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On the Coherence of Inversion Clayton Littlejohn

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Abstract In this paper, I shall evaluate a strategy recently used to try to demonstrate the impossibility of behaviorally undetectable spectrum inversion. After showing that the impossibility proof proves too much, I shall identify where it goes wrong. In turn, I shall explain why someone attracted to functionalist and representationalist assumptions might rightly remain agnostic about the possibility of inversion.

Keywords Qualia. Perceptual consciousness. Spectrum inversion. Functionalism. Representationalism. Self-knowledge

1 Introduction

Ingrid and Norma are twin sisters. They were raised by the same loving, linguistically competent parents. They are disposed to apply the same color terms in every situation they will ever face. Although similar in many respects, it doesn't seem all that hard to imagine that one or both of these hypotheses is true:

H1: In terms of their colors, red things seem to Ingrid the way that green things seem to Norma.

H2: In terms of their experiences of colors, what it's like for Ingrid to see something red is what it's like for Norma to see something green.

Are these hypotheses genuine possibilities? That's most unclear. The imaginable and the possible are two different things (Kripke 1980) (or, maybe imagining is harder than imagined (Kripke 1980)). Because we're interested in the possibility of inversion and we've learned the hard way that claims to conceivability are an unsure

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guide to possibility, it's hard to know what to make of the claim that some cherished philosophical thesis is in conflict with the possibility of behaviorally undetectable inversion. Maybe I want to be a functionalist, a representationalist, I want to think that colors are represented by experience, and I really want to think that the physical is all that there is. So what if someone claims to be able to conceive of inversion? One recent author has stated bluntly, "Spectrum inversion is, to put it mildly, a fanciful possibility...many working philosophers are inclined to think that no serious person could rest much on it" (Thau 2002, 26).

For better or worse, not everyone is impressed by the claims to find tales of behaviorally undetectable spectrum inversion conceivable, but, saying that this a fanciful possibility won't make talk of this (alleged) possibility go away. What would move the discussion along is a clear, compelling demonstration of the impossibility of the inversion hypotheses. I want to look at some recent attempts to provide us with this demonstration. According to one commentator, these inversion hypotheses entail their own negations (Gibbons 2005, 399). According to another, we can show that these hypotheses couldn't possibly be true given our intuitive sense of what these subjects must believe, experience, and say (Sundstrom 2002, 65).¹ I'll explain why these attempts have failed. This will allow me to explain how it is that inversion might be true even if we grant certain assumptions about perceptual consciousness thought to be at odds with the possibility of inversion. In particular, I'd like to suggest that even if your account of perceptual consciousness incorporates functionalist and representationalist elements, you could still rightly remain agnostic about the possibility of spectrum inversion.

2 The Incoherence of Inversion

The argument against our first inversion hypothesis can be stated as follows (Gibbons 2005; Sundstrom 2002).

Ingrid and Norma are shown a red tile. If asked what color it was, they'll both say:

(1) That's red.

Assume that they're both sincere. There is some inclination to think that they both speak the truth. If we assume that they both speak the truth and both are sincere, it seems we should say:

(2) Norma believes that that's red. (3) Ingrid believes that that's red.

Someone could say that while Ingrid and Norma assert that the tile is red, they don't believe that the tile is red, not because one of them is insincere, but because one of them does not know what 'red' means. The trouble with this response is that it is hard to imagine why we should think it impossible for Ingrid to learn that 'red'

¹ Sundstrom (2002) suggests that the argument under consideration develops some ideas discussed earlier by Harman (1990) and Shoemaker (1982).

means red if raised in Norma's linguistic environment. If it is possible for someone like Ingrid to learn that 'red' means red and possible for her to believe what she says. Let's assume that (3) is true.²

Ingrid and Norma are told that the lighting conditions are funny. They're told that there might be lights that make non-red objects look red. Ingrid and Norma say:

(4) I don't know if what I saw was really red, but it seemed red. Assuming that both mean what they say and

that they're both competent English speakers, we should say:

(5) Norma believes that she doesn't know whether what she saw was red, but she believes that it seemed red to her at the time.

(6) Ingrid believes that she doesn't know whether what she saw was red, but she believes that it seemed red to her at the time.

There's no reason to think that inverteds have any difficulty determining how things seem to them introspectively. The same holds true for normally sighted perceivers. Anything Norma knows about her mind (i.e., that things seem such and such a way to her), Ingrid knows about her own mind. It seems we should be able to infer:

(7) Norma knows that it seemed red to her at the time. (8) Ingrid knows that it seemed red to her at the time.

Owing to the factivity of 'knows', (7) and (8) entail that in terms of their colors, red things would seem to Norma the way it would to Ingrid, but that is just to deny our first inversion hypothesis, H1. The latent nonsense has been made manifest.

What of our second hypothesis? Let's suppose that we've now ruled out the possibility of the first inversion hypothesis. Maybe Ingrid and Norma aren't inverted with respect to how the colors seem to them, but perhaps things are inverted in terms of what it's like for them to undergo these experiences. If the second hypothesis is still a live possibility, that's because there's some difference between the inversion of what it's like and the inversion of how things seem. However, to draw such a distinction, it seems you'd have to deny one of the following:

CR: Experiences represent the colors of objects.³

F: If an experience represents the colors of objects, such an experience disposes the subject towards believing that the object seen is the color the experience represents it as being (Harman 1990).

R: If two experiences *e* and *e'* are perfectly alike in their representational character, there is no difference in terms of what it's like to undergo *e* and *e'* (Tye 2000).

² This assumption is not my assumption, but an assumption crucial to the argument against the possibility of inversion. If you think that it's only possible for a subject to be linguistically competent in the use of our color language if the phenomenal character of this subject's experience is indistinguishable from our own, you might reject this step in the argument. I shall grant it for the sake of discussion if only to show that we can grant this assumption and say that the inversion hypothesis remains a live possibility.

³ For discussion, see Thau (2002). While he's right that you can square representationalism with the possibility of inversion by denying CR, I think we're not forced to deny that our experiences represent colors.

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If we said that the second inversion hypothesis is possible, it seems we'd have to assume that while things seem the same to both Ingrid and Norma, what it's like for them to view the same scenes would differ. But this seems incompatible with the triad. We're assuming that the colors are represented in experience (CR). According to the functionalist, if the experiences represent the colors, the subject is disposed to believe that the objects they see have the colors their experiences represent (F). We've observed that Ingrid and Norma believe the colors of the objects are the same, so it seems their experiences represent the colors of the objects they see as being the same. If we were to say that the representational properties of their experiences were the same so that in terms of how things seemed they were the same, but then denied that what it's like for them to undergo the experiences differed, we'd have to deny that the properties that determine what the experiences are like are determined by the properties that determine the representational properties of experience. In other words, we would have to deny (R). So, it seems that if we accept the trio, we'll have to say that we've demonstrated the impossibility of both inversion hypotheses once we've demonstrated the impossibility of the first.

3 The Argument Extended

Amy and Bianca are twin sisters. They were raised by the same loving, linguistically competent parents. They are disposed to apply the same color terms in every situation they will ever face.⁴ Although similar in many respects, it isn't hard to imagine that these hypotheses are true:

H3: In terms of their colors, green things seem different to Amy and Bianca. H4: In terms of their experiences of colors, what it's like for Amy to see something green is different from what it's like for Bianca to see something green.

To imagine that H3 and H4 are true, imagine that Amy can distinguish red from green by sight, but Bianca is blind to this difference between red and green things. Their parents have carefully arranged things so that neither Bianca nor Amy will ever encounter a red object.

Shown a green tile, Amy and Bianca will utter: (1') That's green.

⁴ This is important. Amy and Bianca will never face a situation in which they see something red. This means that while they will have different behavioral dispositions, they will not be disposed to respond differently to any situation they will ever encounter. If it is possible for such subjects to nevertheless both come to mean green by 'green', I can't see that this difference in behavioral dispositions will matter. If you think it is impossible for such subjects to come to mean green by 'green', I suspect that you are working from some assumptions about language use

and learning that should lead you to say that Ingrid and Norma cannot come to mean the same things in their uses of color terms. I'm fine with that, but then you think, as I think, that the argument for the incoherence of inversion in the previous section fails. You just think it fails at a much earlier step than I am arguing here.

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Assuming that they're both sincere and that both are competent English speakers, it seems:

(2') Amy knows that that's green. (3') Bianca knows that that's green.

They are both taught to associate 'green' with green objects and learn to correctly apply that term. It seems implausible to think that when they utter (1') they aren't saying that it is green. It seems implausible to think that they can't both believe what they say having been raised in the same linguistic community. It seems that they both believe the tile is green. Their judgments are reliably correct so it's implausible to deny (3') while accepting (2').

After they saw the tile, Amy and Bianca were told that the lighting conditions were funny. They're told that there might be lights that make non-green objects look green. Now Amy and Bianca utter:

(4') I don't know if what I saw was really green, but it seemed green. Assuming that both mean what they say and that they're both competent speakers

of English, we should say:

(5') Amy believes that she doesn't know whether what she saw was green, but she believes that it seemed green to her at the time.

(6') Bianca believes that she doesn't know whether what she saw was green, but she believes that it seemed green to her at the time.

Now for the finishing touch. Anything Amy knows about her mind (i.e., that things seem such and such a way to him), Bianca should be able to know about her mind:

(7') Amy knows that it seemed green to her at the time. (8') Bianca knows that it seemed green to her at the time.

Owing to the factivity of 'knows', (7') and (8') would seem to entail that in terms of its color, a green tile would seem the same (i.e., seem green) to Amy and Bianca. But that is just to deny H3. If we were to accept H4 having denied that H3 is possible, we'd have to reject CR, R, or F. The latent nonsense of tales of colorblindness has now been made manifest.

4 The Diagnosis

Unless I've missed some difference between the first and second arguments, the second proves that colorblindness is a myth if the first proves anything about spectrum inversion. That is the polite way of saying that the first tells us nothing about the possibility of inversion (that is the impolite way of saying it). Let's see if we can locate where the first argument goes wrong.

Here's an outline of the strategy for trying to demonstrate the impossibility of H1 and H2. Starting from the assumption that our pairs (Ingrid and Norma or Bianca and Amy) engage in the same linguistic behavior, we infer that our pairs assert the same things when placed in similar external circumstances (the first step). Next, we

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infer that our subjects must express the same beliefs by means of these assertions (the second step). Next, we infer that our subjects must undergo experiences with the same representational content (the third step).⁵ Last, we infer that what it's like for our subjects to undergo these experiences must be subjectively indistinguishable (the fourth step). Having arrived at the third step in the derivation, we can infer that H1 is impossible. Having done so, we can infer that H2 is impossible. The justification for the third step derives from our functionalist assumptions. The justification for the fourth step derives from our representationalist assumptions.

Here's where I think this demonstration goes wrong. If we look at the rationale for the first step in the derivation, we'll see that once it is in place, the functionalist assumptions cannot motivate the third step. That's why I think it's a mistake to suggest that in allowing for the possibility of inversion, we're forced to give up either our functionalist or representationalist assumptions. Moreover, if there's no incompatibility between the claim that Ingrid and Norma or Amy and Bianca undergo subjectively different experiences on the one hand and functionalist and representationalist assumptions on the other, then there is no way to demonstrate the impossibility of either of our inversion hypotheses. The modal status of these hypotheses is still uncertain, but our right to remain uncertain about their modal status while remaining firmly wedded to representationalism and functionalism is certain.

In order to establish claims about what these subjects' experiences are like, we proceed from claims about what these subjects say to claims about what these subjects believe and experience. For example, in order to evaluate H1 and H2, we've tried to show that Ingrid and Norma have the same beliefs about the colors of the tiles that they see and the same beliefs about how things seem to them. These ascriptions are motivated by ascriptions about what they say. Why should we accept them? The answer we're given by both Gibbons and Sundstrom is that Ingrid and Norma belong to the same linguistic community and that while we don't always believe what we

say, it's possible for Ingrid and Norma to believe what they say (Gibbons 2005, 400; Harman 1990, 48; Sundstrom 2002, 73; and Thau 2002, 18). Denying such possibilities is, apparently, unintuitive and unmotivated. I'm somewhat inclined to agree. Think about Bianca. It seems quite possible that she'd end up having just the same beliefs as her sister once she's learned to use the same color terms with the same competence that her sister has. Why? Because it's implausible to think that the subjective differences that distinguish her from her sister would constitute an insurmountable obstacle to her learning to identify green things by sight in her environment or to say that something is green having received just the same training as her linguistically competent sister. However, if it's implausible to say that the subjective differences between Amy and Bianca would prevent Amy and Bianca from becoming subjects that will be disposed to say that the same things are green, blue, etc... and believe that the same things are green,

⁵ I think that Gibbons and Sundstrom aren't necessarily alone in moving too quickly from claims about what these subjects believe to what these subjects' experiences must be like. In his discussion, Thau raises the rhetorical question, concerning pairs of subjects both of whom believe something they see is red, "if our respective visual experiences lead each of us to believe that it's red, how could either of our visual experiences fail to represent it as red?" (2002, 13).

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blue, etc..., it's implausible to say that the subjective differences between Ingrid and Norma would constitute an insurmountable obstacle to their sharing the same beliefs about the colors of the objects they see.

So, let's say that in spite of the differences in their experiences there are processes that enable both Ingrid and Norma, as well as Amy and Bianca, to become competent speakers (i.e., say 'red' when they're supposed to; say that something is red when they use 'red'). However, someone might object, isn't this inconsistent with certain functionalist assumptions? A functionalist like Harman will say that if an experience represents something as having some sensible quality, F, that experience disposes the subject to believe that the thing is F (Harman 1990, 46). It is somewhat implausible to say that an experience, e, represents something as having a sensible quality such as redness, while also representing that thing as having a second sensible quality, such as greenness. It is somewhat more implausible than this to suggest that one of two subjects who know that something is red because of their perceptual experiences will undergo an experience, e, that represents something as being both red and green. But isn't that what my view amounts to?

Not quite. Suppose we grant that when Ingrid sees something green and says that the thing she sees is green, she's disposed to believe it is green having undergone that experience. There's no inconsistency in saying that her experience disposes her to believe the thing is red if we add that something overrides this disposition and explains why she's disposed to believe something is green having undergone an experience that represents the thing as red and thereby disposes her to believe that it's red (and is disposed to believe something is red having undergone an experience that disposes her to think it is green). Dispositions can, after all, be overridden. The magnets on my refrigerator are disposed to fall in virtue of their mass, but to remain in place in virtue of its magnetic powers.⁶ To accommodate the functionalist assumptions, we simply have to posit something that disposes Ingrid to believe green things are green that overrides the experience's disposition to cause her to think otherwise.

Is there any plausible candidate for playing this role? I think there is. More importantly, I think that my target cannot plausibly deny that there is. Remember that we've been told that it is implausible to think that someone like Ingrid, who is raised by linguistically competent speakers with experiences like ours, would not become the kind of person who says that the green things she sees are green or the red things she sees are red having associated those terms with objects with those colors for their entire lives. This is, after all, how we make sense of the idea that someone like Bianca, who is blind to the difference between red and green, can say and believe that green things are green in his carefully controlled environment. It is in virtue of the beliefs we must posit in order to explain their linguistic competence that these subjects are disposed to think that the colors are what we think they are in spite of the differences between experiences like ours and experiences like theirs. It has been something of a staple in philosophy of mind and language that certain kinds of subjective differences between individuals and their mental lives won't constitute an insurmountable obstacle to these individuals coming to have beliefs with the same contents in the same external circumstances in spite of these subjective differences.

⁶ Thanks to Luke Robinson for the example.

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But, someone might now object, isn't this position inconsistent with the representationalist assumption?

According to the representationalist, we cannot say that Ingrid and Norma's experiences have the same representational content while saying that what it's like for them to undergo these experiences differ. How can I possibly say that there is a sense in which Ingrid's experiences are inverted with respect to Norma's if both know that when they see the red tile it seems red to them? If I say that this is true and that the tile seems red to them, to say that they're inverted would seem to require distinguishing those properties that determine what it's like for them to undergo an experience of the sort they (typically) undergo when they see a red tile and those that determine what such experiences represent. But that's to deny the representationalist thesis that there cannot be

phenomenal differences in the absence of representational differences.

I think this objection can also be dealt with, but doing so requires us to proceed with some care. Think about Bianca. She has learned to identify green things by sight in her carefully controlled environment. It seems she can say, truthfully, that she knows that something seems green to her when she hears that the lighting conditions are funny having just reported that she saw something green. But, in terms of how things seem, things seem quite different to Amy and Bianca precisely because only one of them is blind to the difference between red and green. There are two lessons to be drawn from this. Here's the first. Think about the scope of perceptual knowledge, the range of things you can know in light of your experience of the external world. It seems natural to say that someone like Bianca can know the colors of green things in her environment by looking even though his experiences do not represent things as being green. That is to say, we ascribe knowledge in a way that is at odds with the following assumption:

KLR: S's perceptual knowledge is limited to knowledge of just those properties represented by S's experiences. A number of examples speak against this thesis, KLR. In addition to Bianca's knowledgeable judgments about the location of green objects, think about the judgment you'd make upon hearing what you take to be your obnoxious neighbor's motorcycle. "It's the obnoxious neighbor who drives the Harley", you think to yourself. Having learned to identify the motorcycle's engine by its distinctive sound, such a judgment would appear to be the sort of judgment that could constitute perceptual knowledge. The belief that it's the Harley needn't be an inferential belief even though your experience does not have as part of its content anything about the engine's particular make. The judgment about your knowledge, I submit, is consistent with our ordinary practice of knowledge ascriptions.⁷ The judgment about the content of the experiences that give rise to that bit of knowledge is motivated by a principle to the effect that:

RV: The properties represented by S's experiences are limited to those properties such that if S judges a has F on the basis of veridical experience, that experience involves the veridical representation of qualities, the possession of which, would entail that a has F (Smith 2002, 49).

⁷For further discussion of such examples and the status of KLR, see Brewer (1999, 246) and Millar (2000).

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While there might be perceptual illusions of color, size, shape, and the like, I doubt that if you heard a motorcycle that sounded just like a Harley that was made by some other company, we'd classify this as a case of perceptual illusion. The mistaken judgment isn't due to the fact that the experience represents something as being a Harley, although we might say that someone could know perceptually that something is a Harley.

If we can say that perceptual knowledge extends beyond knowledge of properties that are represented by experience, we can say that the judgment about how things 'seem' can pertain to states of affairs you might possibly know to obtain on the basis of perceptual experience even though those experiences do not represent the presence of those properties, *per se*. And this allows us to reconcile the hypothesis that Ingrid truly is inverted with both the functionalist and representationalist assumption. There appears to be a use of 'seems' governed by a rule of roughly the following sort:

ES: S can truthfully say 'It know it seems F' if F is a property S can knowingly attribute on the basis of experience even if the experience's representational content doesn't represent something as being F. The judgment 'It seems F' is true only if S is overall disposed that the thing is F if S forms a belief having taken experience at face value.

There is logical space for a view on which there is a property, F, such that someone could knowingly attribute it on the basis of experience even though F-ness is not itself part of the experience's representational content. Such a view is the natural one to take with respect to Bianca and so it cannot be wrong to extend it to say something about Ingrid on grounds of being incoherent.

I said that there was a second lesson to be drawn from our description of Amy, Bianca, and their knowledge of how things seem. By hypothesis, things seem quite different to Amy and Bianca. Bianca is colorblind, but Amy is not. But, by hypothesis, the judgments they knowingly make about how things seem are identical. And that seems like excellent evidence for saying that 'seems' judgments are potentially ambiguous. On one reading, I'll call it the doxastic reading, judgments about how things 'seem' are judgments about what someone would believe on the basis of experience if they were to judge something about the external world in light of their experience. On this reading, 'seems' conforms to ES. On a second reading, I'll call it the phenomenal reading, judgments about how things 'seem' are judgments about what it's like for the subject to undergo an experience. To use Harman's jargon, they pertain to the intrinsic qualities of the experience. Because we're trying to accommodate representationalism, we should assume that on the phenomenal reading of 'seems', the judgment that it seems such and such a way to someone carries with it implications about the representational contents of their experiences. However, because we've rejected KLR, such judgments are logically independent from judgments about how things 'seem' on the doxastic reading. Thus, judgments about how things seem (doxastically) cannot be used to determine the facts about how things are in terms of the phenomenal character of an experience or its

representational content.

If we reject KLR, we can deal with one final objection. How is it, someone might ask, that Audrey and Ingrid might be inverted if they can both say truthfully 'I know

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it seems red' when viewing a red tile? Well, in the same way that Amy and Bianca might differ subjectively when they can both truthfully say 'I know it seems green' when viewing a green tile. They can truthfully say these things because such assertions are about a different subject matter than judgments about how things seem phenomenally. Their judgments are not judgments that pertain only to properties that are represented by experience, whereas the sense of 'seems' we use in formulating the inversion hypotheses do pertain only to those properties (this is a use of 'seems' that doesn't conform to ES). In their carefully controlled environment, Amy and Bianca are disposed to judge the same things about the colors of objects when both take experience at face value in spite of the differences in the representational contents of their experiences. Hence, while the colors seem different to Amy and Bianca, in terms of the colors objects seem to have, they seem the same. And, while things seem (phenomenally) different to Ingrid and Norma, in terms of the colors objects seem (doxastically) to have, they seem the same. When Ingrid and Norma say 'The tile seems red', what they say is true because what they'd believe if they took experience at face value is that the thing is red (this is true in spite of the fact that only Norma has an experience with a representational content such that the experience is veridical only if the tile is red). So, while someone might assert that inversion is possible, asserting in effect that (phenomenally) how things seem differ for Ingrid and Norma, such an assertion is not corrected by the further assertion that they can both knowingly say the same red thing 'seems red'. In other words, (7) and (8) are consistent with H1 and H2 on their proper readings.

Let me make one final observation about the argument for the incoherence of inversion. If Ingrid and Norma differ in the way that I've suggested they might differ consistent with the (1)–(8) then it seems that one of these subjects has color experiences that are not veridical. It seems, then, that if someone wants to give a compelling demonstration for the incoherence of inversion they will want to provide some additional argument to show that it would be implausible to suggest that one of these subjects' experiences is illusory. Whatever shape this argument takes, it would appear that the considerations that support (1–8) are insufficient to establish this further claim that neither subjects' experience misrepresents the colors if one subject's experiences are veridical. It seems we have a coherent model that explains how (1–8) could be true consistent with the hypothesis that only one subject's experience is veridical.

At bottom, the problem with the argument against the possibility of inversion is that it equivocates. If we formulate the inversion hypotheses using the phenomenal senses of 'seems', we oughtn't argue that such hypotheses are impossible by eliciting judgments about how things 'seem' on the doxastic readings. Not unless we have independent reason for saying that these judgments are logically related to each other. However, we've seen that neither functionalist nor representationalist assumptions provide any reason for saying that these judgments are logically related to each other. How could they? They are theses about mind and experience, not about the subject matter of English expressions. We've also seen that there's some intuitive pressure to say that judgments about how things seem phenomenally and doxastically should be taken to be logically distinct. If we don't, it's hard to make sense of what's going on with Amy and Bianca, and once this is granted, it seems all the pieces fall into place. Assuming H1 and H2, it isn't surprising that Ingrid and

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Norma have the same beliefs about the colors and say the same things about the colors, even if we assume functionalism and representationalism. That's not to say that H1 or H2 is possible, but only that its impossibility is difficult to demonstrate, and its significance for the philosophy of perception difficult to discern.

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