
Knowing What It Is Like: The Ability Hypothesis and the Knowledge Argument

Mary, as the familiar story goes (Jackson 1982), is imprisoned in a black and white room. Never having been permitted to leave it, she acquires information about the world outside from the black and white books her captors have made available to her, from the black and white television sets attached to external cameras, and from the black and white monitor screens hooked up to banks of computers. As time passes, Mary acquires more and more information about the physical aspects of color and color vision. She comes to know all the familiar color names and the objects to which they apply, the physical character of the surfaces of those objects, the way the light is reflected, the changes in the retina and the optic nerve as different colors are perceived, the physical changes in the visual cortex. Eventually, she becomes the world's leading authority on color and color vision. Indeed she comes to know *all* the physical facts pertinent to everyday colors and color vision.

Still, as the years go by, she becomes more and more dissatisfied. She wonders to herself: What do people in the outside world *experience* when they see the various colors? *What is it like* for them to see red or green? No matter how often she reads her books or how long she spends examining the printouts from her computers, she still can't answer these questions fully.¹ One day her captors release her. She is free at last to see things with their real colors (and free too to scrub off the awful black and white paint that covers her body). She steps outside her room into a garden full of flowers. "So, that is what it is like to experience red," she exclaims, as she sees a red rose. "And that," she adds, looking down at the grass, "is what it is like to experience green."

Mary here seems to make some important discoveries. She seems to find out things she did not know before. How can that be, if, as seems possible at least in principle, she has all the physical information there is to have about color and color vision—that is, if she knows all the pertinent physical facts?

One popular explanation among philosophers (so-called “qualia freaks”) is that there is a realm of subjective, phenomenal qualities associated with color, qualities the intrinsic nature of which Mary comes to discover upon her release, as she herself undergoes the various new color experiences. Before she left her room, she only knew the objective, physical basis of those subjective qualities, their causes and effects, and various relations of similarity and difference. She had no knowledge of the subjective qualities in themselves.

This explanation is not available to the physicalist. If what it is like for someone to experience red is one and the same as some physical quality, then Mary already knows *that* while in her room. Likewise, for experiences of the other colors. For Mary knows all the pertinent physical facts. What, then, can the physicalist say?

Some physicalists respond that knowing what it is like is know-how and nothing more. Mary acquires certain abilities—for example, the ability to recognize red things by sight alone, the ability to imagine a green expanse. She does *not* come to know any new information, any new facts about color, any new qualities. This is the view of David Lewis. In the postscript to “Mad Pain and Martian Pain,” he comments:

...knowing what it is like isn't the possession of information at all. It isn't the elimination of any hitherto open possibilities. Rather, knowing what it is like is the possession of abilities: abilities to recognize, abilities to imagine, abilities to predict one's behavior by imaginative experiments (1983, p. 131).

In a similar vein, in his essay “What Experience Teaches,” Lewis says:

The Ability Hypothesis says that knowing what an experience is like just *is* the possession of these abilities to remember, imagine, and recognize... It isn't knowing-that. It's knowing-how. (1990, p. 516)

Lawrence Nemirow holds the same (or almost the same) view:

Knowing what an experience is like is the same as knowing how to imagine having the experience. (1990, p. 495)

Is the Ability Hypothesis true? Moreover, if it is true, is it really the case that captive Mary poses no problem for physicalism? In what follows, I argue that the answer to both of these questions is “No.” I also propose an alternative hybrid account of knowing what it is like that ties it conceptually both to knowing-that and to knowing-how. Given this account, I maintain, the physicalist still has a satisfactory response to the case of Mary and the Knowledge Argument.²

1.1 The Hypothesis Clarified

Lewis identifies knowing what an experience is like with certain abilities. What exactly are these abilities supposed to be? To begin with, there is the ability to remember the experience in question. Suppose you smell a skunk for the first time, and you thereby learn what it is like to smell a skunk. Afterward, you can remember the experience. Moreover, by remembering it, you can imaginatively recreate it. This will be the case, even if, as Lewis notes, you eventually forget the occasion on which you had the experience. By having the experience of smelling a skunk, you gain new abilities to remember and imagine.

Included within the ability to imagine is more than just the ability to imagine the experience you underwent earlier. After seeing something red, for example, and seeing something yellow, you are able to imagine something red with yellow spots, even if you have never seen anything red with yellow spots. By imagining certain situations you could not imagine before, you also gain the ability to predict with a fair degree of confidence what you would do were the situations to arise. For example, having seen the color purple, you can now imagine how you would likely react if you were offered a purple shirt to wear.

Another important ability you gain is the ability to recognize the experience when it comes again. Lewis says:

If you taste Vegemite on another day [your second encounter with it], you will probably know that you have met the taste once before. And if, while tasting Vegemite, you know that it is Vegemite that you are tasting, then you will be able to put the name to the experience if you have it again. (1990, p. 515)

These abilities—to remember, imagine, and recognize—constitute knowing what it is like, in Lewis view. There is no claim that you *could*

not possibly have these abilities without having the relevant experiences. After all, you might acquire them by some possible future neurophysiology or by magic. The point is that, given how the world actually works, lessons alone won't do the trick, no matter how complicated they become. Experience, as Lewis puts it, is the best teacher about what a new experience is like.

1.2 The Three L's (Levin, Lycan, and Loar): Some Unpersuasive Objections to the Ability Hypothesis

Janet Levin suggests that the Ability Hypothesis has a number of undesirable consequences. She comments:

First of all, it would be perverse to claim that bare experience can provide us only with practical abilities. . . . By being shown an unfamiliar color, I acquire information about its similarities and compatibilities with other colors, and its effects on other of our mental states: surely I seem to be acquiring certain facts about that color and the visual experience of it. (1990, p. 479)

This seems to me to miss the point. It is certainly true that *I* can gain information about a color I have never seen before by experiencing it. The real question, however, is whether Mary could or whether I could in a comparable situation. In actual fact, I myself do not know all the relevant physical facts; so, of course, *I* can learn things about similarities and differences and causes and effects by undergoing new color experiences. Mary's situation is different, however. Arguably, she already knows all such relations for the case of color even though she does not know what it is like to experience the various colors. As Lewis observes,

Maybe Mary knows enough to triangulate each color experience exactly in a network of resemblances, or in many networks of resemblance in different respects, while never knowing what any node of any network is like. (1990, p. 502)

The Ability Hypothesis has it that Mary's failure to know what any node in any network is like consists in her lacking certain crucial abilities. Nothing in Levin's first objection undercuts this claim.

Levin has a second objection:

. . . it is not implausible to suppose that experience is the *only* source of at least some of these facts. . . . [H]ow *does* one convey the taste of pineapple to someone

who has not yet tried it, and does that first taste not dramatically increase, if not fully constitute, the knowledge of what the taste of pineapple is?

Again, this seems unconvincing. The first taste of pineapple provides one with knowledge of what the taste of pineapple is like, as everyone agrees. In Lewis's view (1990, p. 519), the expression "what experience *E* is like" denotes experience *E*. So, Lewis can happily grant that knowledge of what the taste of pineapple is like is knowledge of the taste of pineapple, of what that taste is.³ The real issue concerns the *kind* of knowledge acquired here. Lewis says that it is knowledge-how. Having tasted pineapple, one has the ability to remember what the taste of pineapple is, to imagine the taste, and so on. Levin evidently takes the opposing view. But she has not given us a clear reason in her second objection for taking her side.

Levin's final objection follows:

... there seem to be important cognitive differences between ourselves and those incapable of sharing our experiences. It would seem extremely natural to explain this by appeal to differences in our knowledge of the facts about experience: indeed what other explanation could there be? (1990, p. 479)

The obvious reply by the advocate of the Ability Hypothesis is that the difference can be explained by differences in cognitive abilities. If you have never experienced a certain experience *E*, you lack the ability to remember *E*, to recognize *E* when it comes again, to imagine *E*.

All of the above objections by Levin to the Ability Hypothesis are endorsed by Lycan (1996). He has some further objections of his own, none of which seems to me very persuasive. I shall briefly discuss four.

Lycan tells us that instances of "S knows wh- . . ." are closely related to "S knows that . . ." For example, "I know where Tom is" is true by virtue of my knowing that Tom is in such-and-such place. Likewise, "You know who Bill Clinton is" is true by virtue of your knowing that Bill Clinton is so-and-so (e.g., the president of the United States). This model leads Lycan to propose that "S knows what it is like to see blue" means (roughly): "S knows that it is like *Q* to see blue," where '*Q*' names the pertinent phenomenal quality. So, according to Lycan, the "knowing what it is like" locution does not pick out an ability at all.

Presumably Lycan introduces the name '*Q*' into the proposed analysis rather than an indexical for a phenomenal quality, since one can know

what it is like to experience blue at times at which one is not experiencing it and hence at times at which one does not know that experiencing blue is like *this*. But the presence of a qualia name within a propositional attitude context creates a difficulty. If I can know that Hesperus is a planet without knowing that Phosphorus is a planet, even though ‘Hesperus’ and ‘Phosphorus’ are coreferential, I can surely likewise know that seeing blue is like *Q* without knowing that seeing blue is like *R*, or vice versa, even though ‘*Q*’ and ‘*R*’ denote the same phenomenal quality. So, which name is the appropriate one for the analysis? Presumably whichever name *S* antecedently knows or introduces for the relevant phenomenal quality. Still, what if *S* neither introduces a name nor knows one already? This surely does not preclude *S* from knowing what it is like to see blue. Moreover, even if *S* has a suitable name, she can satisfy Lycan’s analysans without satisfying the analysandum.

Consider again Mary. Arguably, as Lewis suggests, Mary knows enough to triangulate each color experience within a network of resemblances. Hence, she knows of the experience of indigo, for example, that it is like seeing blue. If she names the former experience ‘*Q*’, Mary knows that seeing blue is like *Q*. However, Mary does not know what it is like to see blue (or indigo) until she leaves her cell. This objection, I might add, also refutes the suggestion that “*S* knows what it is like to see blue” means “There is a phenomenal quality (or state) such that *S* knows that seeing blue is like it.”

So Lycan has not shown that “knowing what it’s like” sentences are analyzable as “knowing-that” sentences. Nor is it obvious how to revise Lycan’s proposal satisfactorily.

A rather different objection Lycan raises is that comparisons can be made between what it is like to experience one thing (e.g., hydrogen sulphide) and what it is like to experience another (e.g., rotten eggs). What it’s like, then, is a matter of fact. “The facts in question per se are not about imagining but about actually smelling,” Lycan asserts, “[a]nd what is factual is propositional” (1996, p. 99).

It seems to me that Lewis would deny none of this. He explicitly allows that color experiences can be compared, and also that what it is like to taste Vegemite can be compared to what it is like to taste Marmite (Lewis, 1990, pp. 501–2). He explicitly asserts that what experience *E*

is like is the same as *E*. So, what it's like, according to Lewis, is a matter of fact. The issue, to repeat what I said earlier, concerns *knowledge* of what it's like. Lycan's argument for the conclusion that the relevant knowledge is propositional is a nonsequitur.⁴

Lycan has another objection from success or failure. If knowing what it is like to experience red is largely being able to imagine experiencing red, the imagining here must be accurate. I do not know what it is like to experience red, if, when I take myself to be imagining it, I am really visualizing blue. From this, Lycan concludes:

... there is such a thing as getting "what it's like" right, representing truly rather than falsely, from which it seems to follow that "knowing what it's like" is knowing a truth. (1990, p. 99)

This is a blatant non sequitur. From the fact that the abilities with which knowing what it is like is identified are abilities to be in certain propositional states, it certainly does *not* follow that knowing what it is like is knowing a truth. What follows is that knowing what it's like consists in abilities, the exercise of which demands (at the time of exercise) the representation of certain truths. So what?

Lycan also objects that the Ability Hypothesis leaves us without a satisfactory explanation of why we have the abilities it describes. Consider our ability to visualize red. How is this best explained? According to Lycan, the answer is that we have factual knowledge of what it is like to experience red. No such explanation is available to Lewis.

This again seems to me inconclusive. Lewis can respond that we have the ability to visualize red because we have experienced red, and we can generate a mental image of red from a suitable memory representation of the experience. Of course, the ability to generate images from memory representations itself needs some sort of explanation. However, this explanation (which lies within the domain of cognitive science) is not obviously one that need appeal to factual knowledge of what it is like to see red. For it is not at all obvious that the relevant memory representations will be propositional at all. One alternative possibility is that they are stored representations with a picture-like format.⁵

The third objector to the Ability Hypothesis, Brian Loar (1990), cites two objections. His initial complaint (echoed again by Lycan, 1996) is as follows:

One can have knowledge not only of the form “pains feel like such and such” but also of the form “*if* pains feel like such and such then Q ”. Perhaps you could get away with saying that the former expresses (not a genuine judgement but) the mere possession of recognitional know-how. There seems however no comparable way of accounting for the embedded occurrence of ‘feels like such and such’ in the latter; it seems to introduce a predicate with a distinct content. (1990, p. 96)

It is not easy to evaluate this objection since Lewis and Nemirow focus on the locution “knows what it is like,” not the locution “feels like such and such.” Their claim is simply that the former expresses an ability. Still, let us take a concrete example: Suppose I have never felt any pains before, and I remark about my current experience (P): “If pains feel like *this*, then I do not want to feel pain ever again.” As noted earlier, Lewis claims that “what experience E is like” denotes E . So, in Lewis’s view, (P) may be recast as simply “If this is pain, then I do not want to experience it again.”⁶

What is supposed to be the problem here? No one who endorses the Ability Hypothesis should deny that the final quoted sentence expresses a genuine judgment. Lewis, for example, is a realist about pain. Pain, in his view, is both a brain state and a functional state (1983a). Abilities enter only with respect to *knowing what pain is like*. One’s knowledge of the state of pain, when one knows what it is like, consists in the possession of certain cognitive abilities, all of which pertain to that state (e.g., the ability to recognize *it* when it comes again, the ability to imagine *it*, and so forth).

So far so good, then, for the Ability Hypothesis. But Loar has one further objection:

For many conceptions of phenomenal qualities, there simply is no candidate for an independently mastered term, instances of which one then proceeds to learn how to recognize: my conception of a peculiar way my left knee feels when I run (a conception that occurs predicatively in various judgments) is not my knowing how to apply an independently mastered predicate. (1990, p. 86)

The obvious riposte is: Whoever said that the conceptions pertinent to the relevant abilities must be ones that correlate neatly with linguistic terms? If I know the way my left knee feels when I run, then, according to the Ability Theorist, I must have certain abilities. These abilities (to recognize, to imagine) require conceptions. But the conceptions need not

be ones that their subjects can articulate publicly in language. Of course, if Loar here has in mind terms in the language of thought, then this response is inappropriate. But Loar's initial claim now needs defense. For why should the Ability Theorist accept that there are no suitable terms in the language of thought, terms that are deployed when the pertinent abilities are exercised?

Still, there is, I believe, a real difficulty lurking here in the background for the Ability Hypothesis. It is to the development of this difficulty that I turn in the next section.

1.3 The Problem as I See It

Human sensory experience is enormously rich. Take color experience. There is a plenitude of detail here that goes far beyond our concepts. Humans can experience an enormous number of subtly different colors, something on the order of 10 million, according to some estimates. But we have names for only a few of these colors, and we also have no stored representations in memory for most colors. There simply isn't enough room. My experience of red_{19} , for example, is phenomenally different from my experience of red_{21} , even though I have no stored memory representations of these specific hues and hence no such concepts as the concepts red_{19} and red_{21} . This is why I cannot go into a paint store and reliably identify a color on a chart as *exactly* matching the precise hue of my dining room walls. I possess the concept *red*, of course, and I exercise it when I recognize something as red, but I lack the concepts for determinate hues. My ordinary color judgments are, of necessity, far less discriminating than my experiences of color. Human memory simply isn't up to the task of capturing the wealth of detail found in the experiences. Beliefs or judgments abstract from the details and impose more general categories. Sensory experience is the basis for many beliefs or judgments, but it is far, far richer.

This point is not restricted to color, of course. The same is true for our sensory experiences of sounds, to mention another obvious example. They, too, admit of many more fine-grained distinctions than our stored representations of sounds in memory. Experiences of shapes are likewise nonconceptual. Presented with an inkblot, for example, Mary will likely

have an experience of a shape for which she has no corresponding concept.⁷

When Mary first sees the rose and exclaims, “So, that is what it is like to see red,” she certainly acquires certain abilities, as Lewis and Nemirow suppose. She is now able to recognize red things by sight; she can identify the experience of red when it comes again; afterward, she can remember the experience of red; she can imagine what it is for something to be red. So far no obvious difficulty. But she knows more than just what it is like to experience red. As she stares at the rose, it is also true of her at that time that she knows what it is like to experience the particular determinate hue of red—call it ‘red₁₇’—she is seeing. Of course, she does not know that hue *as* red₁₇. Her conception of it is indexical; she thinks of it only as *that* shade of red. But she certainly knows what it is like to experience that particular hue *at the time at which she is experiencing it*.

What is the new ability that Mary acquires here? She is not now able to recognize things that are red₁₇ as red₁₇ by sight. Ex hypothesi, Mary is one of us, a human being. She lacks the concept *red*₁₇. Nor is she able to recognize things other than the rose as having that very determinate color (whatever it is). She has no mental template that is sufficiently fine-grained to permit her to identify the experience of red₁₇ when it comes again. Presented with two items (one red₁₇ and the other red₁₈) in a series of tests, she cannot say with any accuracy which experience her earlier experience of the rose matches. Sometimes she picks one; at other times she picks the other. Nor is she able afterward to imagine things as having hue, red₁₇, or as having that very shade of red the rose had; and for precisely the same reason.

Mary lacks the abilities Lewis lists. But, as she stares at the rose, she certainly knows what it is like to experience the particular shade of red she is experiencing. If you doubt this, suppose we inform Mary that she is seeing red₁₇. She replies, “So, this is what it is like to see red₁₇. I had always wondered. Seventeen, you see, is my favorite number; and red the color of my mother’s favorite dress.” We then say to her, “No, you don’t know what it is like to see red₁₇. For you won’t remember it accurately when you take your eyes from the rose; you won’t be able to recognize it when it comes again; you won’t be able to imagine the

experience of seeing red₁₇.” Should Mary then admit that she doesn’t really know what it is like to see red₁₇ even while she is staring at the rose? She won’t know it later certainly. But it seems intuitively bizarre to deny that she knows it *at the time*.

Perhaps it is correct to say that Mary never really *learns* what it is like to see red₁₇, for learning arguably requires not just knowledge but the retention of that knowledge. You haven’t learned that the distance of the earth from the sun is 93 million miles if you only know it at the moment your teacher tells you. You need to retain that knowledge to have genuinely learned what the distance is. But the Knowledge Argument against physicalism is just that: an argument from knowledge. It makes no essential use of the concept of learning. The main claim is that Mary comes to *know* things she didn’t know before even though she knows all the physical facts.

I conclude that the Ability Hypothesis, as elaborated by Lewis, does not afford us a satisfactory *general* account of knowing what it is like. The Knowledge Argument still presents physicalism with a very serious difficulty.

1.4 A Possible Revision to the Ability Hypothesis

When Mary leaves her room, she gains certain abilities. Among them is the ability to recognize certain experiences when they come again. Another more basic ability is the ability to *cognize* the experience for as long as it is present. The latter ability, it might be said, is one Mary possesses even with respect to the experience of red₁₇. For when Mary first sees that particular shade of red, she does have the ability then and there to cognize her experience as an experience with *that* phenomenal character. Perhaps knowing what it is like should be identified not with the cluster of abilities Lewis cites—for they may all be lacking while knowing what it is like is present—but rather with the more basic ability to apply an indexical concept to the phenomenal character of her experience via introspection.

This, it seems to me, still won’t save the Ability Hypothesis. Mary, when she is shown the rose for the first time, may be distracted. Perhaps she is still thinking hard about a theoretical problem that occupied her

in her black and white room. The fact that she is distracted does not entail that she doesn't undergo any color experience any more than the fact that I am sometimes distracted by philosophical thoughts when I drive entails that I no longer see the road and the cars ahead. I am able at such times to attend to my visual sensations even though I do not do so. But the visual sensations are there all right. How else do I keep the car on the road? And the same points apply *mutatis mutandis* to Mary. She has her eyes open. The rose is immediately before her. She is not cognitively blocked from her visual experiences by a psychological impairment. She *can* introspect those experiences even if, in fact, she does not do so.

Now if Mary sees the rose, as I see the road ahead in the driving example, then she must have a visual experience caused by it. If, say, she has massive damage to the visual cortex, then it won't matter what activity the rose elicits in the cells of her retina: she won't have any visual experiences and she won't *see* anything.⁸ But if Mary has visual *experiences*, then she must have consciousness at the phenomenal level. There must be something it is like for her as she sees the rose. Her state must have a certain phenomenal character. What it is like for her is something she can become aware of by introspection. Had she paid attention to her visual state, she would have been conscious of it in the higher-order sense. She would have formed a thought about it. She would have been aware that she was undergoing that visual experience. But, in fact, Mary is distracted. And being distracted, she does not actually apply *any* concept at all to her experience. In these circumstances, she clearly does not know what it is like to have the experience in question. For she has no conception, no cognitive awareness of her phenomenal state. But she certainly has the *ability* to mentally point to the phenomenal character of her experience with an indexical concept via introspection. So, here the proposed ability is present, but knowing what it is like is absent. In the earlier examples, the reverse had been true. Cut the pie, any way you like, then, the Ability Hypothesis is false.

Of course, I am not claiming that knowing what it is like is never the possession of abilities. In particular, I am not claiming that in those cases where the subject has the appropriate concept knowing what it is like is not the possession of abilities. Nothing that I have said undercuts the

claim that knowing what it is like to experience red, for example, is a cluster of abilities of the sort Lewis proposes. But the 'is' here cannot be the 'is' of identity. Knowing what it is like to experience red and knowing what it is like to experience red₁₇ have something in common: they are both cases of knowing what it is like. This common feature is lost if knowing what it is like to experience red is literally one and the same as the possession of certain abilities.

It is also worth stressing that even if some specimens of knowing what it is like could be identified with various abilities, this would not help the physicalist with the Knowledge Argument. For if there are *any* examples of knowing what it is like that do not conform to some version of the Ability Hypothesis, then physicalism is threatened. And that there are such examples is what I have been primarily at pains to show.

I now want to make the case for something stronger: that physicalism is threatened by the Knowledge Argument, even if knowing what it is like *is* an ability or cluster of abilities. If this is correct, then the Ability Hypothesis has less significance than is usually supposed. Consider again Mary as she remarks, "So, this is what it is like to experience red." Intuitively, in making this remark, Mary is expressing a discovery that she has made. But what has she discovered? Well, she now knows what it is like to experience red. So, on the Ability Hypothesis, she has acquired some know-how. But that know-how she retains even after she stops having any experience of red; and intuitively, there is a cognitive difference between Mary at the time at which she makes her remark and Mary later on, after the experience ceases (at least at those times at which she is not exercising any of the pertinent abilities). If we agree with Lewis that what experience *E* is like is the same as *E*, then the difference seems well captured by saying that while she is attending to her experience, Mary has knowledge-that she didn't have before, knowledge (in part) that this is the experience of red.⁹ Moreover, even if we distinguish what experience *E* is like from *E*, we can still say that Mary has knowledge-that she didn't have before, namely, knowledge that this is the phenomenal character of the experience of red. So, either way, Mary does make a genuine propositional discovery. And that, according to advocates of the Knowledge Argument, spells trouble for physicalism.

1.5 More on Knowing What It Is Like and the Knowledge Argument

In the case described in the section above in which Mary is distracted, Mary has knowledge of how to do something. She knows how to mentally point to the phenomenal character of her experience in introspection. But, being distracted, she doesn't exercise her know-how. Were she to do so, she would turn her knowledge-how into knowledge-that. Intuitively, she would come to know that *that* is the phenomenal character of her experience. And in so doing, she would come to know what it is like to have an experience of that sort. So, introspective knowing-that is sufficient for knowing what it is like. Such knowing-that is not necessary, however. One need not be paying attention to one's current experiences to know what it is like to experience red. Intuitively, in such a case, it is necessary and sufficient to have abilities of the sort Lewis describes. It seems, then, that knowing what it is like is best captured by a disjunction of introspective knowing-that and knowing-how along the following lines:

S knows what it is like to undergo experience *E* = df Either *S* is now undergoing *E*, and *S* has knowledge-that with respect to the phenomenal character of *E* obtained via current introspection, or *S* has the Lewis abilities with respect to *E*.

This proposal is similar to one I made some years ago (Tye, 1986), and it still seems to me to do more justice to our ordinary understanding of the expression "know what it is like" than does any other I have seen. But *prima facie* it leaves the physicalist with a problem. For how can it now be denied that Mary gains some new propositional knowledge when she leaves her room as she introspects her new experiences—for example, knowledge that this is the experience of red, while viewing a ripe tomato; or knowledge, on the same occasion, that she is having an experience of this phenomenal type? The worry, of course, is that physicalism cannot allow such discoveries.

Let us focus first on Mary's discovery that this is the experience of red. It will not suffice for the physicalist to try to explain this discovery by saying simply that, confined to her cell, Mary can form no indexical conception of the experience of red or any particular shade of red. For if the experience of red is a physical state, then it is not at all obvious that

captive Mary cannot perceptually demonstrate it, as it is tokened in others outside her room—given the appropriate finely focused, high-tech, viewing apparatus.

A more promising strategy is to argue that Mary, while she is confined, lacks the phenomenal concept *red*.¹⁰ This is not to say that she attaches no meaning to the term ‘red’. On the contrary, given the information at her disposal, she can use the term correctly in a wide range of cases. Still, the concept Mary exercises here is nonphenomenal. She does not know what it is like to experience red; and intuitively knowing what it is like to have that experience is necessary for possession of the phenomenal concept *red*.¹¹ It follows that there is a thought that Mary cannot think to herself while in her room, namely the thought *that this is the experience of red*, where the concept *red*, as it is exercised in this thought, is the one she acquires upon her release after seeing red things. But if she cannot think this thought as she languishes in her cell, she cannot know its content then. Since she does know that content upon her release, she discovers something. Experience is her teacher even though, according to the physicalist, there is nothing nonphysical in the world that makes her new thought true.

Perhaps it will be replied that if Mary acquires various phenomenal concepts pertaining to color experience upon her release, then she cannot really know all there is to know about the nature of color vision from within her room; for where a difference between the old and the new concepts obtains, a difference in the world between the properties these concepts stand for or express must also obtain. Some of these properties she knew in her cell; others she became cognizant of only upon her release. That I simply deny, however. Properties individuate no more finely than causal powers, but conceptual differences exist even between concepts that are analytically equivalent. So, conceptual differences need not be mirrored in worldly differences. Sense is one thing, reference another.¹²

Consider now Mary’s thought *that she is having an experience with this phenomenal character*, as she introspects her first experience of red. Here it is certainly the case that she cannot think this thought truly, while she is held in her room. For the concept *this*, exercised in her thought, refers to the phenomenal character associated with her experiencing red

and Mary, in her room, never experiences red. So, once again, when she thinks a thought of this sort on the appropriate occasion, she is making a genuine discovery.

The position sketched above assumes that demonstrative thoughts and thought-contents are partly individuated by the item picked out by the demonstrative and partly by the various general concepts and associated modes of presentation exercised in the thoughts. That real-world items play a role in individuating indexical thoughts and thought contents is an externalist claim that is very widely accepted, and one which needs no further argument here. That concepts and modes of presentation are also involved in the individuation of thought-contents should also be uncontroversial, given one sense of the term *content*—the sense in which thought-content is whatever information that-clauses provide that suffices for the purposes of even the most demanding rationalizing explanation. In this sense, what I think, when I think that Cicero was an orator, is not what I think when I think that Tully was an orator. This is precisely why it is possible to discover that Cicero is Tully. The thought that Cicero was an orator differs from the thought that Tully was an orator not at the level of truth-conditions—the same singular proposition is partly constitutive of the content of both—but at the level of concepts and modes of presentation. The one thought exercises the concept *Cicero*; the other the concept *Tully*. The concepts have the same reference; but because they present the referent in different ways, the two thoughts can play different roles in rationalizing explanation.

So, there is no difficulty in holding that Mary comes to know some new things upon her release, while already knowing all the pertinent real-world physical facts, even though the new experiences she undergoes and their introspectible qualities are wholly physical.¹³ In an ordinary, everyday sense, Mary's knowledge increases. And that is all the physicalist needs to answer the Knowledge Argument.

Some philosophers (including Lewis) individuate thought contents more coarsely than I have above, as, for example, sets of possible worlds. On this view, the thought that $7 + 5 = 12$ has the very same content as the thought that all bachelors are unmarried. However, it seems intuitively undeniable that the event type, thinking that $7 + 5 = 12$, plays a different role in rationalizing explanation than the event type, thinking

that all bachelors are unmarried. So, on this approach, thought-types cannot be individuated for the purposes of rationalizing explanations by their contents alone. Two different thought types can have the same content. Likewise for belief types.

It follows that even on this two-factor theory of thought-types (according to which thought-types are individuated by their contents plus some other factor), the physicalist can insist that there is a perfectly good sense in which Mary discovers that so-and-so is the case after she is released. For she comes to instantiate cognitive thought-types (knowing-that types) she did not instantiate before, even though, given her exhaustive knowledge of the physical facts, the contents of her thought-types before and after remain unchanged. And if Mary or anyone else knows that p at time t without knowing that p before t , then surely it is correct to say, in ordinary parlance, that the person has made a discovery at t .

My overall conclusion is that there is much that is right in the Ability Hypothesis, but that it cannot be the whole truth about the nature of knowing what it is like. Moreover, even if it were the whole truth, there would still be propositional cases of knowing, not themselves properly classifiable as knowing what it is like, that advocates of the Knowledge Argument might well take to refute physicalism. This should not overly concern the physicalist, however. Even with the demise of the Ability Hypothesis, these cases can be comfortably handled in the manner I have indicated. Either way, then, the Knowledge Argument can be answered.

Notes

1. For a real life case of a visual scientist (Knut Norby) who is an achromotope, see Sacks (1996, chapter 1).
2. Of course, the case of Mary is a threat not only to physicalism with respect to phenomenal qualities but also to functionalism: Mary has all the pertinent functional information, too. To simplify exposition, I focus on physicalism. But what I say applies *mutatis mutandis* to functionalism.
3. Nemirow (1990) takes a different view. His claim is that “what E is like” is a syncategorematic part of the expression “know what experience E is like.” This creates difficulties for him of a sort that Lewis can avoid.
4. A response of the same sort can be given to Lycan’s argument from attempting-to-describe (1996, p. 98).

5. See, for example, Kosslyn (1980). These representations (in Kosslyn's view) are also importantly dissimilar from pictures.
6. For Lewis, pain and the feeling of pain are one and the same (Lewis, 1983, p. 130).
7. For more on this topic, see chapters 3 and 4.
8. I ignore here blindsight. My remark is made with respect to normal, every-day seeing.
9. By parallel reasoning, we may infer that Mary has other new knowledge-that associated with her experience of red, notably knowledge that she is having an experience of this particular shade of red and knowledge that she is having an experience of this phenomenal type. The latter knowledge, incidentally, should be granted even by those who deny that what experience *E* is like is the same as *E*.
10. Those who take the view that inversion scenarios show that no phenomenal character need be shared by all actual and possible tokens of the experience of red will want to deny that Mary discovers *that this is the experience of red* and, correspondingly, that there is any such concept as the *phenomenal* concept *red*. This position is compatible with holding that Mary nonetheless makes some discoveries as she introspects her first experience of red: for example, *that this is R*, where the concept *R* is a phenomenal concept of the phenomenal character associated with the experience of red in Mary, and *that I am having an experience with this phenomenal character*. The concept *R* is one Mary lacks in her room. For a discussion of the latter discovery, see below, pp. 17–18. The former discovery may be handled in a way parallel to that given in the text for the discovery that this is the experience of red.
11. Phenomenal concepts are discussed in detail in chapter 2.
12. For more here, see chapter 2.
13. The term 'fact' is itself ambiguous. Sometimes it is used to pick out real-world states of affairs alone; sometimes it is used for such states of affairs under certain conceptualizations. When I speak of the physical facts here, I refer either to physical states of affairs alone or to those states of affairs under purely physical conceptualizations. (For more on 'fact', see Tye 1995.)