Canadian Journal of Philosophy (2025), 1–17
doi:10.1017/can.2025.10049

ARTICLE

Is the Knowledge Argument a Frege Puzzle?

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Abstract
Frank Jackson's Knowledge Argument claims that Mary—a neuroscientist who knows all the physical facts about color perception but has never seen color—learns something new when she sees red, posing a challenge to physicalism. While physicalists deny that Mary acquires knowledge of new facts, they must still explain her apparent epistemic progress. I argue that the intuition that Mary gains new knowledge upon seeing red stems from the alleged opacity of propositional attitude ascriptions—the same phenomenon underlying Frege puzzles.

Keywords: phenomenal knowledge; opacity; Frege puzzles; propositional attitude ascriptions; phenomenal modes of presentation; acquaintance

1. Introduction

In Frank Jackson's thought experiment (Jackson, 1986), Mary is a brilliant neuroscientist who knows every physical fact about color perception—for example, facts about the functioning of the receptors and neurons involved in color vision, as well as the whole network of causal relations between processes underlying color vision, external stimuli, and behavior—but has spent her entire life confined to a black-and-white room. According to Jackson's knowledge argument (KA), when Mary finally leaves the room and sees red, she learns something new about color perception. This seems to entail that there are facts about color perception that she did not know before. Yet, by hypothesis, Mary already knew all the *physical* facts about color perception. Thus, Jackson concludes, there must be *non-physical* facts about color perception that Mary comes to know upon leaving the room—hence, physicalism is false.[1]

Physicalists deny that Mary acquires knowledge of a new fact upon leaving the room, but acknowledge that KA presents an epistemic challenge: it highlights the need for physicalism to account for Mary's apparent epistemic progress within a physicalist framework. One prominent physicalist response is the Phenomenal Concept Strategy (PCS), which holds that, upon leaving the room, Mary acquires new *phenomenal* concepts for properties she already knew under physical concepts (Horgan, 1984; Levine, 2007; Loar, 1997; Papineau, 2007; Perry, 2001; Tye, 2000). On this view, when Mary sees something red for the first time, she comes to know an old fact—one that she

[1]In the literature, the problem is typically framed in terms of whether Mary knows certain physical or phenomenal facts. For this reason, I will at times refer to facts as the objects of knowledge. Nonetheless, I take the issue to be more accurately characterized in terms of knowledge of propositions. Fregean propositions are more fine-grained than facts (and therefore distinct from them), whereas more coarse-grained propositions—such as intensions or Russellian structured propositions—can plausibly be identified with facts.

already knew in the room—under new concepts. This account aligns with the view I will defend, namely that, from a physicalist standpoint, the KA is an instance of Frege's puzzle (1892). However, for reasons that will become clearer in the final section, I will frame the view in terms of modes of presentation, rather than concepts. I will defend this account by examining the structural symmetry between KA and a paradigmatic Frege case. I will argue that the intuition that Mary learns something new upon leaving her room does not stem from anything unique to phenomenal consciousness, but from the same phenomenon underlying Frege puzzles: the apparent opacity of propositional attitude ascriptions. That is, within a physicalist framework, whether Mary can be said to gain new knowledge ultimately turns on the semantics of attitude ascriptions.

The structure of the paper is as follows. Following Nida-Rümelin (1995) and Stalnaker (2008), I distinguish three stages in Mary's (putative) epistemic progress: t1, when Mary is in the black-and-white room; t2, when she first sees red; and t3, when she is in a position to describe her experience *as* an experience of red. In Section 2, I argue that the intuition that Mary gains new knowledge at t3, like the familiar intuition that one gains new knowledge upon learning that Hesperus is Phosphorus under an informative guise, is due to the apparent opacity of knowledge ascriptions. The available accounts of Mary's knowledge at t3 parallel those offered in standard Frege puzzles.

It may be objected, however, that Mary's real epistemic progress takes place at t2, when she comes to know *what it's like* to see red. In Section 3, I argue that the semantics of "know" followed by wh-clauses supports the view that knowing what it's like involves propositional knowledge. Once again, whether Mary gains new knowledge at t2 depends on which semantic framework and account of propositional attitude ascriptions are correct, introducing a new Frege puzzle.

In Section 4, I then address the objection that, in paradigmatic Frege puzzles, one comes to know a further contingent proposition when grasping the relevant identity claim under an informative guise. For instance, only when one comes to know the informative claim "Hesperus is Phosphorus" does one learn that there is something which is both the brightest planet in the evening and the brightest planet in the morning. According to the objection, it is unclear whether anything analogous applies to KA. In response, I suggest that in both cases, new contingent knowledge may be acquired.

Finally, in Section 5, I discuss a challenge to physicalist accounts of KA as a Frege puzzle, namely that either phenomenal modes of presentation introduce new (non-physical) properties or Mary's new phenomenal knowledge seems insufficiently "substantial." I argue that it is unclear whether this argument can be formulated without begging the question against physicalism and that, in any case, under a sufficiently broad understanding of phenomenal modes of presentation, a posteriori physicalists can respond to the challenge.

In short, what needs to be established is whether there is anything epistemically exceptional about consciousness which gives rise to the intuition that Mary learns something new or whether, as I argue, this is simply the familiar intuition—present in any Frege puzzle for knowledge ascriptions—that new modes of presentation yield new knowledge. Importantly, this paper focuses on reductive physicalism—the original target of KA—bracketing non-reductive alternatives (e.g., Moran, 2023).[2]

2. The Knowledge Argument and Frege Puzzles

2.1. Mary and Jane

Following Stalnaker (2008) and Nida-Rümelin (1995), Mary's apparent epistemic progress can be conceptualized across three distinct stages:

(t1) At an initial time t1, Mary is inside her black-and-white room.

[2]Non-reductive physicalism is often viewed as too close to anti-physicalism to qualify as a genuinely physicalist theory (Kim, 1989, Melnyk, 2008).

At this stage, although she has no direct acquaintance with it, Mary knows that there is a color—red—that corresponds to a specific wavelength, is more similar to orange than to green, and so on. Given her extensive knowledge of color perception, Mary also knows that a certain physical property—which she labels "ph-red"—is the phenomenal character of visual experiences of red, their "felt quality" as perceived by a normal visual system under normal lighting conditions.[3]

(t2) At a later time t2, Mary leaves her room and, for the first time, sees a red object.

However, Mary is not told that the object is red and, let us assume, the object is not a paradigmatically red one (such as a tomato or a fire extinguisher). Thus, Mary is not in a position, at t2, to apply the term "red" to the object in question. Yet, upon seeing the red object, Mary arguably comes to know *what it's like* to see red. Following Stalnaker, let us suppose that Mary coins the term "wow" for the phenomenal character of the experience she has at t2.

(t3) At t3, Mary is told, in these words, that the experience she had at t2 was an experience of red, and that wow *is* ph-red.

Reductive physicalists hold that wow and ph-red are the same physical property; hence, Mary's learning at t3 does not involve the discovery of any new non-physical property. The question is whether Mary's knowledge at t1—that the phenomenal character of experiences of red is ph-red—and her knowledge at t3—that the phenomenal character of experiences of red is wow—constitute the same piece of knowledge. Does Mary learn anything new at t3?

As we shall see, the answer to this question depends on which semantic framework for propositional attitude ascriptions is correct. The intuition that Mary learns something new at t3 stems from the (apparent) opacity of propositional attitude ascriptions—the phenomenon at the heart of Frege puzzles for attitude ascriptions.

Paradigmatic Frege puzzles (Frege, 1892) for attitude ascriptions involve co-referential rigid designators—such as "Hesperus" and "Phosphorus" (now both known to refer to Venus)—and attitude reports, such as:

(1) Jane knows that Hesperus is the brightest planet in the evening.

To preserve compositionality, it must be possible to substitute terms with the same semantic value *salva veritate*—that is, preserving the truth value of sentences in which they occur in any non-quotational context. Thus, if "Hesperus" and "Phosphorus" have the same semantic value, they should make the same semantic contribution to the relevant sentences. This means that sentences (1) and

(2) Jane knows that Phosphorus is the brightest planet in the evening

cannot differ in truth value. The puzzle arises from the fact that, intuitively, Jane may know that Hesperus is the brightest planet in the evening without knowing that Phosphorus is, since she might not know that Hesperus is Phosphorus. The difficulty in fact extends even to the identity claims themselves: by the same principles, it should be impossible for

(3) Jane knows that Hesperus is Hesperus

[3]I will remain neutral on the nature of the property ph-red, as long as it is something that Mary can have knowledge of from within her room—that is, as long as it can be described in physical terms (e.g., using the vocabulary of neurophysiology). For all that is assumed here, ph-red may, for instance, be a representational property of visual experiences of red, the property of such experiences of representing something as red.

and

(4) Jane knows that Hesperus is Phosphorus

to differ in truth value. Yet, while Jane clearly knows that Hesperus is Hesperus, intuitively she may fail to know that Hesperus is Phosphorus. Indeed, propositional attitude ascriptions—such as knowledge ascriptions—are often taken to generate allegedly "opaque" contexts, namely linguistic contexts where substituting co-referential expressions appears to alter the truth value of the relevant sentences. We can compare the above three-step description of Mary's epistemic situation to Jane's:

(t1) At t1, Jane knows that Hesperus is the brightest planet in the evening.
(t2) At a later time t2, Jane learns that Phosphorus is the brightest planet in the morning.
(t3) At t3, Jane is told, in these words, that Hesperus is Phosphorus and thus learns that Phosphorus is the brightest planet in the evening.

Does Jane learn anything new at t3? In both Mary's and Jane's cases, the objects or properties known at t1 under one mode of presentation are known at t3 under another. In Mary's case, this parallels the PCS claim that she comes to know "old" physical properties—properties that she already knew from within the black-and-white room—under new concepts. However, the fact that Mary acquires new concepts or modes of presentation does not, by itself, suffice to establish whether she acquires new knowledge. As with any Frege puzzle, this ultimately depends on which semantic framework and account of propositional attitude ascription are correct.

2.2. Three strategies

In examining whether Mary acquires new knowledge at t3, one immediately sees that the available physicalist accounts of her epistemic situation closely parallel familiar approaches to Frege puzzles.

Many physicalists find it hard to deny that Mary gains new factual knowledge upon release and are thus drawn to what is known as the "New Knowledge/Old Facts View".[4]

On the "Fregean" version of this view, although Mary does not come to know any new facts at t3, she acquires knowledge of new propositions. Facts are typically understood either as sets of possible worlds or as structured entities individuated by the properties, relations, and objects they are about. On either conception, if ph-red and wow are the same property, then the fact that ph-red is wow is identical to the fact that ph-red is ph-red, and the fact that ph-red is the phenomenal character of experiences of red is identical to the fact that wow is the phenomenal character of experiences of red. Thus, under this view, Mary does not acquire knowledge of any new facts at t3.

What she does acquire, however, is knowledge of new propositions—namely that wow is ph-red and that wow is the phenomenal character of experiences of red. Propositions, on this view, are thus more *fine-grained* than facts: although the sentences

(5) ph-red is the phenomenal character of experiences of red

and

(6) wow is the phenomenal character of experiences of red

describe the same fact, they express different propositions. This is because the co-referential terms "ph-red" and "wow" pick out the phenomenal character of experiences of red via distinct *modes of*

[4]Versions of this view are defended by Horgan (1984), Loar (1997), Tye (2000), Perry (2001), and Papineau (2007).

presentation. On this account, modes of presentation play a semantic role such that two co-referential terms that pick out their referent via distinct modes of presentation can make different semantic contributions to the relevant sentence and thus cannot always be substituted *salva veritate.* Consequently, one can coherently hold a propositional attitude (e.g., knowledge) toward (5) without holding the same attitude toward (6), as these express distinct fine-grained propositions.[5] Mary thus gains knowledge of a new fine-grained proposition at t3, although she does not discover any genuinely new possibility that "narrows down" the set of worlds consistent with what she knows.[6]

This approach is essentially the classical Fregean solution to Frege puzzles, on which "Hesperus" and "Phosphorus" are co-referential but differ in *sense* (Frege, 1892). Accordingly,

(7) Hesperus is the brightest planet in the evening

and

(8) Phosphorus is the brightest planet in the evening

do not express the same proposition, despite being true at exactly the same possible worlds and being about the same objects and properties (though of course Frege himself did not think in terms of possible worlds). Thus, when Jane learns at t3 that Phosphorus is the brightest planet in the evening, she acquires knowledge of a new fine-grained proposition (see Forbes, 1990, Chalmers, 2011 for contemporary Fregean accounts).

The New Knowledge/Old Facts view also comes in a contextualist version. Like the Fregean version, this variant of the view holds that Mary does not know at t1 that wow is the phenomenal character of experiences of red, though she does know that ph-red is. However, on this view, this is not because (5) and (6) express different (fine-grained) propositions. Rather, on the contextualist view, propositions are coarse-grained—either sets of possible worlds or Russellian structured propositions whose constituents are the referents of the terms involved—but ascriptions of propositional attitudes are sensitive to contextually relevant modes of presentation. In other words, a difference in mode of presentation does not entail a difference in proposition: if "ph-red" and "wow" are co-referential, (5) and (6) express the same proposition. This makes the view *anti-Fregean.* Nonetheless, according to this view, for Mary to be ascribed knowledge that wow is the phenomenal character of experiences of red, she must entertain that proposition under a contextually relevant mode of presentation—in this case, her newly acquired "wow" mode—and she can only do so at t3.

Thus, although Mary does not gain knowledge of a new proposition at t3, she still acquires new propositional knowledge, which could not be attributed to her at t1. This view can be seen as a version of the New Knowledge/Old Facts view precisely because it entails that Mary gains new propositional knowledge without discovering any genuinely new possibility (or fact) at t3. Many proposals within the New Knowledge/Old Facts cluster fail to distinguish between the Fregean and contextualist versions of the view, as they do not clarify whether Mary gains new knowledge because she acquires knowledge of a *new* (fine-grained) proposition (but no new possibility) or because she gains *new knowledge* of an old (coarse-grained) proposition.

The contextualist strategy (e.g., Crimmins & Perry, 1989; Schiffer, 1992) is a popular approach to Frege puzzles among proponents of anti-Fregean semantic frameworks, such as Russellianism and

[5]A version of this view can be developed in a two-dimensional framework which distinguishes between a coarse-grained "broad content" of a sentence (e.g., a set of possible worlds) and a more fine-grained "narrow content." This is typically combined with the idea that propositional attitude ascription is sensitive to narrow content (e.g., Chalmers, 2011).

[6]Tye (2010) calls this the "non-modal" conception of knowledge, which merely involves "coming to think new thoughts," as opposed to eliminating genuine possibilities.

intensionalism. On these views, (7) and (8) express the same proposition. However, since knowledge ascriptions are context-sensitive, at t1 we can ascribe to Jane knowledge that Hesperus is the brightest planet in the evening, but not that Phosphorus is the brightest planet in the evening. Only at t3, when she finally entertains the proposition under the contextually relevant "Phosphorus" mode, can Jane be ascribed knowledge that Phosphorus is the brightest planet in the evening.

Thus, on this account, no new proposition is learned in either case—the same coarse-grained proposition is involved at t1 and t3—but both Mary and Jane gain new propositional knowledge at t3.

Finally, there is a further view on which Mary does not possess any propositional knowledge at t3 that she did not already possess at t1. This "No New Propositional Knowledge" view combines a coarse-grained account of propositions with an anti-contextualist approach to knowledge ascription. Given that "ph-red" and "wow" are co-referential, (5) and (6) express the same proposition. Moreover, since knowledge ascriptions are *not* sensitive to contextually relevant modes of presentation, Mary's knowing that ph-red is the phenomenal character of experiences of red entails that she knows that wow is the phenomenal character of experiences of red. Thus, Mary gains neither new knowledge of an old (coarse-grained) proposition nor knowledge of a new (fine-grained) proposition at t3: she already knew, at t1, that wow is the phenomenal character of experiences of red.

Anti-contextualist anti-Fregean solutions to Frege puzzles were put forward by, among others, Salmon (1986) and Williamson (2021): if at t1 Jane knows that Hesperus is the brightest planet in the evening and the proposition that Hesperus is the brightest planet in the evening *just is* the proposition that Phosphorus is the brightest planet in the evening, then at t1 Jane also knows that Phosphorus is the brightest planet in the evening. Similarly, insofar as she can be ascribed knowledge that Hesperus is Hesperus, Jane can also be ascribed knowledge that Hesperus is Phosphorus, since these propositions are in fact identical. Thus, this account entails that in neither Jane's nor Mary's case is new propositional knowledge acquired at t3.

So far, Mary's and Jane's cases look symmetrical: whether they can be credited with new knowledge at t3 seems to hinge on the correct semantics for knowledge ascriptions. And, in both cases, the intuition that new knowledge is gained appears to stem from the (putative) opacity of propositional attitude ascriptions. At this stage, then, there is no evident reason to think that the intuition that Mary acquires new knowledge at t3 derives from anything distinctive about phenomenal consciousness.

3. Knowing What It's Like

It may be objected that Mary's actual progress takes place at t2, when Mary comes to know *what it's like* to see red—even though she is still not in a position to describe her experience in those terms. One thing to note is that, unlike her progress at t3, Mary's progress at t2 does not appear to involve language at all. At t3, Mary is in a position to assent to statements like "experiences of red are wow" and "ph-red is wow" and can thus be straightforwardly credited with knowledge of the propositions that experiences of red are wow and that ph-red is wow. By contrast, her progress at t2 arguably has nothing to do with what sentences she would assent to or which terms she would use to refer to the properties of her experience. The linguistic issue might arise when we *describe* the situation using demonstrative or non-demonstrative terms (e.g., "wow"), co-referential with "ph-red," to refer to the phenomenal character of Mary's experience. But the point of KA seems to be that Mary learns something new when she *sees* red—something that is, prima facie, unrelated to anything linguistic. We should thus focus on what, if anything, Mary learns at t2.

3.1. Knowing how and the ability hypothesis

I will start by focusing on a widely discussed account of knowing what it's like, proposed by David Lewis (1990), before drawing more general conclusions based on considerations about the

semantics of knowledge ascriptions involving wh-clauses. According to Lewis' so-called ability hypothesis, Mary gains no propositional knowledge upon seeing red for the first time, but only knowledge-how. At t2, she comes to know, for instance, how to imagine, remember, and recognize experiences of red—though she need not be in a position to say to herself "It's an experience of red that I'm now able to imagine." Similarly, Nemirow claims that "knowing what an experience is like is the same as knowing how to imagine having the experience" (Nemirow, 1990, p. 495).

Against the ability hypothesis, Stanley and Williamson (2001)—henceforth S&W—argue that knowing-how is a form of knowing-that. On their view, knowing how to imagine experiences of red amounts to knowing a proposition of the form "w is a way for me to imagine an experience of red," entertained under a guise involving a practical mode of presentation of a way.[7] This is, first of all, because ascriptions of knowledge-how—like ascriptions of knowledge-why, knowledge-what, and so on—contain embedded questions, which are standardly interpreted as indicating propositional knowledge (more on this in Section 3.2).

Second, S&W note, cross-linguistic evidence suggests that "know" is ambiguous between two readings in English, which are captured by distinct verbs in languages such as German or Italian. For example, the Italian verb "sapere" and the German verb "wissen" express propositional knowledge, whereas the verbs "conoscere" and "kennen" express non-propositional (e.g., objectual) knowledge. Crucially, "knowing-how" is translated in these languages using the verb for propositional knowledge, supporting an interpretation of knowledge-how as a species of knowledge-that. Thus, according to S&W, Lewis' claim that Mary only gains new knowledge-how but no knowledge-that at t2 is inconsistent: by gaining knowledge-how, they claim, Mary gains new propositional knowledge.

Yet, the issue of whether, by acquiring know-how, Mary gains *new* propositional knowledge at t2 introduces a new Frege puzzle. As I argue below, whether Mary can be said to acquire new propositional knowledge at t2 depends, once again, on the semantics of propositional attitude ascriptions.

S&W consider a possible response on Lewis' behalf: that Mary already knows how to imagine experiences of red at t1, but only acquires the ability to employ that knowledge at t2. However, they dismiss this view. As S&W note, it seems absurd to claim that Mary knows how to imagine experiences of red at t1, while she is still in her black-and-white room—if she really knows how, then why is she unable to do so? In general, knowing how to φ does not entail being able to φ: a pianist who loses her arms may still know how to play the piano, even if she is no longer able to. But in Mary's specific case, it is unclear what could prevent her from having the relevant ability, if she really has the knowledge-how. As S&W suggest, the best explanation for her being unable to imagine experiences of red is that she does not, in fact, know how to do so. Thus, it is plausible to think that Mary does not know how to imagine experiences of red at t1 and only learns how to do so at t2.

Still, even granting S&W's intellectualist account of knowledge-how, it is not clear that Mary's acquisition of knowledge-how at t2 entails that she acquires *new* propositional knowledge at that time (Cath, 2009). On the intellectualist account, knowing how to imagine an experience of red entails knowing, for some w, that w is a way for someone to imagine an experience of red, where w is grasped under a *practical* mode of presentation. Of course, at t1 Mary does not know of any w that it is a way to imagine an experience of red *under a practical mode of presentation*—which is why she does not *know how* to imagine experiences of red. This also explains why she is not *able to* imagine experiences of red.

Nonetheless, in virtue of her extensive knowledge of neurophysiology, Mary knows precisely, at t1, which parts of the brains and which physical mechanisms are involved in imagining an

[7]See Pavese (2020) for an account of practical modes of presentation, on which representing an aspect of the world under a practical mode of presentation means representing it in a way that is a function of our practical abilities, in a sense to be made precise.

experience of red. Thus, arguably, she already knows at t1, of some w, that w is a way to imagine an experience of red under a *non-practical* mode of presentation. This will plausibly involve some description "P" of whatever is occurring at the neurophysiological and cognitive levels when someone imagines an experience of red. Mary's complete physical knowledge surely enables her to know, at t1, that being in the P-state is a way for someone to imagine an experience of red. At t2, she merely comes to know that being in the P-state is a way for someone to imagine an experience of red under a *practical* mode of presentation, thereby learning how to imagine such an experience and gaining the corresponding ability.

In sum, at t1 Mary lacks the ability to imagine experiences of red and does not know *how* to imagine experiences of red, but might nonetheless already know the relevant proposition—namely that being in the P-state is a way (for someone) to imagine such experiences. If S&W's intellectualist account is correct, then at t2 Mary comes to know that very proposition under a practical mode of presentation and thereby acquires the knowledge of how to imagine experiences of red. However, this does not, by itself, entail that Mary acquires knowledge of any *new* proposition. Of course, a fine-grained semantics—on which a difference in modes of presentation corresponds to a difference in propositions—does entail that Mary comes to know a new proposition at t2. But this is, once again, simply the standard Fregean response to Frege puzzles. Given intellectualism about knowledge-how, whether Mary can be said to gain new propositional knowledge at t2 depends on which view of semantics and propositional attitude ascription—that is, which of the three strategies considered in Section 2.2—is ultimately correct.

3.2. The semantics of "knowing what"

Leaving aside intellectualism about knowledge-how, general considerations about the semantics of knowledge ascriptions involving wh-clauses support the idea that "knowing what it's like" expresses propositional knowledge. These considerations parallel those advanced by S&W in defense of the view that "knowing how" expresses propositional knowledge. To begin with, just like the sentence "Mary knows how to imagine an experience of red," the sentence "Mary knows what it's like to see red" contains an embedded question, which is standardly taken to indicate propositional knowledge. As Lycan (1996) observes, indirect-question clauses following attitude ascriptions are closely related to that-clauses, both in meaning and grammatically. The schema "S knows wh-" is related to "S knows that…." For instance, "S knows *where* X φs" is true in virtue of S's knowing *that* X φs at p, where "p" names some place; "S knows *when* X φs" is true in virtue of S's knowing *that* X φs at t, where "t" names some time; and so on. By analogy, "S knows what it's like to see red" means, roughly, "S knows that it is (like) Q to see red," where "Q" names a relevant property. As mentioned, at t2 Mary is not in a position to describe her experience as an experience of red. The mode of presentation associated with "see red" in the proposition that it is like Q to see red—the proposition she entertains at t2—might, for instance, be a demonstrative one ("to see *this* color"). The same applies to her knowledge, at t2, that w is a way for someone to imagine an experience of red.

Stoljar (2016) notes that "what it's like" questions are closely related to "how" questions: "How does it feel to be one of the beautiful people?" is a close variant on "What is it like to be one of the beautiful people?" Most "what is it like" questions can naturally be recast as "how" questions. Stoljar argues that, just as "know where" quantifies over places and "know when" quantifies over times, "know how" quantifies over ways, where a way is either a way a thing is or a way to do something (Stoljar, 2016). Drawing on S&W's analysis of sentences like "Carla knows how to ride a bike" in terms of "There is some way such that Carla knows that that way is a way for her to ride a bike," Stoljar claims that sentences like "Dennis knows how Stalin was to his generals" are plausibly analyzed as "There is some way such that Dennis knows that that way is the way Stalin was to his generals." This, he suggests, supports an analogous treatment of "knowing what it is like to φ" as knowing, of some way, that that is the way it is like to φ. He writes: "A sentence like 'There is

something it is like to have a toothache' has schematically the form 'There is a way x's c-ing is to y'. […] On this treatment, 'John knows what it is like to have a toothache' is plausibly analysed (again, to a first approximation) as 'There is some way such that John knows that it is that way to have a toothache'" (2016, pp. 1165–1171).

The ambiguity of the English verb "know," highlighted by S&W in defense of intellectualism, further supports a propositional reading of such expressions. Like "knowing how," "knowing what it's like" is naturally translated using the verb that expresses propositional knowledge in languages that employ distinct verbs for propositional and non-propositional knowledge. For example, "Mary knows what it's like to see red" is rendered in Italian as "Mary *sa* com'è vedere il rosso" and in German as "Mary *weiß* wie es sich anfühlt rot zu sehen."

Of course, these types of linguistic arguments raise methodological concerns. Even assuming that these semantic considerations are correct, one might worry that the languages in question are misleading as to what actually makes "knowing what" sentences true. Perhaps in a "metaphysically perspicuous" language, one would express things differently. While I am generally sympathetic to this line of thought, the fact that the languages in question consistently work this way, I believe, should at least make the propositional reading the default interpretation. If wh-clauses in English are indeed ambiguous between a propositional and a non-propositional reading, then consulting languages that make an explicit lexical distinction between the two types of knowledge seems like a legitimate way to adjudicate the matter—at least in the absence of defeating considerations. It is up to the opponent, then, to explain why this seemingly plausible interpretation should be rejected.

Analogous considerations apply to acquaintance or objectual accounts of knowing what it's like (e.g., Conee, 1994). On these accounts, Mary does not acquire any new propositional knowledge at t2, but merely acquaintance, or objectual, knowledge of the phenomenal character of experiences of red (ph-red), which she previously knew only "by description." Yet, once again, this seems to presuppose an *ad hoc* reading of "knowing what it's like," one that deviates from the standard interpretation of "know" followed by wh-clauses as expressing propositional knowledge.

Note that the claim that knowing what it's like to see red involves propositional knowledge is entirely consistent with the—very plausible—view that, at t2, Mary *also* gains acquaintance knowledge of the phenomenal character of experiences of red. In fact, the propositional interpretation of "knowing what it's like" plausibly *involves* acquaintance insofar as it involves phenomenal modes of presentation in its account of Mary's knowledge at t2 (more on that in Section 4.2).

In sum, it is plausible to account for Mary's epistemic situation at t2 as a Frege puzzle. Knowledge of what it is like to see red amounts to knowledge of a proposition of the form "it is Q to see red" or "w is the way it's like (for someone) to see red." Under reductive physicalism, "Q" and "w" must refer to physical properties, states, or processes—ones that Mary already associates with experiences of red at t1.[8] Once again, Mary's knowledge of what it's like to see red at t2 can be construed in one of three ways: as "old" knowledge of an "old" coarse-grained proposition that she already knew at t1; as new knowledge of an old coarse-grained proposition—new in virtue of the difference in mode of presentation; as new knowledge of a new fine-grained proposition.

4. The Asymmetry Objection

4.1. Ruling out possibilities

In this section, I consider an objection to the claim that KA is symmetrical with paradigmatic Frege puzzles. Let us call this the "asymmetry objection" (AO). As discussed in previous sections, whether

[8]To be clear, my claim is that knowing what it's like to see red involves propositional knowledge *about* one's experience and its phenomenal character. Saying that, by having the experience of red, Mary comes to know the proposition that w is the way it is like to see red is not to claim that this proposition constitutes the *content* of her experience.

Jane and Mary can be said to learn something at t3 depends on the semantics of propositional attitude ascription. However, the objection goes, there is a genuine discovery that Jane makes at t3: she learns the contingent proposition that something is both the brightest planet in the morning and the brightest planet in the evening. That is, only at t3 is Jane able to rule out genuine possibilities (metaphysically possible worlds) in which the brightest planet in the evening and the brightest planet in the morning are distinct. The same structure, AO continues, holds for any Frege puzzle—for instance, only when Lois Lane comes to know that Clark Kent is Superman under the informative guise "Clark Kent is Superman" does she learn the contingent proposition that someone is both a superhero and a journalist at the Daily Planet.

By contrast, according to AO, no similar contingent proposition is learned by Mary at t3. To see why, we should note that it is often assumed that phenomenal properties such as pain and color sensations have their phenomenology necessarily—anything that does not feel like pain, for example, simply cannot be pain (Chalmers, 1996, 2009; Kripke, 1980. See Grahek, 2011 for skepticism about this claim). Similarly, anything that does not have a red phenomenology cannot count as an experience of red. This means that having a red phenomenology is not a contingent feature of experiences of red: experiences of red have their phenomenal character necessarily.

According to AO, when Mary comes to know, at t3, the informative identity claim "wow is ph-red," the relevant proposition in the vicinity is the proposition, *s*, that the wow-phenomenology is the phenomenal character of experiences of red (ph-red). But since the wow-phenomenology *is* the red phenomenology—and the red phenomenology is necessarily co-instantiated with experiences of red—*s* is not contingent. Unlike the proposition that the brightest planet in the morning is the brightest planet in the evening, which Jane learns at t3, *s* is necessarily true. Therefore, according to AO, there is no possibility that Mary is able to rule out at t3 which she was not able to rule out before, because there is no possible world where an experience of red lacks a red phenomenology altogether. Variants of AO underlie arguments against the idea that the relation between phenomenal properties and their physical correlates could be one of a posteriori identity (e.g., Chalmers, 1996, 2009; Kripke, 1980).

4.2. A reply to the asymmetry objection

An immediate reply to AO is that, contrary to the objection's assumption, it is possible to construct analogous contingent propositions that Mary can be said to learn at t3. One of these may be, for instance, the proposition *r* that the phenomenal character of an experience of a color called "red" is the phenomenal character of the kind of experience Mary has at t2—that is, that there is something which is both the phenomenal character of experiences of a color called "red" and the phenomenal character of the kind of experience Mary has at t2. Clearly, *r* is contingent: first, it is not necessarily the case that Mary has an experience of red at t2—there are possible worlds where she is shown a green object at t2; second, there are surely worlds where "red" refers to a different color or no color at all.

The idea underlying AO is that the relevant proposition in the vicinity of an informative identity claim is built out of the modes of presentation associated with the terms involved. But this, one might argue, is not sufficient to establish whether the modes of presentation associated with "wow" and "ph-red" yield *r* or *s*. Both "the phenomenal character of experiences of the color called 'red'" and "the phenomenal character of the kind of experience I had at t2" may be apt verbalizations of what Mary cognitively associates with "wow" and "ph-red." We are, of course, assuming that modes of presentation do not, without rigidification, fix the reference of the terms in question across possible worlds. After all, "the brightest planet in the evening" and "the brightest planet in the morning" do not fix the reference of "Hesperus" and "Phosphorus" across possible worlds either—otherwise such terms would function as non-rigid designators, contrary to what is standardly assumed after Kripke (1980). Modes of presentation do, however, account for the cognitive significance of the terms in question. Both "the phenomenal character of experiences of a color

called 'red'" and "the phenomenal character of the experience Mary has at t2" are possible candidates for this role. Therefore, in coming to know the informative identity claim "wow is ph-red" Mary might come to know *r*. Since *r* is contingently true, there might be genuinely possible worlds that Mary is unable to rule out before t3—for instance, a world w where blue is called "red" and where Mary is shown a green object at t2.

At this point, however, we should pause to consider a further objection to this response to AO. Suppose, for instance, that Mary is unable to form metalinguistic thoughts of the kind involved in entertaining *r*. Intuitively, we would still want to say that Mary learns something new at t3, even though, arguably, she does not come to know any metalinguistic proposition. One might respond by appealing to other, non-metalinguistic, propositions that Mary may be taken to learn at t3—for example, that ph-red is the phenomenal character of the experience she had at t2. A more general objection, however, is that these metalinguistic, time-relative, or indexical/demonstrative propositions are too "trivial" and fail to capture the apparent "robustness" of what Mary seems to learn. One might argue, then, that the AO challenges us to explain not simply how Mary could learn some new proposition, but how she could learn a "substantial" or "significant" one. The contingent proposition Jane learns, the objection continues, is a substantive one; the contingent propositions we might attribute to Mary are not.

Before discussing this claim in more detail, it is worth noting that paradigmatic Frege puzzles do not necessarily involve the acquisition of new "substantial" or "robust" knowledge—whatever precisely those terms are taken to mean (more on that later). Indeed, the relevant modes of presentation in such cases can be rather "thin" and even merely metalinguistic. Suppose, for instance, that someone is looking at two objects in the distance and, after a while, realizes that they are in fact parts of one and the same object. At that point, she utters the informative identity claim "that is that." Here, the speaker might associate the two token demonstratives with rather "insubstantial" contents, such as "the thing I am pointing to" or "the thing I am looking at." This applies especially to cases in which the speaker is not sure what the referent of the demonstrative is and is thus unable to associate it with any specific sortal. Another illustrative case: suppose I overhear someone mention a person named "James" but am not paying close attention. The cognitive content I associate with "James" might amount to no more than "the person called 'James'" or "the individual that guy just mentioned." Now suppose I later overhear the same speaker refer to someone named "Jimmy." Eventually, I might discover that James is Jimmy. What I thereby come to know in that scenario is hardly substantial: I may simply acquire metalinguistic knowledge that the person called "James" is the person called "Jimmy" or that the individual mentioned earlier is the same one mentioned just now.

In this sense, the supposed lack of "substantial" (e.g., non-metalinguistic) knowledge in Mary's case should not be taken to make her case significantly different from standard Frege cases. Moreover, someone who thinks of Hesperus as *the actual evening star* and of Phosphorus as *the actual morning star* will not discover any substantial contingent proposition upon coming to know that Hesperus is Phosphorus. This is because the rigidifying operator "actual" renders the proposition that *the actual morning star is the actual evening star* a necessary one—and indeed one that, on certain coarse-grained accounts, is the very same proposition expressed by "Hesperus is Phosphorus." Arguably, this does not make the case any less a genuine instance of Frege puzzle.

In sum, in both Mary's case and standard Frege cases, subjects may acquire merely metalinguistic or demonstrative knowledge by coming to know the relevant informative identity claims. Moreover, in both cases, the propositions thereby known can be necessary or contingent. In sum, the claim that the terms involved in standard Frege puzzles pick out their referent via contingent and substantial modes of presentation, whereas those in Mary's case do not, appears to be mistaken.

5. The New Challenge

5.1. Substantial knowledge

It may be objected that the point concerning the substantiveness or robustness of Mary's new knowledge is not merely about the asymmetry with Frege puzzles, but has independent plausibility. In other words, regardless of the analogy between Mary's case and standard Frege puzzles, it is independently implausible to claim that phenomenal modes of presentation are "thin"—for instance, demonstrative or metalinguistic.[9]

Indeed, a "new challenge" (Schroer, 2010) has been raised against physicalist accounts of the KA that appeal to differences in concepts or modes of presentation. The challenge for physicalism is no longer just to explain how Mary could gain new knowledge when she leaves the room. Rather, the challenge is now to explain how Mary can come to acquire new knowledge that is "substantial," "rich," and "robust." Levine writes: "the first-person access we have to the properties of experience seems quite rich; we are afforded a very substantive and determinate conception of a reddish experience merely by having it" (2007, p. 163). Similarly, Levin claims that the goal is to explain "why the knowledge that Mary acquires when she leaves her black-and-white room seems so substantive" or what "seems to be the rich and robust knowledge of experience Mary gains when she leaves her black-and-white room" (2007, pp. 90–93). This, it is claimed, is what makes it implausible to suggest that Mary's new phenomenal mode of presentation of ph-red merely conveys metalinguistic information or functions as a bare demonstrative "pointer," devoid of further content.

The issue raised by the new challenge against physicalist theories that appeal to new concepts or modes of presentation can be framed as follows: either a new phenomenal concept or mode of presentation—whether demonstrative or non-demonstrative—"brings with it" a new property (as part of its definition, reference-fixing material, or sortal) or it does not. If phenomenal concepts do bring with them new properties, it becomes unclear whether the account still qualifies as physicalist, as this arguably entails that there are properties that Mary did not associate with color experience while confined to her room. But Mary, by stipulation, already associated all the relevant *physical* properties with color experience. On the other hand, if phenomenal concepts do not introduce any new property, then the resulting phenomenal knowledge seems insufficiently substantial or robust. Variants of this argument are discussed in Block (2007), Levine (2007), Tye (2008), Schroer (2010), Veillet (2015), and Levin (2019).

To see this more clearly, consider the options available to the physicalist. One option is to construe phenomenal concepts as employing phenomenal descriptions—whether as definitions, reference-fixing material, or sortals (e.g., "an experience like this"). According to Tye (2008), this approach is problematic because it reintroduces irreducibly phenomenal properties within the mode of presentation itself:

> This sets off a vicious regress and so gives us no satisfactory account of how phenomenal concepts operate. The same is true if we say that phenomenal concepts are primitive rigid concepts whose reference is fixed by a phenomenal description, for how do the concepts expressed in the phenomenal description refer? Given that phenomenal concepts have their reference fixed by a phenomenal description, the answer must be "by further associated phenomenal descriptions", and so on without end. (Tye, 2008, p. 44)

Block (2007) observes that this amounts to an instance of the so-called property dualism argument: positing phenomenal modes of presentation effectively reintroduces phenomenal properties as the means through which those modes of presentation pick out their referents.

[9]I am grateful to the anonymous referees for pressing me to engage with this issue.

Another option is to construe phenomenal concepts as employing *physical* descriptions—again, as either definitions, reference-fixing material, or sortals. But here the problem is that if phenomenal concepts fix their reference by means of physical descriptions, then it is unclear why Mary could not have acquired them while still inside her room. Further, if that were the case, phenomenal truths would arguably be deducible from physical truths.

A third option is to maintain that phenomenal concepts refer *directly*, without sortals or reference-fixers (see Díaz-León, 2016; Loar, 1997; Tye, 2000). To a first approximation, a concept C can be taken to refer directly to a quality Q if and only if, under normal cognitive conditions, C is tokened in an act of thought just in case Q is tokened and because Q is tokened (Tye, 2000). However, Tye later dismisses this proposal:

> [On this proposal] *what* Mary thinks is not new when she leaves her room. What is new is the *way* she is thinking what she is thinking. That isn't enough. What Mary knows before time t (the time of her release) is exactly the same as what she knows after time t. But if what she knows before and after her release is the same, she does not make a discovery in any really robust sense. This is counterintuitive. Surely if anyone ever made a significant discovery, Mary does here. The proposal, in the end, is not convincing. Thus, the phenomenal-concept strategy is in deep trouble. No one has yet managed to produce a plausible account of phenomenal concepts that gives them the features they must have in order to do the work needed to defend physicalism. Tye (2008, pp. 55–56)

According to a posteriori physicalists, Mary's new knowledge can be explained in terms of her acquiring new modes of presentation of the same old properties and facts—and, in a Fregean framework, thereby entertaining new *fine-grained* propositions. So, there is a sense in which it is indeed true that she does not make a "substantive" discovery: she does not come to know any new facts or entertain any new *coarse-grained* proposition, if we set aside the "insubstantial" (e.g., metalinguistic) propositions mentioned in the previous section. Thus, in a sense, it is true that what is new is not *what* Mary is thinking, but rather the *way* she is thinking about it. This is precisely what proponents of the anti-Fregean approach claim. In other words, as Díaz-León (2016) notes, to say that Mary "merely" comes to know the same fact in a new way (under a new mode of presentation) or "merely" comes to acquire knowledge of new fine-grained propositions is, in effect, just another way of stating the a posteriori physicalist's position.

At this point, it is worth pausing to ask how clear a grasp we have on the explanandum of this new challenge to physicalism. As Veillet (2015) notes, it is far from obvious what, exactly, physicalists are being asked to explain. Arguably, this "substantiveness" of Mary's new experience cannot be reduced to a *mere* difference in cognitive significance relative to her prior knowledge, since that is precisely what the introduction of new modes of presentation is meant to explain. According to the Fregean criterion, two sentences or thoughts differ in cognitive significance if and only if the same rational agent can simultaneously believe one to be true and the other to be false. Clearly, Mary's new thoughts do differ in this sense from her previous thoughts—that difference in cognitive significance is built into the very structure of the thought experiment. But the introduction of new modes of presentation *does* suffice to explain differences in cognitive significance. As the examples from the previous section show, there can be differences in cognitive significance even when "insubstantial" (e.g., merely demonstrative or metalinguistic) modes of presentation are involved. Therefore, arguably, *substantiveness*—what physicalists are being asked to explain—cannot reduce to mere cognitive significance.

Alternatively, talk of substantial knowledge could mean knowledge of new facts—or new coarse-grained propositions—of the sort that would result if the new mode of presentation introduced new properties. But, it may be argued, asking physicalists to explain why new phenomenal knowledge is substantial in that sense would amount to asking them to explain why it grants thinkers access to new (non-physical) properties. As Veillet (2015) points out, it may *turn out* that the best account of the significance of new phenomenal knowledge involves an appeal to new properties, but

significance itself cannot be initially spelt out in terms of the grasping of new properties, or else the challenge ends up begging the question. A similar problem arises if substantial knowledge is defined as knowledge that provides new information: if "information" is intended in the fine-grained sense, then the physicalist can account for it through a mere difference in mode of presentation. But if "information" is intended coarsely, the challenge amounts to asking the physicalist how Mary's new knowledge can consist in knowledge of new facts, or possibilities—which is just to ask the physicalist to explain the falsity of physicalism. The burden is on those who believe that the challenge has been misconstrued to provide a clearer account of what "substantial" or "robust" knowledge is supposed to be.[10]

5.2. Acquaintance

Even setting aside concerns about whether the new challenge can be formulated without begging the question, and assuming that our intuitive grasp of the notions of "richness" or "substantiveness" involved in its formulation is good enough, I believe the a posteriori physicalist can still meet the challenge by appealing to modes of presentation. Tye's (2008) own account offers a potential solution. Although Tye's view is not a version of the PCS, the claim that Mary's case is analogous to a Frege puzzle—in that her new knowledge involves new modes of presentation of the relevant properties—is not necessarily a version of the PCS either. This is because the notion of a phenomenal *mode of presentation* is broader and more flexible than that of a phenomenal concept.

On Tye's (2008) account, Mary gains new acquaintance knowledge of phenomenal character. What she lacks in the black-and-white room, despite knowing all the relevant facts (or propositions) about experiences of red, is knowledge by acquaintance. Acquaintance knowledge, in this sense, is knowledge of things directly encountered in experience. By contrast, we may have knowledge of things we have not encountered in experience, but this kind of knowledge essentially involves knowing truths about the things in question, whereas acquaintance does not. One can be acquainted with something without knowing any truths about it. As Tye puts it:

> Mary, in knowing what it is like to experience red, stands in the knowing-that relation to the fine-grained proposition that this is what it is like to experience red and is in a position to entertain this proposition in a phenomenal way via her acquaintance with the color red. Mary's consciousness of red gives her objectual knowledge by acquaintance of red, and (partly) via that knowledge she knows a certain proposition. On this view, we can say that after she leaves her room Mary knows a certain fact (partly) by knowing a certain entity she did not know in her room (namely red or the phenomenal character of the experience of red) and that this combined knowledge is what is needed to know what it is like to experience red. (Tye, 2008, p. 133)

The reason why this account is compatible with—and indeed well aligned to—the proposal that Mary's case is analogous to a Frege puzzle is that, on a broad enough understanding of modes of presentation, entertaining a proposition "in a phenomenal way," "via acquaintance" (in Tye's words), with a property just amounts to entertaining that proposition under a certain, phenomenal, mode of presentation. Of course, Mary gains acquaintance knowledge upon seeing red for the first time. But this view is consistent with the claim that knowing what it's like to see red amounts to propositional knowledge: just as, according to intellectualism, knowing how to ride a bike requires knowing *that* w is a way for someone to ride a bike under a *practical* mode of presentation, knowing what it's like to see red might require knowing *that* seeing red is like Q under a *phenomenal* mode of presentation—where this, in turn, requires knowing Q by acquaintance.

[10]According to Veillet, what might constitute the explanandum of the challenge is our *judgment* that Mary acquires substantive new knowledge.

As Salmon (1986) observes, the mode of apprehension, or the way in which one entertains a proposition (i.e., its mode of presentation), depends on the mode of apprehension of its constituents:

> What is important is to recognize that, whatever mode of acquaintance with an object is involved in a particular case of someone's entertaining a singular proposition about that object, that mode of acquaintance is part of the means by which one apprehends the singular proposition, for it is the means by which one is familiar with one the main ingredients of the proposition. This generates something analogous to an "appearance" or a "guise" for singular propositions. If an individual has a certain appearance, either objective or subjective, and through perceiving the individual one comes to have some thought directly about that individual—say, a thought that would be verbalized as "Gee, is he tall"—then there is a sense in which the cognitive content of the thought may be said to have a certain appearance for the thinker since one of its major components does. (Salmon, 1986, p.109)

The proposal is thus that phenomenal modes of presentation involve acquaintance with the relevant properties. Acquaintance does not introduce new properties. By definition, it does not present a property or entity via a *description* that would itself introduce further properties. Rather, we are presented with phenomenal properties not via descriptive mediation, but directly.

For present purposes, I will not commit to a specific account of acquaintance. However, we arguably want to be able to say that Mary knows what it's like to see red—or is able to entertain the relevant propositions—under her newly acquired phenomenal mode of presentation even when she is not directly experiencing red. Several moves are available here. One might say that standing belief states are dispositions to be in occurrent belief states and that an occurrent belief state involving the phenomenal character of experiences of red, entertained under a phenomenal mode of presentation, requires at least visually imagining an experience of red and thus being acquainted with it. On this view, Mary counts as knowing what it's like to see red via acquaintance because she is disposed to form beliefs that involve imagining experiences of red and thereby being acquainted with their phenomenal character. Another option, drawing on the mental file metaphor, is that a mental file is created whose referent is fixed through acquaintance when Mary first has the experience of red. The file then persists over time, retaining the same referent, and can be later deployed in thought or imagination. Since the referent of this file is determined by the acquaintance relation, the file—the mode of presentation—remains, in this sense, "acquaintance-based."[11]

The idea that modes of presentation should be broad enough to encompass acquaintance is neither ad hoc nor surprising, given the variety of things that are independently required to serve as modes of presentation. In this case, the mode of presentation is simply experience—the means through which we come into contact with the relevant entities, namely phenomenal properties. Modes of presentation are not limited to concepts. Practical modes of presentation are, arguably, non-conceptual. Linguistic expressions (such as terms or sentences) can also sometimes serve as "guises" or modes of presentation of their referents, particularly in cases where there is no semantic difference between the expressions themselves (e.g., in the case of synonyms like "furze" and "gorse"). Purely linguistic differences can give rise to differences in cognitive significance: for any two sentences of the form "a = a" and "a = b," where "a" and "b" are co-referential, there will always be room for rational doubt as to whether one is true and the other is false, because the difference in signs *alone* can generate (rational) doubts about identity and co-reference. Plausibly, this phenomenon is, at least in part, what has led many philosophers to posit very fine-grained and language-sensitive modes of presentation. If expressions themselves can serve as modes of presentation, then, arguably, so can other kinds of non-conceptual representational "vehicles," including experience. This suggests that the notion of a mode of presentation is broader than that of a concept, at least as

[11]I am grateful to Robbie Williams for raising this issue, which deserves further development.

conceived by proponents of the PCS. Consequently, the account of Mary's case as a Frege puzzle is not necessarily a version of the PCS.

In short, the idea is that Mary comes to know the phenomenal character of experiences of red under an acquaintance mode of presentation—one that is not descriptive and therefore does not introduce any new reference-fixing properties. Knowing phenomenal properties under phenomenal modes of presentation requires having been acquainted with them in experience. This explains why Mary could not know the relevant propositions under a phenomenal *mode of presentation* before leaving her room, even though, as Tye (2008) notes, she may already have possessed deferential phenomenal concepts. This also helps explain why it is difficult to identify a contingent proposition—other than metalinguistic or demonstrative ones—that Mary comes to know at t3, when she learns the informative identity claim "wow is ph-red": there are no reference-fixing properties that could be used to construct contingent propositions from the relevant modes of presentation. Acquaintance does not present the relevant properties via other properties, but directly.[12]

The broader lesson from Frege puzzles is that the sense of substantiveness we associate with certain discoveries may derive not from acquiring genuinely new information, but from coming to know new fine-grained propositions, or old propositions under new, cognitively richer modes of presentation. Substantiveness, whatever exactly it amounts to, need not be explained by appeal to genuinely new information, of the kind that opens up new facts or new possible worlds.

As I have noted, the challenge is, first, to provide a precise account of the alleged "substantiveness" or "robustness" of Mary's new knowledge. Second, we must avoid assuming from the outset that any shift in mode of presentation is too insubstantial to account for such knowledge. My view is that the richness of Mary's new knowledge lies not in its involving new content, but in its mode of presentation. In particular, the nature of acquaintance—as direct, immediate, and cognitively rich—may give the impression that Mary has gained access to genuinely new non-physical facts. But, under a sufficiently broad conception of modes of presentation, Mary's case arguably remains a Frege puzzle.

Acknowledgments. For insightful comments and discussions, I am grateful to Matti Eklund, Filippo Ferrari, Nick Jones, Matthew Parrott, Bernhard Salow, Robbie Williams, Tim Williamson, the anonymous referees for *CJP*, and the audience at the *International Society for the Philosophy of the Sciences of the Mind* 2024 conference.

Funding statement. This work was supported by the Arts and Humanities Research Council through the Open-Oxford-Cambridge DTP (AH/R012709/1).

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[12]A potential objection is that Mary might already be acquainted with the phenomenal character of experiences of red by observing the relevant property instantiated in someone else's brain from her black-and-white room. Tye's (2008) account sidesteps this worry by treating phenomenal character as a property of external objects rather than of experiences. However, the objection can be addressed without this commitment. For example, we should note that there are different ways of being acquainted with the same property. We can be acquainted with a property (e.g., a shape property) through different sensory modalities—e.g., visually or tactually—without thereby employing different concepts or introducing new sortals via distinct token demonstratives (a move that would reintroduce the problem raised by the new challenge). Similarly, acquaintance with a phenomenal property observed from a third-person perspective may differ significantly in cognitive value from acquaintance with the same property as instantiated in one's own experience.

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Cite this article: Sassarini, E. 2025. Is the Knowledge Argument a Frege Puzzle?. *Canadian Journal of Philosophy*: 1–17, doi:10.1017/can.2025.10049