

Cognitive Phenomenology: In Defense of Recombination

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Abstract. The cognitive experience view of thought holds that the content of thought is determined by its cognitive-phenomenal character. Adam Pautz argues that the cognitive experience view is extensionally inadequate: it entails the possibility of *mix-and-match* cases, where the cognitive-phenomenal properties that determine thought content are combined with different sensory-phenomenal and functional properties. Because mix-and-match cases are metaphysically impossible, Pautz argues, the cognitive experience view should be rejected. This paper defends the cognitive experience view from Pautz's argument. I build on resources in the philosophy of mind literature to show that cognitive-phenomenal properties are modally independent from sensory-phenomenal and functional properties. The result is that mix-and-match cases, though modally remote, are metaphysically possible. The possibility of mix-and-match cases allows us to move from defensive posture to a critical one: it poses problems for any theory of content that imposes rationality constraints, including Pautz's positive view, phenomenal functionalism.

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rationality

According to the *cognitive experience view*, thinking is an experience that has phenomenal character: there is something it is like to think a thought. In particular, thinking has *non-sensory* phenomenal character: it has a kind of phenomenal character lacked by sensory perception, broadly construed to include bodily sensation, perceptual imagery, and inner speech. The view holds that there exists a kind of phenomenal character had by cognitive experiences like thoughts. What's more, on the cognitive experience view, the phenomenal character of thought partially determines what the thought is *about*. In other words, thought has a kind of content that supervenes on its phenomenal character. For any content p , to think a thought that p , having a cognitive experience with this distinctive non-sensory phenomenology is required. So, on the cognitive experience view of thought, to think the thought that p is to have a cognitive experience with the content that p in the right external circumstances.

This paper examines an objection to the cognitive experience view advanced by Adam Pautz (2013, forthcoming). Pautz argues that the cognitive experience view leaves open the possibility of *mix-and-match* cases in which the same cognitive-phenomenal property could be mixed and matched with different sensory-phenomenal properties and different functional properties.¹ According to Pautz, some of these cases are *metaphysically impossible*. Because the cognitive experience view entails that these cases are possible, Pautz argues, we ought to reject the view.

This paper defends the cognitive experience view of thought against Pautz's recombination argument. I argue that Pautz's mix-and-match cases, although strange and modally remote, are not strictly *impossible*. As I explain, we can construct these cases by drawing on elements found within standard examples in the literature on cognitive phenomenology and the metaphysics of phenomenal consciousness. The upshot is that the recombination argument is dialectically ineffective. What's more,

¹ This is Goff's (2018) label for Pautz's cases.

this allows us to move from a defensive posture to a critical one: the possibility of mix-and-match cases undermines Pautz's own view, *phenomenal functionalism*.

Here's how the paper will proceed. §1 presents and motivates the cognitive experience view. §2 outlines Pautz's argument against the cognitive experience view and gives a taxonomy of mix-and-match cases. §3 draws on examples from the literature on the metaphysics of consciousness to motivate the claim that there is modal independence between functional properties and cognitive-phenomenal properties. Meanwhile, §4 draws on examples from the literature on cognitive phenomenology to motivate the claim that there is modal independence between sensory-phenomenal and cognitive-phenomenal properties. §5 explains how opposition to the possibility of mix-and-match cases is motivated by rationality constraints that are built into certain theories of content determination. I argue that the possibility of mix-and-match cases gives reason to reject theories of content determination that impose rationality constraints on content, including Pautz's own view, phenomenal functionalism. Finally, §6 responds to the objection that some perceptual thoughts are modally dependent on certain sensory experiences.

1. Cognitive phenomenology and the cognitive experience view of thought

What determines the contents of thoughts? For example, when I think it's raining outside, *in virtue of what* is my thought about rain, as opposed to something else, or nothing at all? According to the cognitive experience view of thought, what it is to have a thought with the content that it's raining is to have a cognitive experience with a certain phenomenal character. The phenomenal character of the thought determines that it's about rain, rather than something else, or nothing at all.

Thoughts, on this view, are a kind of experience, occurring in the stream of consciousness (Crane 2013). As experiences, thoughts have *phenomenal character*. Thoughts aren't just experiences, but *cognitive experiences*, of a kind with judgments and intuitions. They have a particular kind of *non-*

sensory phenomenal character, or *cognitive phenomenology*. When one has a conscious thought, one instantiates a cognitive-phenomenal property, a kind of property not instantiated by purely sensory experiences, such as perception, sensation, imagery, and inner speech.² Proponents of the cognitive experience view are thus committed to the claim that cognitive phenomenology *exists*.

Not only do proponents of the cognitive experience view believe that cognitive phenomenology exists, but they often endorse the further claim about that it determines the intentional content of thought.³ On the cognitive experience view, to have a thought with the intentional content that *p* is to instantiate a cognitive-phenomenal property. So, when I think that it's raining outside, I have this thought *because* I instantiate a cognitive-phenomenal property underlying the content that it's raining outside.

Two points of clarification. First, while the cognitive experience view says that thought has some intentional content that is determined by its phenomenal character, it doesn't entail that *all* intentional contents of thought are determined by phenomenal character. The view leaves open the possibility that thought also has wide content determined by phenomenal character in conjunction with the natural or social environment. Some proponents of the cognitive experience view hold that phenomenally determined content exhausts intentional content (Farkas 2008); others allow for wide content (Horgan and Tienson 2002).

Second, cognition is a matter of taking an intentional attitude towards an intentional content. The cognitive experience view says that thought has content determined by the phenomenal character of the experience that one has when one thinks a thought. Proponents of the cognitive experience view also often espouse the claim that particular cognitive attitude types (e.g., thinking, judging,

² In Pitt's (2004) terminology, thought has *proprietary* phenomenology.

³ See Strawson (2010), Siewert (2011), Horgan and Tienson (2002), Graham, Horgan, and Tienson (2007), and Pitt (2009).

doubting, etc.) have distinct phenomenology (Horgan and Tienson 2002). This paper focuses on the cognitive experience view construed as a claim about the intentional content of thought, while leaving open what the intentional relation to the content might be.

We can now state the cognitive experience view as a conjunction of the thesis that cognitive phenomenology exists and the thesis that it determines thought content:

The cognitive experience view of thought

There exist cognitive-phenomenal properties and necessarily, for any cognitive-phenomenal property p , there exists some content c such that if subject S has p , then S entertains the content c .

Philosophers have offered a variety of arguments for both theses. Some arguments are theoretical, while others are phenomenological. I'll briefly review two phenomenological arguments for the existence of cognitive phenomenology, one from unsymbolized thought and the other from instances of interpretive switch, because they figure in my response to Pautz. As we shall see in §4, these cases also provide evidence that there is modal independence between cognitive phenomenology and sensory phenomenology.

Unsymbolized thoughts are conscious thoughts that occur without any accompanying mental imagery or inner speech. Siewert (1998, 2011) appeals to spontaneous thoughts, as one has when suddenly realizing one has locked their keys inside one's apartment. These thoughts are conscious—there's something it's like for the subject having them—yet they often occur in the absence of mental images, like those of keys or doors, or utterances of inner speech. Of course, sometimes we *do* think

using symbols or images; as I write this sentence, attending to my own experience reveals that I have been saying these very words in inner speech. The important point for proponents of cognitive phenomenology is that we *sometimes* have instances of unsymbolized thoughts.

Phenomenological arguments for the existence of unsymbolized thought can be supported by appealing to empirical studies. Russ Hurlburt uses the “descriptive experience sampling” method to argue for the ubiquity of unsymbolized thoughts (Hurlburt and Akhter 2008, Heavey and Hurlburt 2008). In this method, subjects carry beepers which are set to go off randomly throughout the day. When the beeper goes off, the subject is asked to pay attention to their ongoing experience at that moment, and to immediately write down notes about that experience. Within twenty-four hours, a researcher interviews the subject. This method reveals that unsymbolized thoughts make up a significant amount of the inner lives of everyday human beings: they are among the five most frequently occurring types of inner experiences described by the subjects (in addition to sensory awareness, feelings, inner speech, and inner seeing). Unsymbolized thoughts made up 22% of the subjects’ described experiences; the other most common types of experiences occur at similar rates.

Other phenomenological arguments for the existence of cognitive phenomenology appeal to *phenomenal contrast*. Strawson (1994/2009) invites us to consider the experiences of Jack, a monoglot Englishman, and Jacques, a monoglot Frenchman, as they listen to the news in French. Strawson notes that the two will have different phenomenal experiences. Whereas Jack hears the news as an unfiltered stream of noise, Jacques’ grasp of the meaning of the words is an aspect of his phenomenology. In other words, Jacques has *understanding experience*.

One might object that the phenomenal difference between Jack and Jacques can be explained by Jacques’ perceiving phonemes which Jack does not perceive.⁴ Phoneme perception is a kind of

⁴ For an account of phoneme perception, see O’Callaghan (2010).

high-level perception: its phenomenal character falls under the broad scope of sensory phenomenology. In reply, we can appeal to cases of phenomenal contrast where the phenomenal character associated with phoneme perception is the same. In particular, we can appeal to cases of *interpretive switch*. These are cases where one is presented with sentences that give rise to two different interpretations. Consider the following sentence:

(HOT) I hope the food's not too hot for you.⁵

(HOT) is lexically ambiguous. First, one might understand (HOT) as speaking to the food's temperature; later, one might understand it as about spice level. We cannot appeal to phoneme perception to explain the phenomenal difference, as the phonemes are identical. On both interpretations, one may have similar mental imagery, and the same auditory phenomenology of inner speech. Yet, there is a difference in phenomenal character. What explains this difference in phenomenal character? We can appeal to cognitive-phenomenal properties to explain the difference in phenomenal character between the two properties. The non-sensory phenomenology of thought covaries with the difference in what one is thinking *about*. This phenomenological datum gives support to the determination thesis.

In addition to these phenomenological arguments, there are also arguments that appeal to the theoretical role of cognitive phenomenology. Horgan and Graham (2012), for instance, argue that cognitive phenomenology explains the *determinacy* of our thoughts, solving long-standing problems of content indeterminacy due to Quine (1960) and Kripke (1982). This argument thus supports both the existence and the determination theses. The idea is that what it is like to think about rabbits has a

⁵ This example is Siewert's (1998).

different phenomenal character than what it is like to think about undetached rabbit parts. I'll revisit this argument in §5.

2. Pautz against the cognitive experience view

The cognitive experience view says that, to have a thought, one must instantiate a cognitive-phenomenal property. Pautz (2013, forthcoming) argues that the view faces a problem: it allows for the metaphysical possibility of mix-and-match cases. While others (Carruthers 2012) have offered empirical arguments against the existence thesis, Pautz's recombination argument is more ambitious, targeting the determination thesis. He argues that the determination thesis is *necessarily* false: the possibility of mix-and-match cases shows that it is *impossible* for there to exist cognitive-phenomenal properties that play a content determining role.

Suppose one entertains the thought that it's raining outside. The cognitive experience view says that one has this thought in virtue of having a cognitive experience with the content that it's raining outside. Having this thought is a matter of having a particular cognitive-phenomenal property that determines this content. Now, in the actual world, when one has the cognitive experience with the content that it's raining outside, one will have other associated mental states, too. In particular, one might have *sensory-phenomenal states*, like a mental image of rain, or the auditory phenomenology associated with the English sentence "it's raining outside" in inner speech. One might also have certain *functional states*: my thought that it's raining outside might (together with my desire to avoid getting wet) tend to cause me to grab an umbrella. Cognitive-phenomenal properties are concurrent with these sensory-phenomenal properties and functional properties.

On the cognitive experience view, however, this concurrence is merely contingent. Why? Pautz argues for this premise by appealing to the Humean dictum that there are no necessary connections between distinct existences. On the cognitive experience view, all it is for a subject to have a thought

that it's raining outside is for the subject to have the relevant cognitive-phenomenal property. One need not have any of the typical sensory-phenomenal or functional properties that typically accompany this cognitive-phenomenal property to count as having the thought that it's raining. Pautz endorses a Lewisian principle of recombination: if two properties are distinct, then it should be possible for them to be come apart from one another. As Lewis says, "the principle is that anything can exist with anything else" (1986, pp. 87-88). This means that it should be possible for cognitive-phenomenal properties to be mixed and matched with various sensory-phenomenal and functional properties.

This means that the following sorts of possibilities are left open by the cognitive experience view:

- *isolated cognitive qualia*, where we hold fixed a state's cognitive-phenomenal properties and eliminate its sensory-phenomenal and functional properties;
- *absent cognitive qualia*, where we hold fixed a state's sensory-phenomenal and functional properties and eliminate its cognitive-phenomenal properties; and
- *inverted cognitive qualia*, where we recombine the cognitive-phenomenal properties of one state with the sensory-phenomenal and functional properties of another state.

Here's a case of isolated cognitive qualia from Pautz. Suppose you hear your friend say, "Let's go to the bar later." In the actual world, this will entail some cognitive-phenomenal property associated with understanding the sentence, some sensory phenomenology (perhaps you form a mental image of the bar) and some functional properties (you're disposed to ask, "What time?"). If cognitive-phenomenal properties are modally independent from sensory-phenomenal and functional properties, however, then we should be able to imagine cases where you have the relevant cognitive-phenomenal property associated with understanding this sentence in the isolation from the characteristic sensory-

phenomenal and functional properties with which it is usually associated. After all, we are able to imagine auditory-phenomenal properties in isolation from visual-phenomenal properties. Unlike this case, however, Pautz says that he is unable to imagine isolated cognitive qualia.

Similarly, Pautz thinks, we should be able to imagine a case in which you have all the same sensory phenomenology and functional properties, but that your phenomenology is different because you lack the relevant cognitive-phenomenal property. That is, we should be able to imagine cases of absent cognitive qualia. Here is an absent cognitive qualia case—call it “bar”: we should be able to imagine having the sensory phenomenology associated with hearing “Let’s go to the bar”, perhaps with a mental image of a drink, as well as certain functional properties (being disposed to follow up with “What time?”) without any cognitive-phenomenal properties. Pautz reports being unable to imagine cases where all the sensory-phenomenal and functional properties are held the same while the overall experience changes.

Finally, if inverted cognitive qualia are possible, then one could have the cognitive-phenomenal property (call it *P*) underlying the thought that it’s raining outside with *drastically different* sensory-phenomenal properties: perhaps one has a mental image of the sun, or expresses the words “it’s sunny outside” in inner speech. One might also have different functional properties: one might be disposed to have *P* when seeing the sun. Having *P* might dispose one to behave as one would were it sunny.

Pautz argues that “we cannot make sense” of these combinations of properties (2013, p. 212) and that they can be ruled out *a priori* (2013, p. 220). Sunshiny mental imagery and vocalizing “it’s sunny outside” in inner speech are incompatible with having the thought that it’s raining outside. It’s thus *inconceivable* that one could have these sensory-phenomenal and functional properties while at the same time having cognitive phenomenology determining one’s thought about rain.

This means that these scenarios are metaphysically impossible, as Pautz assumes a close link between conceivability and possibility. If cognitive-phenomenal properties are distinct from sensory-phenomenal properties and functional properties, then we ought to be able to imagine mix-and-match cases; the fact that we cannot imagine such cases, Pautz thinks, is reason to think that they are impossible.⁶ This is an inference from a combination of properties being inconceivable to their being impossible. He would presumably accept the converse of this claim: if a combination of properties is impossible, then it is inconceivable. Taking the contrapositive, if a combination of properties is conceivable, then the combination is possible. That conceivability is a guide to possibility is thus common ground in this debate. I follow Pautz and take on the claim that conceivability is a guide to possibility as a background structuring assumption, granting that the exact nature of the connection between conceivability and possibility is controversial.

So, according to Pautz, mix-and-match cases are inconceivable. Given our background assumption, this is evidence that they're metaphysically impossible. But the cognitive experience view entails that these cases are possible. If cognitive-phenomenal properties are distinct from sensory-phenomenal and functional properties then we should be possible to recombine them; but we can't conceive of such combinations, so these combinations are impossible. It's thus impossible, Pautz thinks, that there exist cognitive-phenomenal properties that are distinct from sensory-phenomenal and functional properties that play a content determining role.

⁶ Pautz says that he is unable to "positively imagine" these cases (Pautz 2013, pp. 216-17). By "positively imagine," he might have in mind what Chalmers (2002) calls *positive conceivability*. Specifically, Pautz seems to think that we should be able to *perceptually* imagine isolation cases, if such cases are possible. But perceptual imagination does not exhaust imaginability. We can positively imagine Germany winning the second World War, where this content isn't a candidate content of perceptual experiences. We can, following Chalmers, "modally imagine" such contents. I adopt this notion of conceivability when arguing that we *can* conceive of mix-and-match cases.

We can codify Pautz's argument as follows:

- (1) The cognitive experience view of thought entails that cognitive-phenomenal properties are distinct from sensory-phenomenal properties and functional properties.
 - (2) If cognitive-phenomenal properties are distinct from sensory-phenomenal properties and functional properties, then cognitive-phenomenal properties are modally independent from sensory-phenomenal properties and functional properties.
 - (3) If cognitive-phenomenal properties are modally independent from sensory-phenomenal properties and functional properties, then all mix-and-match cases are possible.
 - (4) Certain mix-and-match cases are impossible.
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- (5) Therefore, the cognitive experience view of thought is false.

The argument is that the cognitive experience view is extensionally inadequate: it falsely predicts that certain mix-and-match cases are possible. Because Pautz denies that cognitive-phenomenal properties are not modally independent from sensory-phenomenal and functional properties, he concludes that the cognitive experience view is false.

The goal of the next two sections is to establish that Pautz's argument is unsound. I build on resources extant in the philosophy of mind to show that (4) is false. Considering candidate mix-and-match cases, we find that the cases Pautz considers are indeed metaphysically possible.

3. Phenomenal properties are modally independent from functional properties

I'll now show that phenomenal properties are modally independent from functional properties. I do this by building on arguments from the metaphysics of phenomenal consciousness literature which

show that we can recombine sensory-phenomenal properties and functional properties. I argue that if it's plausible that sensory-phenomenal properties can be recombined with functional properties, the same goes for cognitive-phenomenal properties too.

3.1 *Isolated cognitive qualia*

The first combination of properties to consider is the possibility of phenomenal properties without their characteristic functional properties. Can there be isolated cognitive qualia in which the phenomenal properties of thought are held fixed while eliminating all associated functional properties?

We can begin to answer this question by noting that phenomenal properties are often thought to resist functional characterization. This is what makes “the hard problem of consciousness” so hard (Chalmers 1996). Psychological properties, like those involved in attention or introspection, are comparatively easy to explain insofar as they can be functionally defined by what they do. Phenomenal properties, in contrast, cannot be functionally defined by what they do—rather, they are characterized by how they feel. Of course, phenomenal properties are *associated* with psychological functioning. My experience of the green stoplight causes me to accelerate my car. But this is just the mere co-occurrence of a phenomenal property and a psychological property. It doesn't give a functional characterization of phenomenal green, the qualitative nature of which seems to resist any such functional characterization.

If phenomenal properties resist functional definition, then we can conceive of cases in which phenomenal properties can come apart from their typical functional roles. And if conceivability is a guide to possibility, then we have evidence that these cases are possible too. Can we imagine cases where there are phenomenal properties when those properties do not co-occur with *any* functional properties?

This is a variant of the question of whether or not *epiphenomenal qualia* are possible. Epiphenomenalism about qualia is the view that phenomenal properties do not cause anything. A stronger form of epiphenomenalism says that phenomenal properties are not caused by anything either. It's a short step from this strong form of epiphenomenalism about qualia to the claim that phenomenal properties are functionally inert. Epiphenomenalism about qualia says phenomenal properties aren't causally efficacious. A functional characterization of phenomenal properties would be, roughly, a characterization of phenomenal properties in terms of what they *do*, i.e., what they tend to cause and are caused by. So, if strong epiphenomenalism about qualia is true, then qualia can't be given a functional characterization.

Jackson (1982) employs the example of Mary the color scientist to argue that qualia are epiphenomenal in the *actual* world. Kim's (1993) causal exclusion argument is another route to epiphenomenal qualia. While most metaphysicians of mind are reluctant to abandon the idea that phenomenal properties are causally efficacious in the actual world, many find epiphenomenalism to be a coherent hypothesis, even if it seems false for empirical or introspective reasons. This suggests that epiphenomenal qualia are possible.

We can easily conceive of scenarios where one's phenomenal properties are functionally inert. Walking into the kitchen for a snack, the feeling of hunger that caused me to walk into kitchen could have been epiphenomenal. It might accompany my concurrent brain states without causing me to walk into the kitchen. Notice, however, that we can just as readily conceive of cognitive-phenomenal properties that play no functional role in a subject's mental life. When I consciously judge that "25+10=35" in the actual world, this judgment might cause me to give the cashier a quarter and a dime to pay for candy. We can easily imagine this conscious judgment not being causally recruited at all. It might merely accompany my tendency to hand the cashier change, playing no causal role whatsoever.

If we can conceive of a world in which my sensory-phenomenal properties are functionally inert, then we can conceive of a world in which cognitive-phenomenal properties are functionally inert too. Assuming that conceivability is a guide to possibility, the conceivability of these scenarios provides evidence that isolated cognitive qualia are possible.

3.2 *Absent cognitive qualia*

Can there be absent cognitive qualia in which we hold the functional properties of a mental state fixed while eliminating its phenomenal properties?

Suppose you take a sip of Coca-Cola. There is something it's like to have your experience: the drink feels bubbly, cool, sweet. This feeling might tend to be caused by your desiring to quench your thirst, and it might dispose you to say, "ahh!" before taking another sip. Could there be a functional duplicate, who is disposed to behave in the same way, but without *any* phenomenal properties?

Like the previous combinations, this possible combination of properties has a famous forebear: *zombies*. A zombie is an unconscious creature, i.e. a creature with no phenomenal experience.⁷ A *functional zombie* is an unconscious creature that duplicates the functional organization of a conscious creature. Functional zombies are conceivable. As Block (2002) notes, there is no incoherence in the hypothesis that Commander Data is a zombie. Notice that the conceivability of functional zombies is a consequence of the point made above about the hard problem of consciousness: phenomenal concepts seem to resist functional definition. Assuming that conceivability is a guide to possibility, it follows that functional zombies are possible.

Some worry about the conceivability-possibility link when it comes to *physical* zombies because of a commitment to physicalism about the mental. But physicalists like Block, who think physical

⁷ For support of the claim that zombies are conceivable, see Chalmers (1996). For criticism, see Balog (1999).

zombies are impossible, thought conceivable, often accept that functional zombies are possible. In any case, the conceivability-possibility link is common ground in the debate between me and Pautz. The conceivability of functional zombies will be common ground, too.

So much is familiar. These combinations of mental properties, however, are possible when it comes to cognitive-phenomenal properties as well. When one wonders whether Coke or Pepsi has more sugar, this mental state has a certain functional profile. It might tend to be caused by tasting Pepsi and tend to cause an internet search. There is also a distinct phenomenology one has when one entertains this particular content. If we can conceive of a functional zombie with regards to pain, there is no reason why we cannot similarly “zombify” the subject wondering about the respective amounts of sugar in Coke and Pepsi. We thus can conceive of a subject with identical functional properties without any phenomenal properties, including cognitive-phenomenal properties.

3.3 *Inverted cognitive qualia*

Can there be inverted cognitive qualia in which we hold fixed the phenomenal properties of a mental state while swapping its functional properties with those of a different mental state? Conversely, can we hold functional properties of a state fixed while inverting the state’s phenomenal properties with those of different states?

These inversion scenarios have been thought possible due to the conceivability of color spectrum inversion (Block and Fodor 1972). It seems plausible that my visually perceiving a Coca-Cola can could be accompanied in my inverted twin by green visual phenomenology, rather than the red phenomenology that in fact accompanies my perception. Swapping mental properties this way also gives the converse scenario: green phenomenology plays a different functional role in me and my inverted twin. These scenarios seem imaginable, and so possible.

David Lewis's (1980) "madman" example shows that this point generalizes to other cases, such as pleasure and pain, where it isn't clear there is anything analogous to a color spectrum:

There might be strange man who sometimes feels pain, just as we do, but whose pain differs greatly from ours in its causes and effects. Our pain is typically caused by cuts, burns, pressure, and the like; his is caused by moderate exercise on an empty stomach. Our pain is generally distracting; his turns his mind to mathematics, facilitating concentration on that but distracting him from anything else . . . He is not motivated to prevent pain or to get rid of it. In short, he feels pain but his pain does not at all occupy the typical causal role of pain. (Lewis 1980, p. 216).

Phenomenal pain could occupy a different causal role in our psychology: it might, as Lewis says, cause us to think about mathematics rather than yelping out loud. Lewis endorses the possibility of madmen, saying that any credible theory of mind must accommodate this possibility. Conversely, the functional roles that phenomenal pleasure and phenomenal pain play in the actual world could be swapped. If this is the case, and madmen are possible, then there are possible cases of holding the phenomenal properties of some mental states fixed while swapping that states' functional properties with those of different mental states.

Notice again that we can conceive of cognitive-phenomenal properties being swapped in this same way. In the previous sub-section, we saw that we can conceive of cognitive-phenomenal properties playing *no* causal role. It's also plausible, then, that we can conceive of them playing *different* causal roles than they actually play. We can imagine madmen in which the causal roles associated with thinking about sun and rain are swapped. When one consciously judges that "it's raining outside", one could be disposed to act as if it were sunny outside: having the cognitive-phenomenal property

associated with their rain judgment could dispose them to remove their rain jacket. We can conceive of such “mad thought” just as easily as we can conceive of mad pain.⁸

To get a grip on this possibility, it’s instructive to consider a case in the actual world where cognitive-phenomenal properties play eccentric functional roles. Patients with Capgras delusion, for example, assert that their spouse has been abducted and replaced by an imposter. Presumably these assertions are based on the patient’s feeling of conviction that the abduction has really happened. After all, the patients appear sincere and confident in what they are asserting. These feelings of conviction are cognitive experiences that involve the instantiation of some cognitive-phenomenal property in the patient. But this cognitive-phenomenal property will not play the *entirely* typical functional role that we would expect it to play. Capgras patients often do not, for instance, call the police to report their spouse missing. So, it looks as if there are instances of cognitive-phenomenal properties playing unusual functional roles in the actual world.

More drastic permutations are conceivable. Some Capgras patients do act and react in ways that make sense given their feelings of conviction that their spouse has been abducted. But, as mentioned above, there are other cases in which they do not, and we can imagine more extreme cases in which their delusional judgments play completely eccentric causal roles. Perhaps the feeling of conviction that a Capgras patient’s spouse has been abducted causes in them a desire to repeatedly recite their wedding vows.⁹ This would of course be bizarre, but it seems a live possibility, no less conceivable than instances of mad pain. We can hold phenomenal properties, including cognitive-

⁸ In the postscript to “Radical Interpretation” (1983), Lewis explicitly extends his treatment of mad pain to the attitudes, acknowledging that “mad belief” is possible as well as mad pain.

⁹ See the continuity argument in Smithies Lennon and Samuels (2022) which makes a similar move.

phenomenal properties, fixed while varying the state's functional properties without incoherence. This suggests these combinations of mental properties are possible.

We've now taken each step to show that functional properties and phenomenal properties are modally independent. As we've seen, doing so has taken us on a tour of famous thought experiments from the metaphysics of phenomenal consciousness, featuring a who's who of philosophers of mind. If one thinks that sensory-phenomenal properties are modally independent from functional properties, then it is reasonable to think that cognitive-phenomenal properties are modally independent from functional properties as well.

4. Cognitive-phenomenal properties are modally independent from sensory-phenomenal properties

What has yet to be established, however, is that cognitive-phenomenal properties are modally independent from sensory-phenomenal properties. This section argues for their modal independence in a way that draws on resources in the cognitive phenomenology literature.

4.1 Isolated cognitive qualia

To begin, we are to imagine holding fixed the cognitive-phenomenal properties of a mental state while eliminating its sensory-phenomenal properties. Are *isolated cognitive qualia* possible?

This would mean that one could have some cognitive-phenomenal property—say, the one associated with the content, “pandemics are frightening,” without any of the sensory-phenomenal properties that typically accompany this mental state in the actual world. In the actual world, we might have auditory phenomenology when hearing this sentence in inner speech; we might also have a mental image of an overcrowded hospital. Can we imagine having the *same* cognitive phenomenology associated with one's tokening of this content without *any* relevant sensory phenomenology?

You might be skeptical. Consider your experience as you read this very sentence. I submit that you are having cognitive-phenomenal properties associated with understanding the content of the sentence. But you might think that such properties can only occur if they arrive in some sensory medium (in this case, black marks on a white page), and so can only occur with accompanying sensory-phenomenal properties.¹⁰

In response, the proponent of the cognitive experience view can deploy arguments motivating the existence of cognitive phenomenology mentioned in §1. In particular, one can appeal to unsymbolized thinking. When one has a spontaneous thought, as one has when one suddenly realizes that one has locked their keys inside of their apartment, this thought seems to arrive in the absence of any relevant sensory phenomenology. Hurlburt's method of descriptive experience sampling suggests that unsymbolized thoughts make up a significant portion of subjects' experiential lives. These cases suggest that sometimes we *actually* have instances of cognitive phenomenology without any relevant sensory phenomenology.

One might contest that it's not the case there isn't *any* sensory phenomenology with spontaneous thoughts. (When you suddenly realize you locked your keys inside your apartment, there is still *some* sensory phenomenology, even if you aren't attending to it). But: such phenomenology is irrelevant to the thought. The visual experience that I happen to have when I have the thought that I have locked my keys inside my apartment isn't relevant to my having that thought; the cognitive phenomenology isn't dependent on whatever sensory phenomenology happens to be co-occurring. So surely it is possible that I might have the cognitive-phenomenal property associated with that thought in the absence of the irrelevant sensory phenomenology.

¹⁰ Prinz (2011) argues that the contents of thought are conscious *only* in the sense that thoughts' sensory vehicles are conscious.

Cases of unsymbolized thought show we can think simple thoughts, like leaving one's keys in the apartment, in the absence of sensory phenomenology. But what about more complex thoughts, like those about mathematics? Kriegel (2015) argues for the conceivability of Zoe, a disembodied thinker whose only phenomenal properties are cognitive-phenomenal properties. Kriegel holds there is nothing incoherent in the hypothesis that Zoe experiences the phenomenology of understanding a mathematical proof in isolation from any other sensory-phenomenal properties.

An opponent of cognitive phenomenology might argue that Zoe is inconceivable because ability to understand math exploits our ability to manipulate symbols. Humans in the actual world can't learn math without first learning language; we rely on our understanding of language in understanding mathematical concepts. Relatively simple thoughts like "I left keys inside!" can occur to us without symbols, but we do often rely on inner speech and other symbols when the contents of our thoughts are more complicated.

As Vicente and Jorba (2017) suggest, however, our linguistic faculties may be involved the unconscious processes that realize unsymbolized thought without any conscious experience of inner speech. Moreover, even if our psychological constitution makes it *nomologically* impossible to understand complicated mathematical proofs without some capacity for experiencing inner speech, this does not entail that creatures like Zoe are *metaphysically* impossible. There could be creatures with alien psychologies not constrained by language in the way that ours seem to be. Our psychological abilities are governed by psychological laws, but alien psychologies could be governed by different laws. Isolated cognitive qualia seem conceivable and therefore possible in the metaphysical sense. There is no principled reason why all our thoughts couldn't be unsymbolized.

4.2 *Absent cognitive qualia*

Can we imagine holding fixed a mental state's sensory-phenomenal properties while eliminating its cognitive-phenomenal properties? Are *absent cognitive qualia* possible?

There are again cases in the cognitive phenomenology literature that the proponent of the cognitive experience view can marshal. Return to Strawson's case of Jack and Jacques. Suppose that Jacques, previously assumed to be fluent only in French, had also been fluent in English until an accident removed his English fluency. Before the accident, he hears the phrase "pandemics are frightening" with the cognitive-phenomenal properties associated with understanding the content of the phrase, as well as with the auditory-phenomenal properties of hearing the phonemes (either aloud or in inner speech). After the accident, he no longer grasps the content of the phrase, and so lacks the cognitive-phenomenal properties he previously instantiated.

But some sensory-phenomenal properties are held fixed before and after the accident, namely, the phenomenal properties that show up in auditory perception such as timbre, pitch, and volume. Of course, not all Jacques' sensory-phenomenal properties are held fixed before and after his accident: his auditory system would no longer parse "pandemics are frightening" into words. Even so, it seems plausible that there is still some sensory phenomenology in common before and after the accident.

Other resources in the cognitive phenomenology literature are available. Horgan (2011) argues that a character named Andy₃, who suffers from what Horgan calls "language-understanding absence partial zombie disorder," is conceivable. Andy₃ is a duplicate of Andy₁, a philosopher who enjoys all of the same varieties of conscious experience as you or me, except that Andy₃ lacks the phenomenal character of understanding semantic contents. According to Horgan, "The sounds and marks that Andy₁ experiences as intelligible language are always experienced by Andy₃ as meaningless noises and squiggles" (2011, p. 70). There's no principled reason why we couldn't excise Andy₁'s cognitive-

phenomenal properties that make up his understanding experience, resulting in Andy₃, a partial zombie. That Andy₃ is conceptually coherent suggests that such a creature is indeed possible.

These points undermine Pautz's claim that absent cognitive qualia are impossible. There *are* sensory-phenomenal properties in common before and after one learns English in the "bar" absent cognitive qualia case from §2. Pautz later claims that one would be disposed to behave differently before and after one learns English, which entails functional differences. But this is not to run afoul of any modal constraints: we systematically showed that functional properties can come apart from phenomenal properties in §3. In general, our judgments about what is metaphysically possible should not be privileged by our judgments based on cases close to home in the actual world: modal space is very vast.

4.3 *Inverted cognitive qualia*

Finally, consider the possibility of holding fixed the cognitive-phenomenal properties of some mental state while swapping the states' sensory-phenomenal properties with those of some other, drastically different mental state. Are such cases of inverted cognitive qualia possible?

The proponent of the cognitive experience view again has resources to draw on. Strawson's Jack and Jacques will have drastically different phenomenal experiences when they listen to the news in French; in particular, Jacques, the French speaker, will have *understanding experience*. Indeed, this looks to be the kind of case we are seeking: Jack and Jacques have their sensory-phenomenal properties fixed while their cognitive-phenomenal properties are different.

An opponent can contest Strawson's case: isn't there a shift in phoneme perception, and its sensory-phenomenal properties, between Jack and Jacques? Jack will hear the news in French as a stream of noise, but Jacques hears *words*. The proponent of the cognitive experience view can call upon cases of interpretive switch introduced in §1 to hold fixed the sensory-phenomenal properties

associated with phoneme perception. Recall the lexically ambiguous sentence (HOT). The sensory phenomenology in both of these interpretations (as about temperature and as about spice level) is the same: one will have the same auditory phenomenology saying the sentence in inner speech. And yet, there is a difference in phenomenology between the different ways of understanding the sentence in virtue of the difference in semantic content. This is an example of holding sensory-phenomenal properties the same while inverting the cognitive-phenomenal properties.

Is there any principled reason as to why we cannot imagine a more drastic swap, involving more drastically different sensory-phenomenal and cognitive-phenomenal properties? It seems not. Recall the mad thought case from §3, where we considered whether there could be someone who has the same cognitive phenomenology associated with the content “it’s raining outside” with swapped sensory phenomenology. The subject hears the sentence “it’s sunny outside” running through one’s inner speech, and perhaps has some quasi-perceptual sunshiny mental imagery. If this case is any different than the Jacques case above, it is a difference in degree, rather than in kind. The sensory-phenomenal properties associated with the judgments with the content “it’s sunny outside” *usually* accompany different cognitive-phenomenal properties. This is why we might encounter imaginative resistance when we try and combine running this English sentence through one’s inner monologue while at the same time having the cognitive-phenomenal properties associated with the content “it’s raining outside.” But, in this case, we should not let any difficulty we face in imagination be determinative of what is metaphysically possible.

5. Against rationality constraints on content

We have now taken each step to show that mix-and-match cases are possible. I’ve shown that arguments supporting the modal independence of phenomenal properties and functional properties can be extended from sensory-phenomenal properties to cognitive-phenomenal properties. And I’ve

shown how we can extend familiar arguments in the cognitive phenomenology literature to show that cognitive-phenomenal properties are modally independent from sensory-phenomenal properties.

The recombination argument is dialectically ineffective because proponents of the cognitive experience view should reject premise (4) given the usual arguments for their own view. What's more, insofar as the standard phenomenological arguments for the existence of cognitive phenomenology are persuasive then we in fact have reason to *reject* this premise.

So far, this paper has taken a defensive posture. The possibility of mix-and-match cases, however, allows us to move from a defensive posture to a critical posture, as it raises a problem for Pautz's own positive view, phenomenal functionalism.

Why might someone like Pautz and others claim that mix-and-match cases are incoherent? Clearly there is something bizarre about these cases. But as we've shown, though these cases are strange, they are not *impossible*. Rather, they are bizarre in the sense that they are modally remote, i.e. they exist in possible worlds far away from our own. Much would need to change about human psychology for mix-and-match cases to *actually* happen. Why might someone like Pautz go in for the stronger conclusion that these cases are impossible?

I suggest that the stronger conclusion is driven by certain theoretical motivations. We can notice these theoretical commitments lurking in the background by reflecting on another of Pautz's mix-and-match cases:

Let P be the cognitive phenomenal property which . . . metaphysically necessitates occurrently believing the narrow content *two plus two equals four*, thus solving the Kripkenstein problem. Again, my separation argument . . . has two steps. First, if there is such a non-sensory property as P , then a baby (say) presumably might have P for a few seconds while otherwise remaining the same. . . Second, even though the baby has cognitive phenomenal property P , it does *not*

occurently think that two plus two equals four . . . That would require that it have certain arithmetical concepts (for example, *plus*), which in turn would require that it have certain arithmetical *abilities* (for example, the ability to count). But by stipulation it lacks these abilities. In general, the sensory-functional conditions present (or rather absent) in the case are incompatible with the baby's having the belief that two plus two equals four. (Pautz 2013, p. 213)

According to Pautz, then, the reason why the baby can't occurently believe that two plus two equals four is that the baby lacks arithmetical concepts, such as the concept of addition. What *would* it take for the baby to have the concept addition? Presumably, Pautz would say that to have the concept of addition would be for the baby to *infer* in certain ways. But, not just any inference will suffice to possess this concept. The baby would have to make certain *rational* inferences: being disposed to respond *correctly* when given addition problems would be necessary to count as possessing the concept. The thought is that we aren't inclined to attribute possession of the concept "addition" if the baby regularly got addition problems *wrong*, or if the baby couldn't do addition problems at all.

On this view, there are *normative constraints* on concept possession. This is a commitment of conceptual role semantics, the program of content determination whereby the content of a concept is determined by its *role* in the cognitive life of an agent (and not just any role, but it's *rational* role) (Harman 1987, Peacocke 1992). Other programs of content determination also feature rationality constraints. For instance, the interpretivism of Lewis (1974) holds that the contents of a subject's intentional states are determined by the best interpretation of that agent given her behavioral dispositions and causal history. What counts as the "best interpretation" is constrained by certain a priori knowable platitudes of folk psychology that make the subject come out most rational given the functional and physical facts about her. These principles include *the principle of charity*: roughly, human

beings tend to have certain beliefs that are reasonable given their life history of perceptual evidence and training.

Pautz's (2013) view of content determination, phenomenal functionalism, combines Lewis's interpretivism as a theory of cognitive intentionality with non-reductive intentionalism as a theory of perceptual intentionality. He endorses rationality constraints on cognitive intentional mental states in order to explain why mix-and-match cases are impossible. The bizarre cases are ruled out *a priori* by platitudes like the principle of charity.

The extra ingredient in phenomenal functionalism is sensory-phenomenal consciousness, which is the source of all determinate intentionality. Pautz endorses non-reductive intentionalism about perceptual intentionality in order to solve an indeterminacy problem that arises for Lewis: interpretivism cannot solve indeterminacy problems for the contents of perception, since perceptual states aren't subject to rationality constraints at all. According to Pautz's non-reductive intentionalism, perceptual states have *primitive* intentionality that is identified with their phenomenal character. Cognitive states, like thoughts, inherit their content from these perceptual states in ways that are constrained by the principles of rationality. So, it is impossible for the superbaby to have the thought that two plus two equals four, according to phenomenal functionalism, because the best interpretation would not attribute this thought to the baby, given its functional and sensory-phenomenal properties.

The possibility of mix-and-match cases, however, poses several problems for phenomenal functionalism. The problem is threefold. First, it undermines an abductive argument that Pautz gives for the interpretivist component of his phenomenal functionalism. Second, it generates counterexamples to the interpretivist component of the view: cases of "mad thought." Finally, it raises an indeterminacy problem that phenomenal functionalism cannot solve, thus undercutting one of the key motivations for the view. I'll consider each problem in turn.

Pautz argues for phenomenal functionalism over the cognitive experience view by inference to the best explanation: it *best explains* why mix-and-match cases are impossible. Building rationality constraints into the analysis of thought rules out the possibility of mix-and-match cases from the outset. We have argued, however, that mix-and-match cases are indeed possible. Clearly, then, Pautz cannot legitimately argue from their impossibility to the conclusion of phenomenal functionalism: this abductive argument has a false premise.

The possibility of mix-and-match cases also generates counterexamples to phenomenal functionalism. Thus, there is a problem with Pautz's conclusion, and not just with his abductive argument for this conclusion. Recall our discussion of Lewis's madman. Analogous to Lewis's madman, whose phenomenal pain plays a different causal role than phenomenal pain typically does in us, we can imagine a madman who has cognitive-phenomenal property *P*, and thereby has the thought that two plus two equals four, but where this thought does not play the typical rational role that the thought typically has. He consciously judges the content that two plus two equals four; he might have a feeling of conviction that two plus two equals four. And yet, this madman might be disposed not to answer four when someone asks him how many apples he has after they've handed him two red apples and two green apples. *P* might simply not be integrated into the rest of the madman's psychology. The possibility of this instance of "mad thought" suggests that there is *modal slack* between cognitive experiences and the causal and rational role that cognitive experiences can play. But phenomenal functionalism would rule out the possibility of mad thoughts. Because it does not countenance the possibility of mad thought, it is phenomenal functionalism, and not the cognitive experience view, that is extensionally inadequate.

Finally, the possibility of mix-and-match cases exposes phenomenal functionalism's inability to answer to its own motivations. Pautz argues that phenomenal functionalism can solve problems of content indeterminacy due to Quine (1960) and Kripke (1982). When I think about rabbits, my

thought seems to be determinately about *rabbits*. Yet what could explain why my thought is about rabbits, rather than some deviant content like undetached rabbit parts? Phenomenal functionalism aims to solve this problem by adopting Lewisian interpretivism, with its a priori rationality constraints on thought content, and adding in sensory-phenomenal properties, which are themselves primitively intentional. Thoughts inherit their contents from conscious perception. So, if my perception is determinately about rabbits, rather than undetached rabbit parts, then so are my thoughts when they are rationally based on my perception. Thus, phenomenal functionalism aims to solve indeterminacy worries by appealing to functional and sensory-phenomenal facts about the agent, with deviant interpretations being ruled out by the rationality constraints.

Simply relying on functional and sensory-phenomenal facts, however, will not resolve all indeterminacy problems for phenomenal functionalism. Given that mix-and-match cases are possible, there will be possible cases where it is *indeterminate* what thoughts a subject thinks if we just rely on sensory-phenomenal and functional properties. Recall the Lewis-inspired case of “mad thought.” The functional role that my cognitive-phenomenal property occupies when I have the thought “it’s raining outside” might have been played in a madman by some other cognitive-phenomenal property. Because this mad man and I can differ in our thoughts while sharing the same sensory-phenomenal and functional properties, our thoughts are underdetermined by sensory experience and functional role. Lewis and Pautz seek to solve this indeterminacy problem by appealing to rationality constraints on thought content that rule out the possibility of mad thought. I’ve argued, however, that we should reject rationality constraints on thought because they prematurely rule out the possibility of mad thought. If this is correct, then the indeterminacy problem remains. It remains an open question in this case as to *which thought are you having*. Am I having the thought that it is raining outside or that it is sunny outside? Am I having my thought or my mad twin’s thought? Because we should reject

rationality constraints as figuring into the analysis of thought content, they can't be relied upon to solve the indeterminacy problem here.

How might we solve the indeterminacy problem in this case? It's here where the difference in cognitive-phenomenal properties can come in when sensory-phenomenal and functional properties by themselves won't suffice. As we mentioned in §1, Horgan and Graham (2012) argue for cognitive phenomenology because of the theoretical role it plays; in particular, it plays a determination role. Indeed, according to the determination thesis of the cognitive experience view, the phenomenal character of thought is sufficient to determine a specific content of thought, e.g. about rabbits rather than rabbit-parts. The difference between me and my mad twin is explained by the phenomenal character of our thoughts, rather than any associated differences in either sensory experiences or functional dispositions. It's in this way that cognitive phenomenology plays a role in solving indeterminacy problems.

6. Objection: Color and Other Observational Thoughts

In this section, I entertain an objection to my argument for the modal independence of cognitive-phenomenal properties, sensory-phenomenal properties, and functional properties. There is a certain class of cognitive experiences that are arguably modally dependent on sensory experiences. This class includes judgments about color and shape, and perhaps extends to other thoughts pertaining to observational features. It might seem reasonable, for example, that to have a thought about the color blue, one *must* have a sensory experience of seeing blue (Peacocke 1992; Campbell 2002).

If this is right, then the defensive task of the paper is undermined. The cognitive experience view of thought I seek to defend holds that *all* mix-and-match cases are possible. But if color judgments are modally dependent on perceptual experiences of color, then some mix-and-match cases are impossible: it is impossible for the cognitive-phenomenal properties I have when I consciously

think “there is a blue wall” to be isolated from the sensory-phenomenal properties I have when I have a perceptual experience of seeing blue (and from the functional properties of being causally related to these sensory inputs). To put the objection in a different way: the cognitive experience view entails that my sensory zombie duplicate, who is like me in every respect but lacks all sensory-phenomenal properties, can still have thoughts about color and other observational features.

This case also raises a problem for the critical task of the paper. According to phenomenal functionalism, thought content is inherited from primitively intentional perceptual states in ways constrained by Lewisian rationality constraints so as to rule out deviant contents. Phenomenal functionalism thus appears to have the resources to *explain why* this class of thoughts—color thoughts, observational thoughts, and so on—cannot modally come apart from their sensory-phenomenal inputs. On this view, the conscious thought that “there is a blue wall” is individuated by its functional relationship to blue sensory experiences. What makes this thought about blue rather than yellow is that it is the Lewisian rationality constraints on interpretation make it most reasonable to interpret the thought being about blue—my blue thought is individuated by its functional relationships with respect to the right kind of inputs, i.e., blue sensory experiences. The problem for my argument, then, is that phenomenal functionalism might be true for this class of judgments.

One kind of response to this objection appeals to phenomenal holism (Chudnoff 2013, 2015; Siewert 1998). Phenomenal holism says that certain cognitive-phenomenal properties can only be instantiated when they are part of an experience which also has sensory-phenomenal properties as parts. When it comes to color thoughts, what makes my thought about the color blue, according to phenomenal holism, is that the relevant cognitive-phenomenal property is instantiated only when it is a part of an experience also instantiating a blue sensory-phenomenal property. This response is concessive, because it does admit that certain mix-and-match cases are impossible. If the cognitive-phenomenal property determining my thought about blue is only instantiated when it is part of an

experience that also has a blue sensory-phenomenal property, then these properties cannot modally come part. While one could go this way, I won't pursue this line of response here, in part because I want to grant to Pautz the Humean assumption that if cognitive-phenomenal properties and sensory-phenomenal properties are distinct, then they are modally independent.

Instead, I propose to meet the challenge head-on by arguing that is metaphysically possible that one can have color thoughts without the typical color sensory phenomenology. That is, I argue that it is metaphysically possible for my sensory zombie duplicate to think thoughts about color (though it may not be nomologically possible).

To see this, first consider what the cognitive experience view of thought says it takes to think about people: for a subject to have the thought that Biden is President is for the subject to have a cognitive-phenomenal property. What it's like to think that Biden is President is different than what it's like to think that Trump is President. We can know by means of introspection whether we are thinking about Biden or Trump, and it's plausible that the difference in phenomenology between these thoughts is relevant to explaining how we can know by introspection which thought we are having. Moreover, the phenomenal difference between one's Biden thought and one's Trump thought isn't always explained in terms of sensory phenomenology. Sometimes, for example, we might conjure up a visual mental image of Biden's face when thinking that Biden is President, or have the auditory mental imagery of hearing "Biden" in inner speech. But this is not always the case; indeed, using sensory mental imagery in this way is often quite difficult for some (Zeman et al. 2010; Lennon forthcoming). The phenomenal difference between one's thought that Biden is President and one's thought that Trump is President is thus a *cognitive*-phenomenal difference. This allows for the possibility of my sensory zombie duplicate to have an identical cognitive experience of my own in thinking about Biden without duplicating any of my sensory phenomenology.

To be sure, sensory phenomenology might explain one's ability to think about Biden—perhaps you saw his inauguration on television—but this explanation of one's ability is merely contingent. Our ability to have thoughts about Biden could be explained in other ways. For example, consider my Swampman (Davidson 1987), an exact duplicate of myself who pops into existence through remarkable coincidence. My Swampman duplicate can think Biden-ish thoughts without *referring* to Biden, as the Swampman and I would share phenomenal content but differ in wide content determined by natural or social environment. One can maintain that to *refer* to Biden, my thought that Biden is President would have to be causally related to Biden in the right sort of way.

Notice that the same points hold true in the case of color thoughts. What it is like to think about red is different from what it is like to think about blue, and this is true whether or not you're occurrently looking at red or blue things. The phenomenal difference between your red thoughts and your blue thoughts isn't always explained in terms of sensory phenomenology. For example, when your child asks you for the umpteenth time, "what's your favorite color?" you recall that blue is your favorite color without visualizing it. The phenomenal difference between thinking red thoughts and thinking blue thoughts is thus a cognitive-phenomenal difference. This allows for the possibility of my sensory zombie duplicate to duplicate my cognitive experience of thinking about red without duplicating any sensory experience. We have the ability to think about colors in virtue of our sensory experiences, but again, this explanation of our color thoughts is merely contingent. For example, my sensory-zombified Swampman, an exact duplicate of myself but lacking in all sensory phenomenology that pops into existence coincidentally would plausibly have reddish thoughts in virtue of his cognitive-phenomenal properties.

We typically are able to think thoughts about color in virtue of our sensory experiences—this is perhaps even a matter of nomological necessity. This does not, however, entail that it is a matter of *metaphysical* necessity. Even in the most promising cases for Pautz, the possibility of mix and match

cases can be defended, and so the modal independence of sensory phenomenology and cognitive phenomenology can be defended. This result further reinforces both the defensive and critical tasks of the paper.

7. Conclusion

Here are the main conclusions of the paper:

First, Pautz's recombination argument against the cognitive experience view is *dialectically ineffective*. This is because proponents of the cognitive experience view are likely to reject the premise that mix-and-match cases are impossible.

Second, we have reason to *reject* the premise that mix-and-match cases are impossible. It has long been argued that phenomenal properties and functional properties are modally independent. If this is right, then *cognitive*-phenomenal properties and functional properties will be modally independent, too. Further, arguments for cognitive phenomenology can be extended to show that cognitive-phenomenal properties are modally independent from sensory-phenomenal properties. Insofar as these standard arguments are compelling, we have reason to think that Pautz's recombination argument rests on a false premise.

Third, the possibility of mix-and-match cases undermines the abductive argument for rationality constraints on thought content, which is one component of Pautz's phenomenal functionalism. Pautz argues for rationality constraints by inference to the best explanation: what best explains why mix-and-match cases are impossible is that Lewisian interpretivism is true. The best interpretation of a subject's mental states would not assign mixed and matched contents. Because mix-and-match cases are possible, Pautz cannot use their impossibility to argue for phenomenal functionalism.

Fourth, the possibility of mix-and-match cases provides counterexamples to rationality constraints on thought content. There are possible cases where phenomenal properties do not play their typical *rational* functional roles that they normally play in the actual world. By incorporating rationality constraints into the analysis of thought content, interpretivist programs of content determination rule out such cases of “mad thought” from the outset. If mad thoughts are possible, then this counts as a strike against interpretivism. So, the possibility of mix-and-match cases not only undermines Pautz’s abductive argument for phenomenal functionalism, but also its conclusion.

Fifth, phenomenal functionalism is insufficient to solve indeterminacy problems. A central motivation for the view is that sensory phenomenology can patch indeterminacy problems found in Lewis’s interpretivism. But, because the rationality constraints on thought content central to interpretivism should be rejected, indeterminacy problems remain. Hence, phenomenal functionalism doesn’t answer to its original motivations.

Sixth, cognitive phenomenology is necessary to solve indeterminacy problems. Cognitive-phenomenal properties come in to fill the lacuna left by sensory-phenomenal properties and functional roles to determine what a subject is thinking. Cognitive phenomenology may not be enough *by itself* to determine what a subject is thinking without appealing to externalist factors, such as the subject’s natural or social environment. This is, however, an area for future work.

Seventh, even in cases of thought that might seem modally dependent on sensory-phenomenal properties, such as color thoughts, the possibility of mix-and-match cases can be defended.

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