum view. On traditional sense datum view, to have the moving-orange experience is to be acquainted with a literally *round* and *moving* sense datum. Further, these properties are not neural properties instantiated in the brain. Rather, they are genuine spatial features that sense data *could* share with physical objects in an external, Newtonian space (whether or not they do share them with such physical objects in an external, Newtonian space). I reject traditional sense datum view for other reasons (§1.1).

I will first explain 'qualitative closure'. Take any color quality in the 'color circle'. Nothing is like a color but another color. A bit more exactly: if *X* is a color quality, and *Y* is among the qualities maximally similar to *X*, then *Y* is a color quality too. Let us call this the *closure principle*, because it implies that color space is closed: there is no resemblance-path from a color quality in color space to a non-color quality outside of this space (see Figure 2(A)).

I think that the closure principle is just obvious *a priori*. It is like 'every successor of a number is a number'. True, other principles of the same kind do not survive scrutiny. For instance, you might initially be attracted to 'anything nearly exactly like a heap is a heap', until you think of a sorites sequence taking you from a heap to a non-heap. But the closure principle for color qualities survives scrutiny. Just look at the color space with the full gamut of colors. If you start with any color quality in that space, and move by minimal resemblance steps, you will always stay within the space of color qualities.

However, qualitative closure rules out the neural sense datum view. For example, take the color quality *red* and some non-color – say, the audible quality *middle-C*. On the neural sense datum view, they are identical with neural patterns N_1 and N_2. They are temporal patterns of activity among many neurons that can be represented by 'waves' (Figure 2(B)). Qualitative closure implies that there is no resemblance-path from the quality red

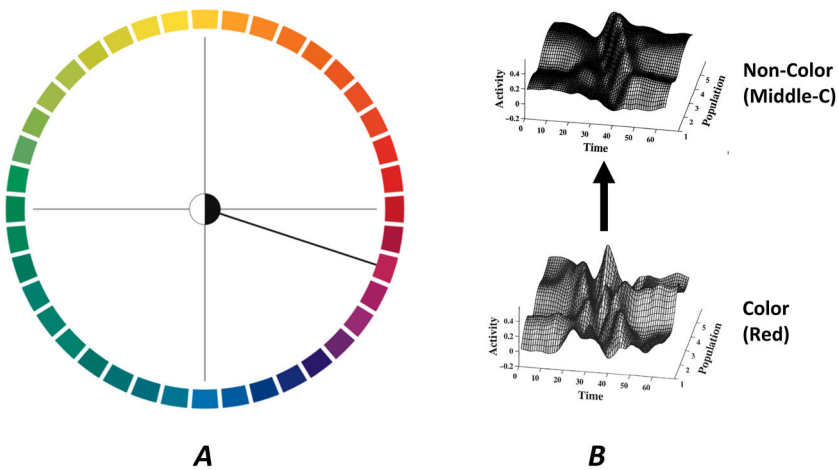

Figure 2. (A) Color qualities have the closure feature: there is no resemblance-path from any color quality to any non-color 'outside' color space. (B) Neural patterns lack the closure feature: there is a resemblance-path (indicated here by the arrow) from a neural pattern corresponding to color to one corresponding to a non-color.

to the audible quality *middle-C* 'outside' color space. By contrast, there *is* a resemblance-path connecting the corresponding neural patterns N_1 and N_2. This is because they are just different patterns of activity across the same types of neurons in different areas of the brain; so, you can start from the one and, through a large enough series of minimal changes, reach the other. Therefore, by Leibniz's law, the sensible qualities *red* and *middle-C* cannot be identified with corresponding neural patterns N_1 and N_2, contrary to the neural sense datum view.

By contrast, my preferred representational view is quite consistent with qualitative closure. While the neural sense datum view is a reductive view that identifies the qualities *red* and *middle-C* with neural patterns N_1 and N_2 inside the head, my preferred representational view is a nonreductive view that holds that they are irreducible qualities that appear to be out there. Of course, on my illusion view, the qualities *red* and *middle-C* are not really out there – they only live in the contents of our experiences. But they still exist even if nothing has them. And since are distinct from N_1 and N_2, they can have the closure feature even if N_1 and N_2 lack the closure feature.[13] The idea is that neural patterns can be connected by a resemblance-path, but they ground the experience of incommensurable qualities that cannot be so connected.[14]

A proponent of the neural sense datum view could apply *modus tollens* where I apply *modus ponens* (thanks here to David Papineau). They could hold on to their view that the sensible qualities *red* and *middle-C* are identical with the neural patterns N_1 and N_2, and therefore reject the closure principle: you can move from a color to a sound in a series of minimal resemblance steps without 'jumps', just like you can move from a heap to a non-heap in this way. But I think we should apply *modus ponens*. We should accept the closure principle and reject the neural sense

[13]While I favor nonreductive representationalism, other representationalists favor reductive representationalism, holding that color qualities are external reflectance properties of objects, that is, properties of the form *being disposed to reflect photons in so-and-so proportions*. In the book, I developed empirical arguments against this view (Chapter 4, Section 4.5). Qualitative closure provides an additional, more *a priori* reason to reject this view. Color qualities have the closure property. They cannot be reflectances, because reflectances lack this property: we can imagine a sorites series where we start with *reflecting photons* and we very gradually alter the laws of physics so that eventually we reach the property of reflecting a very different type of particle – say a particle that behaves classically and that travels much less than the speed of light.

[14]The argument from qualitative closure only works against *neural* sense datum view, not the traditional sense datum view. While the neural sense datum view identifies sensible qualities with neural patterns N_1 and N_2, traditional sense datum view holds that they are irreducible properties of non-physical sense data. So traditional sense datum view accommodates qualitative closure in much the same way as my nonreductive representational view.

datum view. The closure principle for color qualities is just obviously true. By contrast, the neural sense datum is a speculative theory.

To sum up: Cutter and I both favor a representational view of perception, but he plays devil's advocate: why not neural sense datum view? I am glad he asked. I have now supplied three reasons for thinking that my favored representational view is superior to the neural sense datum view.

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