

Aphantasia and Conscious Thought

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Abstract: The sensory constraint on conscious thought says that if a thought is phenomenally conscious, its phenomenal properties must be reducible to some sensory phenomenal character. I argue that the burgeoning psychological literature on aphantasia, an impoverishment in the ability to generate mental imagery, provides a counterexample to the sensory constraint. The best explanation of aphantasics' introspective reports, neuroimaging, and task performance is that some aphantasics have conscious thoughts without sensory mental imagery. This argument against the sensory constraint supports the existence of a non-sensory phenomenology of thought. Moreover, this argument can be extended to show that this non-sensory phenomenology determines a thought content. Finally, it can potentially diagnose the disagreement over cognitive phenomenology in the philosophy of mind, as such disagreement may turn on interpersonal variation in mental imagery.

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Take a moment to answer the following question: how many windows are there in your kitchen? Once you've reached an answer, reflect on how you arrived at it. If you are like most, then you might have called up a visual image of your kitchen and used this image to arrive at the correct number. If this is you, then it might come as a surprise to learn that some subjects, when asked to answer this question, do so successfully without performing this process of visual imagination. If you did not invoke mental imagery to answer this question, fear not, for you are not alone. Some subjects with *aphantasia* report never experiencing anything like visual mental imagery at all.

Visual mental imagery allows us to “see” things in our mind’s eye. Psychologists have long been aware that visual mental imagery can vary in vividness between different subjects (Galton 1880). Beginning with studies by Adam Zeman and coauthors (2010, 2015, 2016, 2020), however, there has recently been a flurry of new research on aphantasia. For purposes of this paper, I define aphantasia

as the reduced ability to generate mental imagery, although aphantasics can lack mental imagery altogether in extreme cases.

Aphantasia has implications for a number of live issues in psychology and philosophy of mind, including the function of mental imagery (Pylyshyn 2002; Kosslyn et. al. 2006) and the nature of dreams (Whiteley 2020). In this paper, I explore the consequences of aphantasia for debates over the nature of conscious thought. Some philosophers have argued that our thoughts are conscious *only* insofar as they are reducible to sensory experience, broadly construed to include mental imagery and inner speech (Lormand 1996; Wilson 2003; Prinz 2007, 2011). I argue that the existence of aphantasia presents a counterexample to this sensory constraint on conscious thought.

My argument against the sensory constraint on conscious thought has two premises. First, the *positive premise*: aphantasic thoughts are phenomenally conscious. Second, the *negative premise*: aphantasics have some thoughts, aphantasic thoughts, that have no *sensory reduction base*, i.e., no accompanying sensory experience that serves as a plausible candidate to constitute the cognitive experience of thinking. These premises entail that the sensory constraint is false.

Though my main goal is to argue for this negative thesis, my argument also supports a positive thesis that has two conjuncts: (1) there is a non-sensory phenomenology of thinking and (2) it partially determines the content of thought, i.e. what we are thinking about. In holding that conscious thoughts must be reducible to sensory mental imagery, proponents of the sensory constraint on conscious thought deny (1). Moreover, they are also motivated to reject (2), as it is not clear how sensory phenomenology alone is rich enough to determine thought content.

Here is the plan. In §1, I characterize the sensory constraint on conscious thought, and explain why philosophers who accept the sensory constraint typically deny that there is any thought content determined by its phenomenal character. In §2, I show that the negative premise has empirical support from the psychological literature on aphantasia. In §3, I show that the positive premise has theoretical

and introspective support. I close in §4 by suggesting two conclusions we can draw from the existence of aphantasic thought: first, there is a non-sensory phenomenology of thinking; and second, arguments for this non-sensory phenomenology can be extended to show that it partially determines what we're thinking about. Finally, I tentatively suggest that some of the disagreement about these two conclusions may be explained by interpersonal variation in mental imagery.

1. The Sensory Constraint on Conscious Thought

A mental state is phenomenally conscious when there is something it's like for the subject to have that state. The visual experience I have as I glance outside my window, the experience of bitterness upon taking a swig of coffee: these are recognizable instances of phenomenal consciousness. Our familiarity with phenomenal consciousness, however, is not just limited to the kind associated with the senses. We are no less familiar with instances of conscious thought, such as the one I have when I consciously calculate that a dime and a quarter give me thirty-five cents, or when it suddenly occurs to me that I've locked my keys inside my apartment (Siewert 1998).

It thus seems uncontroversial from the first-person point of view that we sometimes have conscious experiences when we think. But the nature of our thoughts—in particular, whether our thoughts are themselves conscious—is disputed. Some philosophers hold that the *only* kind of phenomenal consciousness that exists is *sensory* (Tye and Wright 2011; Prinz 2007, 2011; Carruthers and Veillet 2011). According to these philosophers, a mental state is phenomenally conscious only if it has a kind of phenomenal character had by sensory perception, broadly construed to include bodily sensation, perceptual imagery, and inner speech. Others demur, holding that there is a kind of phenomenal character had by conscious thoughts and other cognitive experiences that is different in kind from sensory phenomenology (Strawson 1994; Siewert 1998; Horgan and Tienson 2002; Pitt 2004).

A brief clarification on what I mean by “phenomenal”: some hear “phenomenal” as meaning more or less the same thing as “sensory.” If this is what is meant by “phenomenal,” then any non-sensory phenomenology is excluded by fiat. Instead, I use “phenomenal” to mean “there is something it’s like.” In this way, we do not prejudge the issue of whether non-sensory phenomenology exists.

Those who claim that phenomenal consciousness is exhausted by sensory phenomenal consciousness must explain the experience of thinking in terms of associated sensory episodes. Consider the following passage from Eric Lormand (1996):

One’s standing belief that snow is white may cause one to think that snow is white, by causing one to form an auditory image of quickly saying the words ‘Snow is white’ (or ‘I believe snow is white’) At least normally, if there is anything it’s like for me to have a conscious belief that snow is white, it is exhausted by what it’s like for me to have such verbal representations, together with nonverbal imaginings, e.g., of a white expanse of snow, and perhaps visual imaginings of words. (246-7)

Our conscious thoughts are often accompanied by a certain kind of sensory phenomenology, namely, *mental imagery*. As Lormand notes, when I have the conscious thought that snow is white, this might be accompanied by a state of *visual* mental imagery as of a white snowbank. I might also have *auditory* mental imagery, such as hearing myself saying the English words “snow is white” in inner speech. Once we account for this accompanying sensory mental imagery, Lormand and others claim that there is nothing left over, phenomenologically: the thought’s phenomenal properties are exhausted by its sensory phenomenal properties (see also Wilson 2003).

Jesse Prinz also thinks that thoughts are conscious only insofar as they are reducible to sensory mental imagery. He explains away putative cases of imageless thought as failures on the part of introspectors to notice broadly sensory mental imagery (2007, pp. 348-9; 2011, pp. 183-9). When faced with a conscious thought that appears to arrive, unbidden, without any accompanying imagery, Prinz’s strategy is to find some sensory mental imagery present that has been left out of the case’s description:

On any plausible . . . view, the phenomenology of thought is underwritten by both verbal and non-verbal imagery. Thus, [my opponents] face the difficult challenge of having to find cases in which the phenomenal character of a thought transcends these rich sources. (Prinz 2011, p. 189)

According to Prinz, careful introspection will reveal some visual, verbal, or emotional mental imagery that might initially go undetected. Prinz thus accepts:

The sensory constraint on conscious thought: for any thought, if it is phenomenally conscious, then it has a sensory reduction base.

A phenomenally conscious thought has a *sensory reduction base* when it is accompanied by some sensory mental imagery that can serve as a plausible candidate to constitute the experience of thinking. For example, my experience of thinking that snow is white might be constituted by a mental image of a white expanse of snow, or the auditory imagery of saying the words “snow is white.”

Proponents of the sensory constraint on conscious thought must deny the following:

Anti-reductionism: there exists a non-sensory phenomenology of thinking, a *sui generis* cognitive phenomenology had by conscious thoughts.¹

Philosophers who accept the sensory constraint hold that the experience of thinking is fully constituted by some accompanying sensory phenomenology. They must therefore deny the possibility

¹ Philosophers who argue that there is a non-sensory cognitive phenomenology include Strawson (1994), Siewert (1998), Horgan and Tienson (2002), Pitt (2004), Kriegel (2015), Chudnoff (2015), and Montague (2016).

of conscious thoughts having some non-sensory phenomenology that can come apart from this sensory phenomenology (Carruthers and Veillet 2011; Tye and Wright 2011).

Proponents of the sensory constraint also typically deny the following claim about the role of cognitive phenomenology:

The determination thesis: thought has content that is determined by its phenomenal character alone.

Determination is the converse of supervenience: if thought has a content that is determined by its phenomenal character, then this thought content supervenes on its phenomenal character. If phenomenal character is *narrow* in the sense that it supervenes on intrinsic properties of the subject, then it follows that thought has some narrow content. The determination thesis is consistent with conscious thoughts also having wide content determined partly by causal or functional roles (Horgan and Tienson 2002). To leave this open, I'll say that the non-sensory phenomenology of thought *partially* determines the content of thought.

Why do proponents of the sensory constraint reject the determination thesis? According to the sensory constraint, the experience of thinking is constituted by sensory phenomenology. It is implausible, however, that sensory phenomenology alone is rich enough to determine the content of thought (Tye 2006). For instance, two people might experience exactly the same sensory phenomenology while thinking completely different thoughts. This motivates these philosophers to sideline the role of phenomenal consciousness in determining thought content in favor of purely causal or functional theories of thought content. As will emerge, my argument against the sensory constraint provides support for both anti-reductionism and the determination thesis.

The sensory constraint on conscious thought has been challenged by phenomenological arguments for *unsymbolized thoughts*, thoughts that are conscious, yet occur in the absence of visual or auditory mental imagery (Siewert 1998; Heavey and Hurlburt 2008; Hurlburt and Akhter 2008). The goal of this paper is to develop an empirical challenge to the sensory constraint by appealing to the psychological phenomenon of aphantasia.

2. Aphantasic thoughts do not have a sensory reduction base

In this section, I argue for the negative premise that aphantasics have some thoughts, *aphantasic thoughts*, that have no sensory reduction base. The negative premise best explains the introspective reports, performance on psychological tasks, and neural activity of aphantasics.

Zeman et. al. (2010) initially presented the case of a single subject, MX, who reported losing the capacity to generate any visual mental imagery at all after undergoing a heart procedure. A surveyor by trade, MX was able to remember and describe visual details of landmarks around Edinburgh but reported being unable to “see them” (p. 147). After undergoing a variety of psychometric tests, it was concluded that MX had no underlying cognitive deficits; his results on these tests were consistent with a control group for general intelligence and memory. Notably, MX also performed normally on a number of cognitive tasks that are thought to require sensory mental imagery. For example, when MX was given the “famous face feature test,” MX successfully answered questions that require judgments about visual details of familiar faces (e.g., does Tony Blair have a moustache?).

After the initial MX study was publicized in the popular press (Zimmer 2010), a growing number of people have recognized this total imagery deficit in themselves.² Unlike the case of MX,

² Faw (2009) suggests that extreme aphantasia may affect up to 5% of people. Zeman (2016) reports that “thousands” of aphantasics have made contact with his group at Exeter, which attests to its frequency.

many have reported that their lack of visual imagery is a congenital rather than acquired syndrome. This led Zeman and coauthors to do a follow-up study, showing that aphantasia is a regularly occurring phenomenon (2015, 2016). Studying a group of twenty-one subjects who reported similar imagery deficits to MX's, they found that aphantasics rated much lower on the Vividness of Visual Imagery Questionnaire (VVIQ) than a control group of 121. The VVIQ (first developed by Marks 1973) asks subjects to perform certain imaginative tasks and to quantitatively rate the vividness of their imagery during these tasks. Subjects are asked, among other things, to visualize a rising sun and notice any surrounding clouds or blue sky, and to think of a storefront and rate the vividness of "the overall appearance of the shop from the other side of the road" (Zeman 2015, supplementary data).

In addition to this questionnaire data, there is psychological data replicating MX's initial performance on tasks thought to require imagery. In Zeman (2020), aphantasic patients were asked to mentally count the number of windows in their house or apartment. Aphantasics were much less likely to use visual imagery strategies to perform the task than the control group (see Figure 1).³

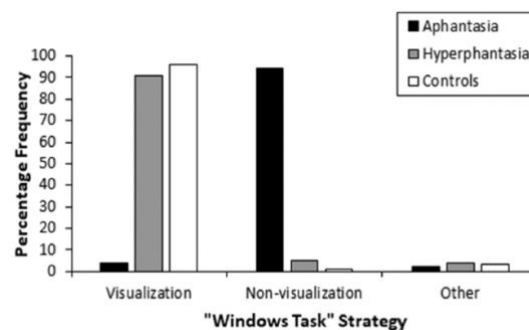


Figure 1 (reproduced from Zeman 2020)

³ They were also far less likely to use visual imagery strategies than the *hyperphantasia* group, consisting of subjects reporting especially vivid mental imagery.

If they do not rely on visual mental imagery, how do aphantasics complete the windows task and other VVIQ tasks? They use non-imagery strategies, including “amodal knowledge” (Zeman 2020, p. 430). Zeman writes that the success of aphantasics on tasks like the windows task was achieved by drawing on what study participants described as “knowledge, memory, and subvisual” models (Zeman, Dewar, and Della Sala 2015).

A major question for those relying on the VVIQ concerns its reliability. It seems quite plausible that what some subjects describe as “vivid” visual imagery, others will not. What one rates as a 9 out of 10 on a vividness scale, another might rate a 4 out of 10. Or, perhaps some subjects are simply not as good at attending to the vividness of their own visual imagery. The VVIQ results suggest that there might be considerable interpersonal variation in how much imagery people have, but how can we rule out the possibility that there might also be a large degree of variation in people’s vividness thresholds? In other words, might the variances in reported mental imagery more so reflect people’s different criteria for reporting it?

This worry can be alleviated by the increased development of objective techniques for measuring mental imagery. These techniques, developed by Joel Pearson and coauthors, exploit the binocular rivalry illusion (Pearson et al. 2008; Pearson 2014; Chang and Pearson 2017; Keough and Pearson 2018). Binocular rivalry is a process wherein one image is presented to a subject’s left eye while a different image is presented to the right eye. One might expect this to cause a fusion of two percepts in the subject. For example, if the left eye is presented with a blue swatch, and the right eye is presented with a red swatch, we might expect the resulting image to be a fusion of these two images (i.e., what is present to the subject’s awareness is a purple swatch). Interestingly, what in fact happens is that one of the images becomes dominant, while the other image is not present in awareness. Previous work has shown that which image becomes dominant is subject to a priming effect: when the subject is presented with a weak visual copy of one of the images before a binocular rivalry

presentation, this makes it more likely that this image will be the one seen in the illusion (Brascamp et al. 2007; Pearson et al. 2008).

Notably, studies by Pearson found that a similar pattern of priming results from visually imagining some image before being presented with a binocular rivalry presentation. Pearson thus writes that “this imagery paradigm has been referred to as a measure of the sensory strength of imagery, as it bypasses the need for any self-reports and directly reflects more sensory priming from the mental image” (Keogh and Pearson 2018, p. 55). The natural next step, then, was to see if aphantasics were subject to this imagery priming effect in binocular rivalry. Keogh and Pearson (2018) found that aphantasics show *almost no* imagery-based rivalry priming. The image that the aphantasics saw after priming was not significantly different from chance, whereas the image subjects from the general population see is significantly different from chance. These same aphantasics also self-rated their visual imagery very low on the VVIQ and other imagery self-assessments.

A more recent study by Wicken, Keogh, and Pearson (2021) gives further evidence for aphantasia being a genuine lack of imagery. This study compared the skin conductance level of aphantasics with that of a control group of general population subjects when reading fictitious fearful scenarios designed to elicit frightening imagery. Skin conductance levels generally increase when responding to frightening stimuli, including imagined stimuli. The data show that aphantasics show a significantly lower fear reaction (witnessed by the lower skin conductance levels) than control participants who retained the ability to visualize. Notably, there was no significant difference in conductance level between the two groups in a control experiment in which both groups were shown frightening perceptual images (see Figure 2).

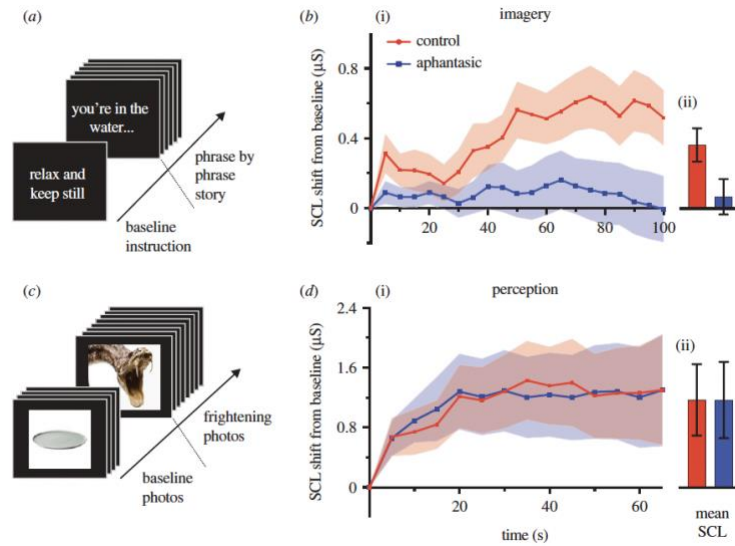


Figure 2 (reproduced from Wicken, Keogh, and Pearson 2021)

Aphantasia also has objective grounding in the form of functional magnetic resonance imaging (fMRI) techniques. Zeman (2010) designed a set of tasks to examine patterns of brain activation in MX and in a control group.⁴ The participants were subjected to a “perception condition” in which they viewed famous faces, as well as an “imagery condition” in which they were presented with the name of a famous person and asked to attempt to visually imagine the person’s face. They also viewed control stimuli for both perception and imagery conditions: scrambled face stimuli and nonsense letter strings, respectively. In both MX and the control participants, face perception activates specific areas, including the inferior occipital and the fusiform gyri (Ishai et. al. 2002). There were no differences in brain activation detected between MX and the control group when subjected to the perception condition. There were differences of brain activation, however, between MX and control participants in the imagery condition. While the control participant group employed the posterior visual network when imaging, MX used a predominantly frontal network when attempting to imagine, including the

⁴ The tasks are adapted from tasks originally performed in Ishai, Haxby, and Ungerleider (2002).

frontal and anterior cingulate gyri. These areas are associated with different cognitive functions, and are activated by different executive tasks; the inferior frontal gyrus has been associated with semantic retrieval (Moss et. al. 2005). Zeman (2010) suggests that this relative increase in frontal activation for MX reflects the difficulty in attempting to visually imagine and the search for alternative cognitive strategies. In all, the fMRI data corroborate MX's subjective reports of loss of visual imagery. Another fMRI study lead by Fulford (2020) measured a group of aphantasics, and the findings were consistent with that of MX's: "The increased frontal activation in MX . . . is mirrored by our current finding that a range of frontal activations, including activation of the anterior cingulate, are negatively correlated with imagery vividness" (p. 37). Taken together, these fMRI studies show that MX and other aphantasics' subjective reports have empirical corroboration.

Now that I've presented empirical support for the negative premise, I'll defend it against the objection that it is guilty of neglecting various kinds of sensory mental imagery: faint imagery, auditory imagery, involuntary imagery, and unconscious imagery. I'll consider each of these in turn.

First, it might be objected that aphantasics do not have a complete lack of sensory mental imagery, but merely a reduced amount of imagery. If aphantasics do have only an impoverishment of mental imagery, then perhaps there is some very faint sensory mental imagery accompanying their thoughts that can serve as a reduction base for their cognitive experience of thinking.

What the burgeoning aphantasia literature has shown is that there is a large degree of variation in mental imagery across subjects. There seems to be a continuum of imagery vividness: on one end of the spectrum, there are *hyperphantasics*, subjects who report especially vivid imagery (Zeman 2020); at the other end of the spectrum, there appear to be some subjects without *any* sensory mental imagery. Call this complete lack of mental imagery "extreme aphantasia." Dawes et. al. (2020) found that up to 26.2% of aphantasics have this extreme form, reporting a *total* absence of imagery. The VVIQ has a range of 16 to 80, where a score of 16 is recorded when a subject answers "no image at all" on all

questions in the questionnaire. Zeman et. al. (2020) found that a number of subjects achieved the minimum score of 16/80 on the VVIQ. Many subjects in the aphantasia studies do experience reduced mental imagery. Some with extreme aphantasia, however, have none.

Proponents of the sensory constraint might insist that even if aphantasics lack visual imagery, they have other kinds of imagery to serve as a sensory reduction base, e.g. inner speech. In response, many aphantasics lack auditory imagery as well as visual imagery. If aphantasics lack auditory mental imagery, this is good evidence that they lack inner speech, since most views of inner speech agree that it has an auditory-phonological component (Langland-Hassan 2018; Carruthers 2018), even if it has other components as well, such as motor imagery.⁵

Some initial studies on aphantasia reveal that impoverishment of imagery is not limited to visual imagery. In the (2015) study, Zeman and coauthors write that “10/21 [aphantasic participants] told us that all modalities of imagery were affected” (p. 378; see also Zeman 2021, who reports that half of their participants report imagery reduction in all sensory modalities). Dawes et. al. (2020) found that “individuals with aphantasia not only report being unable to visualize, but also report comparatively reduced imagery, on average, in all other sensory modalities,” and that 26.2% of subjects report a lack of imagery in *all* sensory modalities (Blomkvist forthcoming). More targeted studies attempting to isolate auditory imagery in aphantasic studies would help to confirm these initial results.⁶

⁵ For the current state of play on inner speech, see the essays in Langland-Hassan and Vicente (2018).

⁶ A recent study by Hinwar and Lambert (2021) found that most self-reported visual aphantasics also reported weak or entirely absent auditory imagery; and participants lacking auditory imagery tended to be (visually) aphantasic. Blomkvist (forthcoming) argues that we have reason to believe that the data reporting how many people have impairments across sensory modalities is actually underestimated, as the extant data is only taken from a subset of those who have a visual imagery impairment; it would not capture a subject who is only impaired when it comes to non-visual mental imagery.

Does extreme aphantasia also occur in the case of auditory imagery? Many anecdotal reports suggest so. In the last decade, as the number of people recognizing aphantasia in themselves has steadily grown, several online communities (aphantasia.com, [reddit.com/r/aphantasia](https://www.reddit.com/r/aphantasia)) have sprung up as people come together to discuss their shared experience (and lack thereof). These communities feature a number of users who report that they experience no visual imagery and no inner speech when they think. A sampling of these reports:

- I can think in sequences of ideas, but there is no running voice or perceptible characteristic to my inner thinking at all.⁷
- I have Aphantasia and no inner monologue. I discovered the aphantasia first, and the fact that other people have an (often) constant voice in their head soon after. Both things (in that other people do not think like me) were just as surprising to me. My thoughts are generally concepts, that only get put into words when I want to externalise them (talk or write). This makes sense to me as thoughts are thoughts, a different thing from words and pictures!⁸
- I have Aphantasia and no inner monologue. I can force words in my head - e.g. if you ask me to repeat a sentence in my head, I can do that (although it feels a bit weird and unnatural) - but I don't think with it and it's never spontaneous. I don't narrate my day, work things out, talk to myself about something, or comment on things I see with words in my head. My thinking is all unsymbolized conceptual thoughts.⁹

⁷ Accessed from: https://www.reddit.com/r/Aphantasia/comments/9t58jj/what_is_an_inner_monologue/

⁸ Accessed from: https://www.reddit.com/r/Aphantasia/comments/c62t5d/aphantasia_lack_of_internal_monologue/

⁹ Accessed from: https://www.reddit.com/r/Aphantasia/comments/jmvpeu/aphantasia_and_inner_speec

- I think in words but don't hear a voice or anything, it's just abstract words, the same as 'visualising', there's nothing there but the abstract concept. It's really hard to explain though . . . when I'm conscious there's nothing.¹⁰
- I have no internal monologue but I also don't see pictures . . . I can't see much but I just "know" what it is. As for thoughts that I have to make concrete, I will 100% think in all words but it's very painstaking because it's like squeezing a bunch of stuff through a strainer to get the right words . . .¹¹

These first-personal reports suggest that a deficit of visual mental imagery and a deficit of auditory mental imagery often go hand in hand. Aphantasics thus sometimes have thoughts without either visual or auditory mental imagery.

Some aphantasia studies indicate that some aphantasics can form *involuntary* mental imagery in the form of daydreaming (Dawes et al. 2020), dreaming (Zeman et al. 2020; Dawes 2020), and "flashes" (Zeman, Dewar, and Della Sala 2015). Many of our conscious thoughts are involuntary, seeming to occur to us suddenly and unprompted. One might be tempted to think that involuntary mental imagery suffices to explain all the conscious thoughts that aphantasic subjects have.¹²

The studies on offer, however, also reveal that many aphantasics have a deficit of involuntary imagery as well (Zeman et. al. 2020; Dawes 2020). Moreover, even among those who do have involuntary sensory mental imagery, these episodes could not explain the apparent conscious thoughts

¹⁰ Accessed from: https://www.reddit.com/r/Aphantasia/comments/jmvepu/aphantasia_and_inner_speech/

¹¹ Accessed from:

https://www.reddit.com/r/Aphantasia/comments/odskh5/how_does_your_stream_of_consciousness_work/

¹² Thanks to Dan Cavedon-Taylor for raising this possibility.

aphantasics have without accompanying imagery when answering questions on the VVIQ, as these thoughts are voluntarily generated (e.g., “Tony Blair does not have a moustache”).

Finally, Bence Nanay argues that aphantasia can be explained by the presence of *unconscious* sensory mental imagery (Nanay 2021). Just as there can be conscious and unconscious perception, so too can there be conscious and unconscious perceptual imagery. Nanay argues for the presence of unconscious visual imagery in order to explain the performance of a single aphantasic studied in Jacobs et. al. (2018). If this is right, then there may be some sensory imagery accompanying the conscious thoughts of aphantasics: it’s just that the sensory mental imagery is unconscious.

There may indeed be unconscious mental imagery present in aphantasics as Nanay suggests. This is no consolation for proponents of the sensory constraint, however, since an unconscious sensory state cannot serve as a reduction base for a conscious thought. A conscious thought has a sensory reduction base when there is an accompanying sensory experience that can serve as a plausible candidate to explain the cognitive experience of thinking. If aphantasic thoughts are phenomenally conscious, then *unconscious* sensory imagery is not a plausible candidate to explain these thoughts. Showing that aphantasic thoughts are phenomenally conscious is the task of the next section.

3. Aphantasic thoughts are phenomenally conscious

In this section, I argue for the positive premise that aphantasic thoughts are phenomenally conscious. I give two arguments for this premise. The first argument is from introspective report: aphantasic subjects report that their own thoughts are conscious, and it seems reasonable to take these reports at face value in the absence of strong evidence to the contrary. The second argument is abductive: the best explanation for how aphantasics know what they are thinking is that their thoughts are phenomenally conscious.

First, then, the argument from introspective report. The introspective reports given by aphantasics seem to indicate that their thoughts are conscious. When describing how they think, aphantasics in online communities appear to be describing their subjective experience. The following quotes from aphantasics describing their thinking are instructive:

- I don't have a good way to describe what goes on in my head. I FEEL my thought, in a more abstract way.¹³
- Most of the time my mind feels blank, with an occasional thought zipping through it... not in visual form, but not in an auditory form either.¹⁴
- I don't have an inner monologue, although I can force one if I want to but it feels like a slower extra step. To me it feels like thinking in abstract concepts...¹⁵
- Unless I'm actually thinking very specifically about something, a lot of how I think feels very abstract and hard to explain. It's like my own thoughts are on the tip of my tongue.¹⁶
- I just think. There aren't words or images that go with it. I just rapidly go through scenarios in my head, like if I do A then B will happen.¹⁷

We can distill four distinct points from these reports. First, when aphantasics make reports to the effect that they “feel” their thoughts “zipping” through their mind, they are describing their stream of

¹³ Accessed from: https://www.reddit.com/r/Aphantasia/comments/penjtt/whats_your_inner_thoughts_language/

¹⁴ Accessed from: https://www.reddit.com/r/Aphantasia/comments/9t58jj/what_is_an_inner_monologue/

¹⁵ Accessed from: https://www.reddit.com/r/Aphantasia/comments/penjtt/whats_your_inner_thoughts_language/

¹⁶ Accessed from: https://www.reddit.com/r/Aphantasia/comments/ad5cl8/thinking_by_using_language_only/

¹⁷ Accessed from: https://www.reddit.com/r/Aphantasia/comments/ccsb7m/how_do_you_think_most_times/

consciousness: there's something it's like for them to experience their thoughts. Second, what it's like for them to experience the thought is non-sensory in that it's "not in visual form, or in auditory form either." Third, the experience of thinking is not the mere occurrence of non-intentional phenomenal qualities, such as "cognitive qualia." On the contrary, it is an experience *of thinking*: it feels like "thinking in abstract concepts."¹⁸ Finally, what it is like to have a thought with one content is different from what it is like to think a thought with another content in the same external circumstances: for example, the experience of having a conditional thought ("if I do A then B will happen") feels different from, say, having a conjunctive thought ("I will do A and B will happen").

These introspective reports from aphantasics thus provide defeasible evidence that their aphantasic thoughts are phenomenally conscious. In the absence of defeaters, we should take these introspective reports at face value. It is therefore reasonable to conclude that these thoughts are phenomenally conscious.

Now let's turn to the abductive argument for the positive premise that aphantasic thoughts are phenomenally conscious. The first premise of the abductive argument is that aphantasics have introspective knowledge of their own thoughts. Aphantasics will report that they "just know" that they are thinking and that they are thinking about some things rather than others. As a popular aphantasic YouTube personality says, "my thoughts are manifesting in a *knowing* way . . . I just *know* they're there . . ."¹⁹ When asked to describe the contents of their "inner monologue", a member of an

¹⁸ In personal communication, Alexei Dawes writes that the majority of the aphantasics studied in Dawes et. al (2020) reported thinking "semantically" but without sensory phenomenology. When thinking about an apple, for example, they think about the apple concept abstractly, are able to describe an apple, know that it tastes sweet, but do not have any accompanying sensory detail.

¹⁹ Accessed from: <https://www.youtube.com/watch?v=drFuO81sI5g>.

online aphantasia community writes, “My internal monologue has no sound or anything *I just know what I'm thinking.*”²⁰

When aphantasics report that they “just know” their own thoughts, and that their thoughts manifest in a “knowing way”, they seem to mean that they know their thoughts directly, rather than indirectly based on inference. When we know a conclusion by inference, and we’re asked how we know it, we can usually answer by citing our premises. When our knowledge is non-inferential, however, it’s more natural to answer, “I just know.” For example, this is the natural answer to give when someone asks you how you know you’re in pain. After all, when we know that we’re in pain, we do not typically infer this conclusion from further premises. Rather, we “just know” in the sense that we have a direct and non-inferential way of knowing our own minds. And what goes for pain goes equally for aphantasic thoughts. Not only do people with aphantasia report that their thoughts are conscious, but their reports also suggest that they have non-inferential knowledge of their thoughts.

It is standard to use the term “introspection” as a label for this first-personal way of knowing our own minds without inference (Smithies and Stoljar 2012). Philosophers give different theories of introspection, but we need not decide between them here. All that is needed is the idea that there is a distinctly first-personal way of knowing about our own minds without inference, however its nature is ultimately explained. Taking the introspective reports from aphantasics seriously suggests that this first-personal way of knowing our own minds does not just apply to sensations, such as the feeling of pain, but extends to the experience of thinking as well.

The second premise of the abductive argument is that the best explanation of how aphantasics have introspective knowledge of their thoughts is that their thoughts are phenomenally conscious.

²⁰ Accessed from:

https://www.reddit.com/r/Aphantasia/comments/f926eg/what_are_your_internal_monologues_like_asking/

More generally, phenomenal consciousness seems relevant for explaining our introspective knowledge of the contents of our conscious states. For example, I can know by introspection not only that I'm visualizing, rather than seeing, but also that I'm visualizing an orange, rather than an apple. Moreover, there is a phenomenal difference between seeing and visualizing and between visualizing an apple or visualizing an orange. It is plausible that these phenomenal differences are relevant to explaining how I can know by introspection that I'm visualizing an orange.

Notice that the same points hold true in the case of thought. We can know by introspection not only *that* we are thinking, but *what* we are thinking. For example, one of the aphantasics above reports thinking a conditional thought: *if I do A then B will happen*. Moreover, there is a phenomenal difference between thinking this conditional thought and thinking a conjunctive thought, e.g., *I'll do A and then B will happen*. And, crucially, this phenomenal difference seems relevant to explaining how we can know by introspection that we're thinking a conditional thought, rather than a conjunctive one. The abductive premise thus offers a kind of explanatory unification: in the same way that they can know their conscious sensations and perceptions, aphantasics (and non-aphantasics) can know their own thoughts directly through introspection *because* these thoughts are phenomenally conscious.

We can now state the abductive argument for the positive premise as follows:

<i>Epistemic premise</i>	Aphantasics have introspective knowledge of their own thoughts.
<i>Abductive premise</i>	The best explanation of this introspective knowledge is that aphantasic thoughts are phenomenally conscious.
<i>Conclusion</i>	Therefore, aphantasic thoughts are phenomenally conscious.

Both premises of the abductive argument face objections. First, some argue that the abductive premise is false because we need not appeal to phenomenal consciousness in order to explain our introspective knowledge of our own thoughts. Rather, all that is needed is to posit a reliable introspective mechanism, which takes as an input the thought that p and produces the belief “I think that p ” as an output (Levine 2011). So long as this mechanism is sufficiently reliable, it can generate introspective knowledge as output, whether or not its inputs are phenomenally conscious.

In response, let me concede that we have some reliable introspective mechanism. Without such a mechanism, it is hard to see how introspective knowledge is possible at all, since reliability is a necessary condition for knowledge. Plausibly, however, introspection is reliable only in certain conditions and given certain kinds of inputs: in particular, it makes us reliable about our conscious states and not our unconscious states. In optimal conditions, introspection gives us *some* degree of reliable introspective access to our conscious states, like pains, itches, and thoughts (Bayne and Spener 2010). It does not, however, seem to give us *any* degree of reliable introspective access to our unconscious states, like our implicit biases or implicit knowledge of syntactic rules. In order to have knowledge of these unconscious states, we must engage in inference to the best explanation.

Moreover, even if we did have reliable access to our unconscious states, this would not obviously be enough to deliver introspective knowledge. This is because, while reliability is generally agreed to be necessary for knowledge, it is much more controversial whether it is sufficient for knowledge. Consider, for instance, Smithies’ (2019, p. 147-8) discussion of the “super-duper-blindsighter,” who has a reliable mechanism that generates true higher-order beliefs about the contents of unconscious vision without inference. The super-duper-blindsighter’s higher-order beliefs are unjustified, despite having a reliable mechanism. And it looks like phenomenal consciousness is the missing element that is needed for such beliefs to be justified. To see this, notice that the feeling of pain doesn’t merely reliably cause us to believe that we are in pain; it also *justifies* our believing that we

are in pain. The same holds true for experiences of thinking: my conscious thought that a dime and a quarter gives me thirty-five cents doesn't just reliably cause me to believe that I have this thought; it also justifies my belief that I have this thought.

The epistemic premise of the abductive argument also faces an objection. Peter Carruthers (2011, 2015) denies that our knowledge of our own thoughts is non-inferential. When it comes to Siewert's (1998) case of suddenly realizing one has locked one's keys inside one's house, he argues, one's knowledge of this thought isn't directly based on introspection, but is rather the result of a swift process of self-interpretation. Whereas introspective knowledge is direct and non-inferential, self-interpretation is an inferential process that yields knowledge of conclusions about our thoughts from sensory and behavioral premises. Siewert's mistake, according to Carruthers, is to infer the false conclusion that our thoughts are conscious from the true premise that we cannot have non-inferential knowledge of our unconscious mental states together with the false premise that we have non-inferential knowledge of our thoughts. Wrongly judging that our knowledge of our own thoughts is direct leads us to think that our thoughts are conscious. But this is a mistake, according to Carruthers.

Carruthers' objection applies not only to Siewert, but also to the entire community of aphantasics. Aphantasics seem to report having non-inferential knowledge of their thoughts. The reports suggest their knowledge of their thoughts is direct in the same way that they know their feelings and sense perceptions. As one aphantasic says:

I don't have inner seeing or inner hearing, but I do have feelings in the present, sensory awareness, and unsymbolized thoughts. So I can have the feeling of hunger or thirst, walk to the fridge, at same time look outside, seeing a mailman and I be aware of a future action that needs to be done, without any symbolism: words, pictures or anything, it is just knowing.²¹

²¹ Accessed from: https://www.reddit.com/r/Aphantasia/comments/penijt/whats_your_inner_thoughts_language/

Here, this aphantasic seems to describe her knowledge of a thought, namely, a thought about some future action that needs to be done, in the same way that she describes knowing her feelings and visual perceptions: she “just knows” that she is having them.

If Carruthers is right, however, then aphantasics are wrong that they have non-inferential knowledge of their minds. What’s more, if they were to have non-inferential knowledge about their own thoughts, then those thoughts would be conscious. Carruthers thinks this linking principle is a part of our universal folk psychology (2011, p. 32). This error about how aphantasics know their own minds thus brings in its train a second: they are also wrong about the contents of their own streams of consciousness. As he says about the case of unsymbolized thought:

subjects who report unsymbolized or partly-worded thoughts . . . may actually be relying on self-interpretation, grounded in prior imagistic activity, current imagery of a non-symbolic sort, and/or knowledge of current behavior and circumstances . . . [they] will simply find themselves with the powerful intuition that they were entertaining a specific thought . . . (2011, p. 221).

It is perhaps not surprising that aphantasics might be wrong about how they know their own minds. But it is the second error that Carruthers imputes to aphantasics, that they are all massively mistaken about their own streams of consciousness, that is more surprising. To motivate this kind of error theory, Carruthers needs a very strong argument.²² It is a cost of his view of self-knowledge that it seems to be at odds with many introspective reports of aphantasics (and non-aphantasics) when

²² Carruthers (2011) does give an argument that we are always mistaken in thinking that we have direct knowledge of our thoughts, but it is beyond the scope of this paper to evaluate this argument. The argument is a rather complex abductive argument that relies on the comparative advantages of his theory in explaining the pattern of psychological data where we sometimes confabulate. Details aside, the key question is whether we can better explain the data with a mixed theory that says we have two different ways of self-ascribing our own thoughts, one inferential and one non-inferential. This mixed view is defended by Nichols and Stich (2003) and Goldman (2006).

describing their thinking. This is not to say that the introspective judgments of aphantasics are infallible, but rather that the default view should be that aphantasics are not all collectively mistaken about their own streams of consciousness.

Both the argument from introspective report and the abductive argument support the positive premise that aphantasic thoughts are phenomenally conscious. When MX judges that Princes Street is in the New Town part of Edinburgh, it is plausible that this thought is present to him in phenomenal consciousness. And, as I argued in §2, the best explanation of the introspective reports, performance on tasks thought to require sensory mental imagery, and neural activity of aphantasics is that aphantasics sometimes have thoughts without a sensory reduction base. MX's thought about New Town thus need not have any accompanying sensory mental imagery constituting his experience of thinking. In other words, the existence of aphantasic thoughts shows that the sensory constraint on conscious thought is false.

4. Conclusion

What do we learn from the argument against the sensory constraint on conscious thought? Here are the conclusions of the paper:

First, the existence of aphantasic thought supports anti-reductionism, i.e., there exists a non-sensory phenomenology of thinking, a *sui generis* kind of cognitive phenomenology. Aphantasic subjects sometimes have thoughts without a sensory reduction base, and yet their thoughts are phenomenally conscious. This suggests there must exist some phenomenal character that is proprietary to cognitive experiences, such as conscious thoughts: a phenomenology that is different in kind from the phenomenal character of sensory experiences. It might be quite difficult to describe this cognitive phenomenology in language; we might reach, as aphantasics do, for certain phrases like

“it feels like thinking in abstract concepts.” But just because an experience is difficult to describe does not mean it doesn’t exist at all.

Second, the arguments that support anti-reductionism can be extended to support the determination thesis. When it comes to the argument from introspective report, recall that aphantasics don’t just report having the experience of thinking; they also report the experience of thinking thoughts with specific contents, e.g., conditional contents, rather than conjunctive contents. This provides defeasible evidence that the experience of thinking varies depending on what you are thinking about, just as the experience of visualizing varies depending on what you are visualizing. When it comes to the abductive argument, we can know by introspection not just *that* we are thinking, but *what* we are thinking, e.g., I can know I’m thinking a conditional thought, rather than a conjunctive thought. The best explanation of how we can have this introspective knowledge is that the experience of thinking varies depending on what you’re thinking about: for example, there’s a phenomenal difference between thinking a conditional thought and a conjunctive thought. The case of aphantasic thought thus supports the determination thesis, which says that any difference in the phenomenal character of thought will reflect some difference in its content (Siewert 1998; Horgan and Tienson 2002).

Much of the debate over the existence of cognitive phenomenology trades on introspective arguments. While some claim that we “cannot miss” the cognitive aspects of phenomenology if we “simply pay attention” (Horgan and Tienson, p. 522-3), others report being able to detect only sensory phenomenology.²³ The large degree of variation in imagery illustrated by aphantasia offers a potential

²³ Siewert (1998), Pitt (2004), and Strawson (2011) appeal to introspection to argue for cognitive phenomenology. Wilson (2003), Nichols and Stich (2003), Robinson (2005, 2011), Tye and Wright (2011), Carruthers and Veillet (2011), and of course Prinz (2011) doubt the appeal to introspection for cognitive phenomenology.

diagnosis of this impasse.²⁴ It may be that opponents of cognitive phenomenology have particularly vivid and ubiquitous sensory phenomenology. Conversely, it may be that proponents of cognitive phenomenology tend to think in imagery less than their opponents: the conceptual or semantic features of their conscious thoughts may stand out to them because they are less typically accompanied by sensory imagery. I put this forward as a tentative hypothesis regarding this disagreement, one which merits a fuller treatment elsewhere.

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²⁴ Schwitzgebel (2008) and Spener (2011) argue that this introspective stalemate amongst participants in the cognitive phenomenology debate shows that introspection cannot be relied on to settle the debate over cognitive phenomenology's existence. Smithies (2013) suggests that arguments for or against cognitive phenomenology should thus instead turn on what theoretical role it might play.

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