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The Know-How Response to Jackson's Knowledge Argument

ABSTRACT

I defend Frank Jackson's knowledge argument against physicalism in the philosophy of mind from a criticism that has been advanced by Laurence Nemirow and David Lewis. According to their criticism, what Mary lacked when she was in her black and white room was a set of abilities; she did not know *how* to recognize or imagine certain types of experience from a first-person perspective. Her subsequent discovery of what it is like to experience redness amounts to no more than her acquisition of these abilities. The physicalist can admit this, since it does not commit one to the view that there are any *facts* of which Mary was ignorant (in spite of her exhaustive knowledge of truths about the physical world). I argue against this view, on the grounds that the knowledge of what an experience is like cannot be equated with the possession of any set of abilities.

I. Introduction

Philosophers have repeatedly sought a reduction of consciousness to physical states. Their endeavours have long been hampered by difficulties of the sort that Frank Jackson (1982 and 1986) illustrated in his knowledge argument against physicalism. Jackson considered the plight of an imaginary scientist named Mary, who has only experienced the black and white shades of the room in which she has lived since birth. We are to suppose that Mary knows all the truths of physical science, including those that describe the neurophysiological states that occur in people when they see red things. It seems clear that if Mary were to leave her room and experience redness for the first time she would learn something new, for she would discover what it is like to see the colour red. According to Jackson, Mary's discovery would consist in her coming to know a new fact about the experiences that people undergo when they see redness, one that she did not know when she was in her room. But she there enjoyed a complete knowledge of the physical. Therefore, Jackson concluded, since there are facts about experiences that elude Mary's complete knowledge of physical science, physicalism is false.

Laurence Nemirow (1980 and 1990) and David Lewis (1983 and 1990) have developed one of the better-known rebuttals of Jackson's argument. They agree that Mary makes a genuine discovery when she learns what it is like to experience redness, but deny that her discovery involves coming to know a fact of which she was not already cognizant while still in her room. According to them, Mary's discovery is a discovery of new abilities rather than new facts. That is, her discovery of what it is like to experience redness consists merely in her acquiring new knowledge of how to do certain things, and not in her gaining new knowledge that so-and-so is the case. It is new knowledge-how but not new knowledge-that. Thus, according to Nemirow and Lewis, the fact that Mary makes a genuine discovery when she first experiences redness does not threaten physicalism; for her making such a discovery is perfectly consistent with the claim that while she was in her room, her exhaustive knowledge of the physical afforded her a complete factual knowledge of all that then existed, including the experiences undergone by others when they viewed red things.

What are these abilities that purportedly constitute Mary's new know-how? While several abilities are adduced by Nemirow and Lewis, they usually cite mnemonic, recognitional and imaginative abilities as being central to their analysis.[1] In what follows, it will be argued that these abilities, taken severally or conjointly, do not amount to the sort of knowledge that we have in mind when we say that Mary gains new knowledge by learning what it is like to see red. I shall begin with a consideration of the relevance of recognitional abilities to such knowledge.

II. Recognitional Abilities and Knowledge of What It's Like

William Seager (1991, pp. 155-56) and John Bigelow and Robert Pargetter (1990, p. 146) have offered similar criticisms of the view that the possession of the relevant recognitional abilities gives one knowledge of what it is like to have a certain sort of experience. Their objections are motivated by the strange case of blindsight. The evidence concerning blindsight seems to show that a subject can acquire from her own visual system knowledge about some part of her surroundings, even though she does not have a conscious visual experience of it. The information thus culled from her visual system apparently equips the blindsight subject with some of the same abilities to recognize environmental features as are possessed by people who have conscious visual experiences of those features. This allegedly poses a difficulty for the view that recognitional abilities account for the knowledge of what it is like to undergo a certain sort of experience, since the person with blindsight evidently shares the same recognitional abilities that we have and yet need not know what it is like to undergo conscious visual experiences of (say) trapezoidal objects.[2] Thus, knowing what it is like cannot simply be a matter of possessing the right recognitional abilities.

This criticism misses the mark, for although the blindsight subject is able to recognize things in her environment without consciously experiencing them she might not be able to recognize conscious *experiences of* those things (were she to have any). A proponent of the recognitional ability account might equate this latter sort of recognitional ability with one's knowledge of what it is like to enjoy experiences of a certain sort.

In order to undermine this view we must show that one can possess the ability to recognize a given sort of experience without also knowing what it is like to undergo it. The question whether this really is possible is similar to a question that was first posed by William Molyneux and reported by John Locke (1974, II.ix.8, pp. 32-33). Molyneux asked us to suppose that a congenitally blind man (hereafter known as Al), who can distinguish cubes from spheres by touch, suddenly gains his sight. We place before him a sphere and a cube and ask him to tell us which of the two objects is a cube without touching them. He is to arrive at his judgment simply by looking at the shapes. Locke maintained that Al would be unable to identify the cube by sight alone. However, beginning with Leibniz (1981, Bk. 2, Ch. 9, pp. 135 ff.), others have claimed that Al could pass the Molyneux test. If they are right this raises a serious difficulty for any attempt to understand the knowledge of what it is like to have a certain sort of experience in terms of the possession of the relevant recognitional ability. For if Al can pass the test, then it seems that he already had the ability to *recognize* visual experiences of cubicity when he first looked at the cube, and had merely lacked until then the opportunity to exercise this ability, since he was without the quite different capacity to *undergo* such experiences. Even though Al was blind and therefore unable to have these experiences, it was nonetheless true of him all

along that were he to have one, he would succeed in recognizing it. Moreover, he possessed this recognitional ability even though he did not (when he was blind) know what it is like to see cubes or to see anything at all. It appears, then, that the possession of the ability to recognize an experience is not sufficient to give one knowledge of what it is like to undergo it.

Of course, this is so far only a "what if" argument. Have we any reason to believe that Al could pass the test? It seems that we do, given the evidence that has been gathered from studies of adults who had been blind from an early age and who gained their sight as a result of surgery (Gregory 1990, pp. 201-05, Morgan 1977, pp. 180-85 and Sacks 1995, pp. 108-52).[3] This evidence is not unassailable. For instance, Janet Levin notes that according to it, blind people who gain their sight through surgery require at least some practice before displaying their recognitional capacities,[4] during which they might be thought to acquire those capacities for the first time. It is more likely, though, given Richard Gregory's description of the data, that this time lag after the surgery is required only in order for the patient's optical (and perhaps neural) hardware to adjust to its post-surgical condition.[5] More specifically, it is only required in order for the patient to develop the capacity to *undergo* such complex visual experiences as that of cubicity, as distinguished from the quite different capacity to *recognize* these new experiences. On this more plausible interpretation of the data, the documented cases of blind adults who gain their sight through surgery tend to support the view that Al could pass the Molyneux test. To that extent, they undermine any account of knowing what it is like (to have a given sort of experience) in terms of having certain recognitional capacities.

A critic might acknowledge that Al had all along an ability to recognize visual experiences of cubicity, but deny that Al's recognition of his first such experience is sufficiently direct; for Al may be able to recognize this first visual experience only indirectly, by means of an inference involving the comparison of his new visual experience with earlier tactile experiences of shapes. The critic may add that Al's discovery of what it is like to have a visual experience of cubicity amounts simply to his acquisition of the ability to recognize this type of experience *noninferentially* (i.e., directly).[6]

It is debatable whether recognition can ever be entirely noninferential, involving as it does classificatory judgments, which seem always to rely on comparisons with earlier experiences. However, we usually recognize experiences without consciously drawing such comparisons. In this sense, our recognition of an experience may indeed be said to be *direct*. But is the critic right in identifying one's knowledge of what a certain experience is like with the capacity for such direct recognition of it? It is hard to see how she can be. After all, I know what it is like to taste Creemore beer, and yet I may have to pause a moment and reflect on earlier beer-tasting experiences before recognizing the current taste as the taste of Creemore. Here, my recognition of the current taste involves a conscious comparison with earlier experiences that supports an inference concerning my present experience. It is consequently not a direct recognition (in the above sense of "direct"). Thus, since I know what it is like to taste Creemore and yet cannot recognize this taste directly, the capacity for direct recognition is not necessary for knowing what it is like.

The ability to directly recognize an experience is also not sufficient for knowing what it is like to undergo it, as is shown by some additional and more compelling evidence in support of the view that one can pass the Molyneux test. The psychologists Andrew Meltzoff and Richard Borton (1979) have shown that infants tend visually to fixate an object of which they have had previous tactile experience for a longer period of time than objects with which they have not already been tactually acquainted. Meltzoff and Borton quite plausibly interpret this longer visual fixation time as evidence of the infants' recognition of the object's shape as a result of their previous tactile experience of it. Skeptics may challenge the relevance of such studies on the grounds that the infants had at least some opportunity beforehand to explore their surroundings both tactually and visually and to correlate the deliverances of these two sense modalities. However, Meltzoff and Borton are alert to this objection. Indeed, they raise it against earlier experiments that were similar to their own but that were carried out on infants who were six months old. In order to ensure that their own experiments would not be vulnerable to this sort of criticism they ran their tests on infants who were only twenty-nine days old. Infants of this age "will not explore objects manually," (Meltzoff and Borton 1979, p. 403) and thus have not already explored their surroundings both visually and tactually and correlated the resulting sense impressions. (Since twenty-nine-day-old infants do not explore objects manually, they were tactually familiarized with the shapes used in the experiment by being given one of two differently shaped pacifiers which they sampled orally and which they were prevented from seeing; visual fixation time was subsequently measured while showing them both pacifiers.)[7]

Here, then, is empirical data in support of the view that one can have the ability to *directly* (i.e., noninferentially) recognize a certain type of visual experience without ever having had it, and thus without knowing what it would be like to have it. For surely the infants, at less than one month old, did not perform any discursive theorizing in which they consciously compared their new visual experiences of the two shapes with their earlier tactile experience of a shape, and which led them to draw inferences concerning the visual experiences. Thus, the infants in the experiment seem to have exercised an ability to recognize their new visual experiences *directly* (in the above sense of "directly"), an ability that they had before having any visual experiences of the oddly shaped pacifiers.

It might be objected that the argument of this section does not address the question of whether Mary's discovery of what it is like *to see red* amounts simply to her acquisition of a recognitional ability, since it has been framed entirely in terms of experiences of shapes rather than of colours.[8] Quite so. I have concentrated on cases involving shapes, which can be detected by means of both visual and tactile experiences. I have exploited our apparent ability to recognize new visual experiences of shapes as a result of previous tactile experiences of them. But colours, unlike shapes, are only detectable by means of one perceptual modality, with the result that there can be no previous tactile (or other non-visual) experience of (e.g.) red that enables one to recognize one's first visual experience of it. For this reason, the argument of this section does not purport to show that one could possess the ability to recognize experiences *of redness* without knowing what it is like to undergo such an experience. The point of the argument is instead that

there are experiences (of shapes) which are such that one can possess the ability to recognize them while yet being ignorant of what they are like. As long as this is so, a defender of Jackson's knowledge argument can simply present the argument in terms of such experiences (e.g., in terms of Al's discovery of what it is like to experience cubicity visually) instead of experiences of redness. The resulting version of Jackson's knowledge argument will be immune from know-how responses that focus on recognitional abilities.

III. Problems for the Imaginative Ability Analysis

Having thus set forth an obstacle to the recognitional ability account, let us consider whether Nemirow's imaginative ability model fares any better. Is it true that Mary's discovery of what it is like to experience redness consists simply in her learning how to imagine it? Apparently not, for one can possess the ability to imagine an experience without knowing what that experience is like. To see how, suppose Sally visits a home improvement store and asks if they have any mauve wallpaper. The sales clerk says, "Yes, in fact, we have wallpaper in three shades of mauve," and, holding up two samples, adds, "This is Dusty Mauve, and this is Country Club Mauve. I don't have a sample available of the third shade of mauve, but, if you want to get an idea of what it looks like, just imagine a shade of mauve in between the Dusty and Country Club shades." Sally could follow this advice and thereby visualize the missing shade of mauve. According to Nemirow, she would therefore have the ability to imagine the missing shade.[9] However, she may not follow the clerk's advice and picture the intermediate shade, even though she retains the ability to do so. Since she has not done so and has not yet seen the missing shade, she does not know what it is like to see it. Although she could easily find out what it is like (by following the clerk's advice) she might never bother to do so; in which case it would be true that Sally possessed an ability to imagine the missing shade of mauve but never actually acquired the knowledge of what it is like to experience it.[10] Therefore, the mere possession of the relevant imaginative ability is not sufficient for knowing what it is like.

This objection can be applied more generally: for any given person, there are many types of experiences of colours, shapes, sounds, etc. that she has not had but that she could imagine by interpolating on her previous experiences. Since she will not in the course of her life imagine or undergo all of them, she will never know what it is like to have every such experience. Thus, knowing what an experience is like cannot be equated with being able to imagine it.

Supporters of the imaginative ability analysis might object that Sally's ability to imagine the missing shade is not the same as our ability to imagine it (assuming that we know what it is like to see that shade); for she can only imagine it by means of an interpolation, while we can imagine it without this extra step.[11] The objection relies on the principle that being able to do A if condition C1 obtains is not the same as being able to do A regardless of whether C1 obtains. Consider the following illustrations of this principle: Bill Gates can buy a mansion; I could buy one too, *if* I had the money. Clearly, Mr. Gates is able to do something that I cannot do. He has an ability that I lack. Similarly, Stretch can touch the basketball net without standing on anything, whereas I have to stand on a chair in order to touch it. I can, in a sense, touch the net. But it is simply false that I have

the same ability as Stretch. It is equally false (so the objection goes) that Sally has the same imaginative ability that we have.

To see why this objection fails, note that there is a crucial dissimilarity between the Bill Gates and Stretch examples and the case involving Sally. In the former examples, I can do A if I first do something *else*. I must first perform some action that is different from A. I must first, for example, stand on a chair, which does not in itself amount to touching the net. My reaching up and touching the net is another action, over and above my standing on the chair (just as my purchasing the mansion is a further action over and above my acquisition of the requisite funds). By contrast, as soon as Sally performs the interpolation on the other two shades of mauve there is nothing more for her to do; she has *thereby* imagined the missing shade. Her performance of the interpolation just is her act of imagining that shade. The disanalogy with the Gates and Stretch cases is clear: it is not that Sally can do A only if she first carries out some other action (B) that sets the stage, as it were, for her performance of A; it is instead that she can do A simply by doing B; the latter action realizes the former one. So, since she is able to do B, she is able to do A, full stop. It does not matter how her performance of A is realized: as long as she can do something that realizes A, she can do A. More specifically, since she is able to interpolate on the other two shades of mauve and since her very performance of that action *is* her imagining of the intermediate shade, she shares with us the ability to imagine that shade.

One might insist that since Sally's imagining of the missing shade is realized differently from our imagining of it, her *ability* to imagine it must therefore be different from the imaginative ability that we have. This is based on the assumption that our abilities to do A are not the same ability if A is realized differently in our respective cases. But this has the implausible result that no two people share the same ability to do A (regardless of what A is), since no two actual realizations of A are qualitatively the same. For instance, you and I are both able to wave goodbye. Intuitively, we share this same ability. And yet if we impose the requirement that two people share the ability to do A only if A has in both cases qualitatively the same realization, then we do not share the ability to wave goodbye. For in my case, "waving goodbye" is realized by moving an arm that is precisely thirty-two centimetres long, and that weighs exactly this much, this far to the left and to the right, thereby moving this many molecules this far; which presumably is not what realizes "waving goodbye" in your case. More generally, given the peculiarities of our bodies and given that our bodies figure in the realizations of our actions, no two people realize a given action in the same way. So if we accept the above stringent criterion for counting abilities, we must conclude that no two people share the same ability. Since there is no good reason to accept this implausible result, we should reject the criterion that yielded it.

In short, there is no imaginative ability that we have but that Sally lacks. She has the ability to imagine the missing shade of mauve, which is the same ability that we have and that is equated, by proponents of the know-how response, with the knowledge of what it is like to see that shade. Since she has this ability but does not know what seeing the missing shade is like, such knowledge cannot simply be the ability to imagine that shade.

IV. Conjoining and Disjoining the Abilities

Earl Conee (1994, p. 138) has raised the same sort of interpolation objection to Nemirow's account as the one that was given in the previous section. However, Conee (1994, p. 139) denies that it refutes David Lewis's view, since Lewis does not simply identify knowing what an experience is like with the possession of the ability to imagine it. Rather, Lewis equates such knowledge with the possession of several abilities, namely, the abilities to imagine, recognize *and* remember experiences of that sort.[12] Now, while Sally is able to imagine—and, it should be noted, to recognize[13]—experiences of the missing shade of mauve, she is clearly unable to *remember* having had any such experience, for she has never had one. So, concludes Conee, Lewis's account is not guilty of wrongly crediting Sally with knowledge of what it is like to see the missing shade of mauve.[14]

Lewis's inclusion of mnemonic abilities does indeed spare his account from the foregoing criticism of Nemirow, but only at the cost of rendering his view too strong. For if Sally were now to look up and see for the first time the missing shade of mauve she would know what it is like to see it, even though she has had no earlier experience of that shade and is thus unable to remember having had any such experience. Clearly, then, if we require that Sally cannot know what it is like to see the missing shade unless she can remember an earlier experience of it, we make it impossible for her (or anyone else) to discover for the first time what it is like to see it.[15] Perhaps, though, Lewis intended his list of mnemonic, imaginative and recognitional abilities to be read only disjunctively, so that Sally's knowledge of what it is like to see the missing shade is equated with her possession of an ability to imagine, recognize *or* remember an experience of it. However, this would make each of the three abilities, taken on its own, sufficient for knowing what it is like to see the missing shade. One would then have to overcome the criticisms raised in sections II and III, according to which neither of the relevant imaginative and recognitional abilities is sufficient. In short, either we read Lewis's list of abilities as a conjunction, in which case his account fails because one of the required abilities (viz., the mnemonic one) is not necessary for knowing what it is like to have the experience;[16] or we read it as a disjunction, in which case his account fails because two of the cited abilities are insufficient to deliver the goods.[17]

V. More About Imaginative Abilities

David Papineau (1993, pp. 106-11) has maintained the relevance of imaginative, mnemonic and recognitional abilities to an account of knowing what it is like to undergo an experience, but without simply equating such knowledge with the possession of these abilities. He merely claims that when Mary learns what it is like to experience redness directly she acquires certain "*re-creative* powers of imagination and recall," along with a recognitional ability (Papineau 1993, p. 107; italics in the original). Papineau stops short of identifying Mary's acquisition of these abilities with her discovery of what it is like to see red, for he believes that other changes (in addition to her acquisition of abilities) occur in Mary when she first experiences redness qualia. He also believes that none of these changes is inconsistent with physicalism. I will not examine Papineau's full account but will instead focus on what he says about some of the abilities that Mary acquires, namely, the abilities to imagine and remember an experience "from the inside" (Papineau 1993, p. 108), that is, from the first-person perspective.

Papineau is impressed by the fact that we can generally only imagine or remember an experience from the inside if we have had an earlier experience of the same sort. He sets out to explain this by suggesting that when I imagine or remember an experience from the inside, I thereby induce in myself a "faint replica" of the earlier experience; that is, I am actually "*re-creating* a version of the experience being imagined or remembered," (Papineau 1993, p. 108; italics in the original).[18] It seems plausible that I can only produce in myself replicas of experiences that I have previously undergone; which, according to Papineau, explains why people can only imagine or recall from the inside experiences of a sort that they have antecedently had.[19]

Papineau has thus outlined a causal account of the origin of our imaginative abilities, according to which, for instance, my first experience of redness *causes* changes in me in virtue of which I become able to imagine experiences of redness from the inside. Like all other causal relations, this one is contingent: we could have the same effect without its having been produced by that cause. For instance, I could have acquired the ability to imagine redness experiences without its having been engendered in me by an earlier experience of that colour. One can resort to the fiction of a perfect neurophysiologist to illustrate the point: she could have produced in me whatever effects were actually brought about by my first redness experience; in which case, I would possess the ability to imagine redness experiences without ever having had one, and thus without knowing what it is like to undergo such an experience. So, again, "knowing what it's like" is not "being able to imagine."

It might be objected that the changes induced by the perfect neurophysiologist only confer upon me the capacity to undergo an experience of redness when I perceive a red thing under normal conditions, without also conferring upon me the ability to imagine redness. For, since I have not yet experienced the redness quale, I have no way of identifying it from a first-person perspective, and thus no way of deciding that *that* is the quale that I shall now imagine from the inside. The point of this objection is that the connection between my first redness experience and my ability to imagine experiences of that type is not merely causal. It is also conceptual, for in order to imagine a redness experience from the inside I must have some way of identifying it from the inside as the experience that I shall imagine. And this seems to require that I have previously undergone such experiences and remember what they are like.

To see why this objection fails consider another tale about interior decorating. Suppose a brain scientist has induced changes in Ed, in virtue of which Ed gains the ability to experience aquamarine, even though he has never actually experienced that shade. Suppose also that Ed is trying to imagine the shade of wallpaper that will best suit his new furniture. Now Ed has a knack for these things. For any given colour combination, he can close his eyes and imagine various additional colours until he arrives at a shade that ideally complements the given colours. He can, for instance, picture vividly the new furniture while varying the shade of the wallpaper until he gets an aesthetically pleasing complement. Suppose that after concentrating on the furniture he arrives at the ideal shade for the wallpaper, which he visualizes and which happens to be aquamarine. There seems to be nothing wrong in supposing that this could happen, even though Ed has never before pictured or experienced aquamarine. Moreover, in some perfectly good sense, Ed here possessed the *ability* to imagine aquamarine, even though he had never before experienced it and was thus unable to identify it from the inside as the shade that he

wished to imagine. Until he exercised this ability he did not know what it is like to see aquamarine, even though he possessed all along the ability to imagine it. Thus, we have another reason for denying that knowing what an experience is like can be identified with being able to imagine it.[20]

VI. Conclusion

It is undeniable that when one undergoes a new kind of experience and learns what it is like to have such experiences one usually acquires new abilities to recognize, remember and imagine them. But the connection between these abilities and one's knowledge of what the experience is like is not as tight as Nemirow and Lewis claim. It is certainly not tight enough to allow an analysis of "knowing what it is like" wholly in terms of such abilities.

ENDNOTES

[1] Lewis devotes more attention to recognitional abilities in his 1983 but shifts the focus to imaginative abilities in his 1990. For a non-physicalist's endorsement of an analysis of knowing what it's like in terms of imaginative abilities, see Mellor 1992/3.

[2] I am assuming, for ease of exposition, that the subject has never had conscious visual experiences of trapezoids and so cannot rely on memory in order to figure out what such experiences are like.

[3] According to Richard Gregory, a man named S.B., who gained his sight late in life, "never learned to read by sight . . . but we found that he could recognize block capital letters, and numbers, by sight without any special training. This surprised us greatly. It turned out that he had been taught upper case, though not lower case, letters at the blind school. They were given raised letters on wooden blocks, which were learned by touch," (Gregory 1990, p. 204). Also, Michael Morgan reports that, "The first evidence of direct transfer from [S.B.'s] previous tactile experience was that he could tell the time from a clock on the wall; and he demonstrated to the investigators how he had previously been used to telling the time by running his fingers over a large Hunter watch with no glass," (Morgan 1977, p. 182). Morgan also reports that S.B. was not really *congenitally* blind, but that he "had little if any experience with pattern vision after the age of ten months," and that "he claimed to have no visual memories other than those of red, white and black," (Morgan 1977, p. 180). Conflicting responses to Molyneux's question receive support in Oliver Sacks's recent description of Virgil, who became blind in childhood and later had his vision surgically restored (Sacks 1995, pp. 108-52). For instance, Sacks recounts Virgil's post-surgical inability "to recognize any shapes visually—even shapes as simple as a square or a circle," and concludes that, "This was his answer to the Molyneux question," (Sacks 1995, p. 126). It is hard to reconcile this with Sacks's earlier claim that, "Virgil's first formal recognitions when the bandages were taken off had been of letters on the ophthalmologist's eye chart," (Sacks 1995, p. 122). Sacks himself subsequently tested Virgil's ability to recognize letters visually and found that Virgil did "rather well . . . and recognized all the commoner letters (at least, capital letters) easily—*as he had been able to do from the moment the bandages were removed*," (Sacks 1995, p. 122; my italics). Virgil, like S.B., had learned to distinguish (by touch) raised, upper case letters on wooden blocks. It is hard to imagine a clearer vindication of Leibniz's response to Molyneux's question, although it is extremely

puzzling that someone who had just regained his sight would be able to recognize visually capital letters but not squares and circles.

[4] Levin (1990, p. 483) quotes Gregory's remark that even the blind people who could recognize their visual experiences soon after gaining their sight did not display these abilities right away but instead came to "see quite well *almost* immediately," (Gregory 1990, p. 201, my italics).

[5] "We should also remember that the operation itself is bound to disturb the optics of the eye, so that we cannot expect a reasonable image until the eye has had time to settle down after the operation," (Gregory 1990, p. 202).

[6] My thanks to an anonymous referee for this journal for raising this concern. It is similar to a worry that Janet Levin considers, although she raises it in a different context, as a problem confronting her proposed defense of physicalism (Levin 1990, p. 483).

[7] Meltzoff and Borton modified the shape of a pacifier by fastening small rubber "nubs" to it. Half of the infants were tactually familiarized with this pacifier, the other half with an unmodified, spherically shaped pacifier. When later shown both pacifiers, each infant tended visually to fixate for a longer period of time the pacifier which he/she had previously sampled orally.

[8] My thanks to an anonymous referee for this journal for raising this worry.

[9] As Nemirow wrote, "Normally, the ability to visualize a colour can be exercised only by the performance of one of three mental actions:

> 1. Directly visualizing the colour itself.
> 2. Remembering a visual experience of the colour.
> 3. Visualizing or remembering similar colours and interpolating. (This third way of visualizing is, of course, Hume's way.)" (Nemirow 1990, pp. 493-4).

[10] A critic may claim that simply by virtue of knowing what it is like to experience the Dusty and Country Club shades, Sally knows what it is like to experience the missing third shade. But this only seems to be the case because it is so easy for Sally to use her knowledge of the first two shades as a basis for imagining the missing shade. She must exercise this imaginative ability, though, if she is to arrive at a knowledge of what it is like to experience the missing shade as distinguished from the other two.

[11] My thanks to an anonymous referee for this journal for alerting me to this worry.

[12] In Lewis's words, "The Ability Hypothesis says that knowing what an experience is like just *is* the possession of these abilities to remember, imagine and recognize," (Lewis 1990, p. 516; italics in the original). (This passage is quoted in Conee 1994, p. 138.)

[13] In the light of her knowledge of the Country Club and Dusty Mauve shades, Sally should be able to recognize experiences of the missing shade, even though she does not know what it is like to see it. Note that this counterexample goes further than the ones offered in Section II, since it indicates that one can possess the ability to

recognize experiences *of colours* (not just of shapes) while not knowing what it is like to have them.

[14] Conee ultimately rejects the know-how response to Jackson's knowledge argument in favour of an alternative refutation. He claims that when Mary discovers what it is like to see red, her new knowledge is simply knowledge of redness by acquaintance. Thus, Mary's discovery of what it is like to see red amounts merely to the knowledge of a new thing (viz., the "look" of red) and not of any new fact (Conee 1994, p. 142). (Conee maintains that knowledge by acquaintance is, in itself, merely knowledge of things [such as looks] and not of facts.) However, Conee adds that in order for Mary to discover what it is like to see red, she must "notice the quality as it is being experienced," since "qualities that are quickly and inattentively experienced may not be thereby known," (Conee 1994, p. 141). It is questionable whether some modicum of propositional content (and thus factual knowledge) has not insinuated itself into Mary's discovery by way of this emphasis on *noticing* and *attentively* experiencing.

[15] Perhaps this is why Lewis, in a more recent paper, does not mention mnemonic abilities, speaking simply of "abilities to recognize and to imagine experiences of the same type," (Lewis 1995, p. 141).

[16] Note that the possession of the mnemonic ability is also not sufficient for knowing what it is like, since one's memory of the earlier experience might be merely propositional; i.e., one might only be able to remember *that* one had an earlier experience of the missing shade, without being able to re-live it. This "re-living" would involve imagining the shade once again. Even if one could thus imagine and remember an experience of the missing shade, one still might not know what it is like to see it; for one's imaginative ability might rest on the same sort of Humean interpolation that Sally could perform, while one's mnemonic ability might be the ability to remember (merely propositionally) *that* one had such an experience.

[17] Seager and Conee also deny that the relevant imaginative ability is necessary. According to Seager, one can know what an experience is like at the moment at which one has it, but, "It does not follow that one at that time (or any other) knows how to imagine having that experience," (Seager 1991, p. 157). Conee asks us to suppose that Mary has a cognitive deficiency, which leaves her "unable to visualize anything," (Conee 1994, p. 139). Nevertheless, while she is attentively viewing a ripe tomato she can truly be said to know what it is like to see red things, even though she is not at that (or any other) moment able to imagine having such an experience.

[18] Papineau says that, "First-person imagination or memory requires that the brain be in a state which is similar to the state constituting the original experience," (Papineau 1993, p. 108). He believes that we are even capable of imagining pains in this re-creative sense of imagining. But compare Seager's consideration of imagining redness by "having a version of an experience of red," (Seager 1991, p. 157). Seager denies that he can imagine in the same way (i.e., in the re-creative way) an excruciating pain. He offers the following challenge: "You can make yourself see red by an effort of imagination (close your eyes and think of the Canadian flag); can you make yourself suffer from toothache by a similar effort (open your mouth and think of your dentist)?" (Seager 1991, p. 157).

[19] In Papineau's words, "For it seems highly plausible that the brain's ability to re-create an experience depends, as a matter of empirical fact, on its having at some time had an original version of that experience, to give it, so to speak, the mould from which to make the replicas," (Papineau 1993, p. 108). In a footnote on the same page, Papineau notes some exceptions to this generalization. E.g., we can imagine "complex experiences, like seeing a unicorn, as long as we've previously experienced the elements separately." Papineau also alludes to cases of Humean interpolation, where we "imagine a colour which is spectrally between others we have previously experienced." He regards these cases as benign exceptions, since the material for such imaginative feats is garnered from previous experiences; they thus conform to the general rule that we can only imagine experiences that are of the same type as experiences that we underwent earlier (or that are at least composed of the latter). Perhaps because he does not himself offer a straightforward imaginative ability analysis of knowing what it is like, he does not discuss the threat posed by interpolation cases to such accounts.

[20] Note that this is not just a variation on the story about Sally and the missing shade of mauve. For we need not assume that aquamarine is spectrally between colours that Ed has experienced, and that he can thus imagine it by performing a Humean interpolation. His imaginative ability is instead a direct result of a hardware change (or activation) that *could* have been caused by an experience of aquamarine but that was in fact produced by the meddling neurophysiologist.

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I am grateful for comments from William Seager and an anonymous referee for the journal.