

Conscious Thought and the Cognitive Fine-Tuning Problem

(i) Thought and consciousness

For something to be conscious is for it to have experience; something is conscious just in case there's something that it's like to be it.¹ According to this standard definition, consciousness is not something cognitively sophisticated such that we would be cautious about ascribing it to non-human animals.

Thoughts, on the other hand, are typically defined as *propositional mental representations*: believing that it's raining, fearing that climate change is irrevocable, hoping that the conflict will be resolved. In contrast to experience, it is much more contentious to what extent, if at all, thought can be ascribed to creatures other than humans. Although most philosophers are happy to ascribe conscious experience to a rabbit, few would be willing to credit a rabbit with full-fledged propositional representations.

What do analytic philosophers think is the relationship between thought and consciousness? The dominant view in twentieth century analytic philosophy was that thought and consciousness had nothing much to do with each other. It was not denied that we typically have experiences when we think; when I think about climate change I may have a feeling of panic, or experience images of freak weather events. But according to twentieth century orthodoxy, the experiences had when thinking are mere accidental accompaniments of thought. I could in principle think about climate change without having any emotions or mental imagery at all. And although we tend to have experiences when we think, no form of experience is either necessary or sufficient for thought.

Let us call this view 'non-phenomenalism about thought', defined as the conjunction of the following two theses:

1. **Thought does not involve a distinctive form of conscious experience, i.e. a form of conscious experience involved in, and only in, thought.** For the non-phenomenalist, the kinds of experience we have when thinking are the kinds of experience we have when perceiving the world, or when having emotions; they are not utterly specific to thought.

¹ Most people trace this way of defining consciousness back to Nagel (1975), although it appears earlier in Sprigge and Montefiore (1971).

2. **Thoughts are neither identical with, nor constituted of, states of consciousness.** Clear evidence of this second thesis is found in the fact that the most influential theories of thought from the last century, for example by Jerry Fodor and Donald Davidson, made no mention of consciousness.²

In the twenty first century, there are growing movements opposed to each of these theses. Firstly, there are those who defend the reality of ‘cognitive phenomenology’, defined as a distinctive form of consciousness found in, and only in, thought.³ Secondly, there are proponents of what Uriah Kriegel dubbed the ‘Phenomenal Intentionality Research Program’ (or ‘PIRP’ for short), the philosophical project of trying to explain all mental representation, including thought, in terms of consciousness.⁴ The latter is put forward as a bold new approach, with significant advantages over its non-phenomenalist rivals.

In principle these two views are separable. One could hold that there’s a distinctive kind of consciousness involved in and only in thought, but deny that states of cognitive phenomenology are identical with or constitutive of thoughts. Conversely one might think that thought is constituted of *sensory* consciousness, and so deny that there is a distinctively cognitive form of experience. But in general these two views are held together, leading to a philosophical position according to which occurrent thoughts are identical with, or constituted of, states of cognitive phenomenology.⁵ I will call this position ‘cognitive phenomenalism.’ The following analogy might help to explain the view. Almost

² Dominant twentieth century theories of thought which fit the non-phenomenalist characterisation include tracking theories of intentionality defended among others by Millikan 1984, Papineau 1984, Fodor 1990, Dretske 1990, and the interpretationalism of Davidson 1980 and Dennett 1987.

³ See Siewert 1998, Horgan & Tienson 2002, Pitt 2004, Strawson 2008, Montague 2016. For a good collection of essays from both believers and non-believers in cognitive phenomenology see Bayne & Montague 2011. There is some variation in the definition of cognitive phenomenology, with Pitt 2004 on the one hand giving a more restrictive definition, and Smithies 2013 on the other giving a more permissive definition. I follow the middle-way definition found in the introduction of Bayne & Montague 2011.

⁴ See Farkas 2008a/b, Horgan & Graham 2012, Kriegel 2013a, Mendolovici & Bourget 2014. Kriegel 2013b is a good collection of essays on phenomenal intentionality. Of course there were some brave defenders of both cognitive phenomenology and phenomenal intentionality in the twentieth century, such as Searle 1991, Strawson 1994, Loar 1995, Siewert 1998.

⁵ Some cognitive phenomenalists are eliminativists about non-occurrent thought, e.g. Strawson 2008, but most give some account of it in terms of occurrent thought, e.g. Searle 1991, Horgan & Tienson 2002, Loar 2003, Kriegel 2011, Horgan & Graham 2012. Most cognitive phenomenalists accept a mild form of cognitive externalism, broadly consistent with the externalist theses defended by Kripke 1972, Putnam 1975 and Burge 1988. Cognitive phenomenalism can be reconciled with a certain degree of externalism by distinguishing between *narrow content* and *broad content*, where the former is taken to be grounded in cognitive phenomenology, and the latter grounded in narrow thought content in conjunction with certain causal connections to the environment (see for example Horgan & Tienson 2002). However, Farkas 2008a/b defends the purely internalist view that all content is grounded in phenomenal intentionality.

everyone agrees that pains are experiences. To be in pain just is to have a certain kind of experience: a painful one. According to cognitive phenomenalism, when I have the occurrent thought that, say, climate change is irrevocable, I have a certain kind of cognitive experience E, such that my occurrently thinking that climate change is irrevocable just is a matter of my having E.

The view I will be concerned with in this paper combines cognitive phenomenalism with robust realism about consciousness, defined as the thesis that facts about consciousness are not grounded in functional facts.⁶ Call this combination ‘robust cognitive phenomenalism.’ In principle one could combine cognitive phenomenalism with functionalism, but (as we shall see) such a combination would undermine any potential advantages of PIRP over its non-phenomenalist rivals. It is perhaps for this reason that most cognitive phenomenologists are robust cognitive phenomenologists.

We can thus define robust cognitive phenomenalism as the conjunction of the following two theses:

(A) Occurrent thoughts are identical with, or constituted of, states of cognitive phenomenology (which of course, assuming that occurrent thoughts exist, implies that cognitive phenomenology exists),

(C) *Robust Realism about Consciousness* – Facts about consciousness are not grounded in functional facts.

My aim is to raise a challenge for robust cognitive phenomenalism: the cognitive fine-tuning problem. In broad brush strokes the difficulty is that, for the cognitive phenomenologist, there is a distinction between three kinds of fact: cognitive phenomenal facts, sensory phenomenal facts, and functional facts. This distinction gives rise to the challenge of explaining why, in actuality, these three phenomena tend to be matched together in ways that respect norms of rationality.

(ii) The Modal Independence Argument

The problem I want to raise draws inspiration from a recent paper by Adam Pautz, in which he considers a variety of non-actual scenarios in which cognitive phenomenal facts, sensory phenomenal facts, and functional facts come apart from each other in peculiar ways.⁷ The most striking cases are what he calls

⁶ To be more specific, the robust realist denies that facts about consciousness are grounded in *pure* functional facts, i.e. facts which can be entirely grasped in causal terms (together perhaps with terms referring to sensory inputs and behavioural outputs). As I discuss later in the paper, it is consistent with robust realism to identify or ground facts about consciousness in facts about powerful qualities.

⁷ Pautz 2013.

‘separation cases’, in which both sensory and cognitive phenomenology are present, but are paired together in what are intuitively ill-fitting combinations.

In one such case, Pautz focuses on the putative state of cognitive phenomenology, represented by the letter P, underlying the thought ‘there is a picture on the wall behind me.’ In actuality, P is associated with certain forms of sensory consciousness – e.g. an image of a picture, or the sentence ‘there is a picture behind me’ running through the mind – as well as with certain behavioural dispositions – e.g. being disposed to report that there is a picture behind one if asked. But in Pautz’s imaginary scenario, a character called Charlie has P with intuitively ‘ill-fitting’ sensory phenomenology – a visual experience of a clock, the sentence ‘there is a clock on the wall’ running through his mind – and ‘ill-fitting’ behavioural dispositions – Charlie is disposed to report that there is clock on the wall on the wall if asked. Another separation case involves mathematical babies: creatures with the same behavioural dispositions and sensory consciousness as babies, but with cognitive phenomenology constitutive of complex mathematical thought.

Pautz also discusses what we can call ‘isolation cases’: cases in which there is sensory consciousness in the absence of cognitive consciousness or vice versa. Pautz calls cases of sensory consciousness in the absence of cognitive consciousness, ‘absent cognitive qualia’ cases, and cases of cognitive consciousness without sensory consciousness, ‘disembodied qualia’ cases. In order to test the imaginability of absent cognitive qualia cases, Pautz asks you (the reader) to recall an experience in which someone said to you, ‘Let’s go to the bar later’ and you quickly formed the visual image of the bar in question and followed up with a question about the time. Pautz then asks you to imagine an experience identical in terms of sensory consciousness and associated functional states, but profoundly different because there is no cognitive phenomenology. In order to test to imaginability of cases of disembodied cognitive qualia, Pautz asks the reader to try to imagine ‘a rich phenomenal life that *overlaps* with our actual phenomenal life, only it is totally non-sensory.’⁸

Let us use the general terms ‘mix and match’ cases for all of these non-actual scenarios in which thought or cognitive phenomenal states on the one hand, and sensory phenomenal states/functional states on the other, come apart in strange ways, either by existing in strange combinations or by one existing without the other. Pautz wants to use his mix and match cases to argue against cognitive phenomenalism. He hopes the reader will agree that the cases he considers are:

⁸ Pautz 2013: 219.

- (A) impossible to imagine, and
- (B) (assuming that cognitive phenomenology grounds thoughts) incoherent,

In support of the latter point, he suggests that there are ‘sensory-functional constraints’ on belief and desire. His positive account of these sensory-functional constraints is spelt out in his positive theory, which we will touch on later in this paper. But the intuitive starting point is that we can rule out a priori certain combinations of thought with sensory phenomenal states/functional states. For example, a baby just does not have the right sensory states/functional states to count as a creature with mathematical thought, and we can know this a priori.

The non-imaginability of the mix and match cases, according to Pautz, counts against the reality of cognitive phenomenology. For if states of cognitive phenomenology existed then (by definition) they would be distinct from states of sensory phenomenology and functional states, and so it ought to be possible to recombine these three kinds of state in imagination, or to imagine one without the other. For example, we ought to be able to imagine sensory consciousness without cognitive consciousness and vice versa, just as we can imagine visual consciousness without auditory consciousness and vice versa. Moreover, if cognitive phenomenal states, and thereby thought, are distinct from sensory phenomenal states and functional states, this would seem to imply the genuine possibility of these three elements being freely combined. That is to say, cognitive phenomenalism seems to imply the genuine possibility of the mix and match cases. If Pautz is right that the mix and match cases are incoherent, this would seem to give us a reason to reject the commitments of cognitive phenomenalism.

We can sum this up as the following against cognitive phenomenalism:

The Modal Independent Argument

Premise 1 – If cognitive phenomenalism is true, the mix and match cases (which Pautz considers) would be both coherent and readily imaginable.

Premise 2 – The mix and match cases are neither coherent nor readily imaginable.

Conclusion – Therefore, cognitive phenomenalism is false.

(iii) Responses to the modal independence argument

There seem to me quite plausible responses the cognitive phenomenalist might make to Pautz’s argument. First consider the argument from the non-imaginability of separation cases. The cognitive

phenomenalist might respond that some combinations of our conscious states are just hard to imagine, e.g. it is difficult to imagine finding pleasure in the sight of vomit. It does not follow from the fact that it's hard (perhaps even psychologically impossible) to imagine finding pleasure in the visual experience of vomit, that pleasure and the visual experience of vomit are not two distinct forms of conscious experience. By analogy, the cognitive phenomenalist might argue that it does not follow from its being hard (or even psychologically impossible) to imagine certain highly unusual combinations of sensory experience and cognitive experience, that we are not in reality dealing with two distinct kinds of consciousness.

A similar response might be made to the argument from the alleged non-imaginability of isolation cases. The cognitive phenomenalist might appeal to certain cases in which one has a unified experience involving two distinct sub-experiences, but it's just incredibly hard (maybe even psychologically impossible) to imagine the sub-experiences in isolation from each other. There are grounds for thinking that pain has two elements: a non-affective and an affective component, the latter being the 'hurtiness' of pain. The reason for thinking this arises from cases of pain asymbolia, a rare neurological condition caused by lesions to the posterior insula that produces complete and thoroughgoing indifference to pain.⁹ Patients with pain asymbolia claim that the pain is still there, but that it just doesn't bother them anymore. A plausible explanation of this fact is that the feeling most people call 'pain' involves a non-affective aspect and a 'hurty' affective aspect, and that patients with asymbolia have the former without the latter. Nonetheless, and even if one accepts this view, it remains extremely hard (perhaps impossible) through introspection to imagine one of these aspects of pain without the other. The cognitive phenomenalist might claim that something analogous is true of unified human experiences involving both sensory and cognitive consciousness: although formed of two distinct kinds of consciousness it's just very hard to imagine these distinct kinds of consciousness in isolation.¹⁰

Turning to the argument from alleged incoherence, clearly the mix and match cases are absurd in some sense. But the cognitive phenomenalist could suggest that they are absurd not in the sense of being a priori incoherent, but in the sense of being radically sceptical scenarios. Consider the hypothesis that nobody other than oneself is conscious. It is plausible that this hypothesis is perfectly coherent, but one we are entitled to assume is false. The cognitive phenomenalist might say something analogous

⁹ Grahek 2007, Klein 2015.

¹⁰ In the case of pain, it seems that we cannot even distinguish the two aspects. However, the cognitive phenomenalist might argue, perhaps with the help of contrast arguments (Chudnoff 2015), that we can distinguish the cognitive from the sensory aspects of experience, even if we can't imagine having one without the other.

concerning the scenarios of babies thinking complex mathematics: it is a coherent but nonetheless radically farfetched scenario. It is at least not obvious whether this or Pautz's account of the absurdity of the mix and match cases is to be preferred.

For what it's worth, many cognitive phenomenologists just don't share Pautz's intuitive reactions to his thought experiments, at least not to the separation cases. Horgan accepts the coherence and imaginability of sensory consciousness without cognitive consciousness, whilst Kriegel accepts the coherence and imaginability of disembodied thought.¹¹ Furthermore, they do not do so reluctantly, but as an intuitive starting point to argue for the existence of cognitive phenomenology or for phenomenal intentionality. Of course it is to be expected that one's opponent disagrees with one. But the aim of an argument is to present one's opponent with a bullet they feel at least a little uncomfortable with biting; whereas what Pautz sees as bullets to be bitten, his opponents see as candy to be relished.¹²

(iv) The modal formulation of the cognitive fine-tuning problem

I want to suggest a different use of the mix and match cases. Arguments against cognitive phenomenism which start from the intuition that mix and match cases are incoherent and/or unimaginable seem to me to have little dialectical force, for the reasons I gave in the last section. I propose an alternative way of using the mix and match cases to challenge cognitive phenomenism: instead of trying to deny the (epistemic or metaphysical) possibility of the mix and match cases, we can present them as constituting an explanatory obligation for the cognitive phenomenist. The challenge goes as follows: given that (according to your view) mix and match cases are possible, why (according to your view) aren't they actual?

I will try to illustrate this challenge with some of my own mix and match cases. Meet Inverted Ian. Inverted Ian has states of cognitive phenomenology which constitute a strong desire to have his body damaged and a strong desire not to have sex and eat burgers. However, Ian lives in a strange possible world, where the laws of nature endow his conscious states with peculiar causal powers. The state of cognitive phenomenology underlying his desire for bodily damage causes Ian to avoid having his body damaged, and the state of cognitive phenomenology underlying his aversion to sex and burgers causes

¹¹ Horgan 2011. Kriegel MS.

¹² Montague forthcoming also has a response to Pautz's modal independent argument. Montague's response would not help with the non-modal formulation of the cognitive fine-tuning problem (discussed below), as it does not provide us with an explanation of the fact that cognitive phenomenal states, sensory phenomenal states and functional states are matched together in ways that respect rational norms.

him to seek out sex and burgers. The result is that Ian ends up behaving just like an ordinary human being with a healthy appetite for sex and burgers.

Inverted Ian is a deeply irrational creature. He displays *practical irrationality*: Ian pursues what he desires to avoid, and avoids what he desires to pursue. He also arguably displays *conative irrationality*: Ian desires what he has strong reason to avoid (pain and harm to himself), and desires to avoid what he has reason to pursue (pleasure).

Meet another of my imaginary friends: Dotty Dawkins. Dotty Dawkins is a functional duplicate of Richard Dawkins, and shares all of Dawkins' sensory conscious states. However, Dotty Dawkins differs from actual Dawkins in his cognitive phenomenology: whenever actual Dawkins has cognitive phenomenology that constitutes the belief that P, Dotty Dawkins has cognitive phenomenology that constitutes the belief that not P. Dotty Dawkins actually believes that God exists, but this belief never shows up in his behaviour. Dotty Dawkins believes that he has no hands, even though his daily sensory experiences testifies to the contrary.

Whilst Inverted Ian is marked by a kind of practical irrationality, Dotty Dawkins displays deep cognitive irrationality. His beliefs are not rationally guided by the evidence of his sensory experience, and are not expressed in his behaviour in a rationally appropriate way.

Through the contrast to my mix and match cases, we can appreciate the extent to which human beings are deeply rational creatures. Of course people display all sorts of irrationality, but this is upon a significant foundation of rationality. We can divide this rationality into (at least) three categories:

- *Practical rationality* – People tend to satisfy their desires, in the light of their beliefs. Most historical explanations are reliant on this. Consider, for example, the following explanation for why a certain political party won an election: most people wanted the economy to improve and they believed that party X would improve the economy. This kind of explanation is dependent on the assumption that people tend to do what they want in the light of what they believe.
- *Theoretical rationality* – People's beliefs are rationally guided by their sensory experiences. We are all familiar with cases of people believing against the evidence. But almost everybody believes what is rationally appropriate in the light of their immediate sensory experiences, e.g. when someone has an experience of a table in front of them, they tend to believe that there is a table in front of them (unless they believe that they are hallucinating, or know that they have taken LSD, etc.)

- *Conative rationality* – To a large extent, people desire things they have some reason to desire, e.g. pleasure and knowledge, and desire to avoid are things they have some reason to avoid, e.g. pain and self-harm. This is not to say that humans do not exhibit self-destructive desires and neurotic compulsions. And arguably many of the quite standard things humans aim for are basically irrational goals, e.g. fame or the desire to accumulate money for its own sake. Nonetheless, we seldom if ever find human beings who do not possess many conatively rational desires, and we don't tend to find humans with lives structured around some essentially pointless aim, e.g. counting blades of grass for its own sake.

Obviously much more could be said about the finer nuances of human rationality. My point here is simply to draw attention to the entirely uncontentious fact that humans exhibit significant rationality, albeit mixed with strong elements of irrationality.

Although uncontentious, this fact is, I want to suggest, hard for the cognitive phenomenalist to account for; this is the essence of the cognitive fine-tuning problem. I will begin with a modal formulation of the challenge. As we will see below, the essence of the challenge does not depend on this modal formulation, but it provides a vivid way of setting up the problem.

According to cognitive phenomenalism, thoughts (constituted of states of cognitive phenomenology), states of sensory consciousness and functional states, are all distinct properties of a human being. This seems to imply:

Modal Implication – Cognitive phenomenal states, sensory phenomenal states and functional states could be 'mixed and matched' in all sorts of ways that do not respect, and even systematically violate, rational norms, e.g. Inverted Ian and Dotty Dawkins are possible.

And because cognitive phenomenalism has this modal implication, it seems to follow that:

The Cognitive Fine-Tuning Problem (modal formulation) – The cognitive phenomenalist is obliged to give an explanation of why, of all the ways cognitive phenomenal states and sensory/functional states might have been matched, they tend to be matched in rationally appropriate ways.

As the name suggests, the problem (at least in this modal formulation) can be understood by analogy to the philosophical problems raised by the so-called ‘fine-tuning’ of the laws of nature.¹³ The basic laws of physics (and the initial conditions of the universe) seem to be ‘fine-tuned’ for life in the sense that (i) the basic laws (and the initial conditions of the universe) are compatible with the eventual emergence of life, (ii) the intrinsic probability of laws (and initial conditions) compatible with the existence of life is extremely low, as life can occur only in possible worlds in which certain constants (in the fundamental laws and initial conditions) lie in an extremely narrow range. Many hold that (i) and (ii) lead to an explanatory obligation to explain why, of all the ways the laws of nature might have been, they turned out to be such as to be compatible with the emergence of life. Analogously, the Modal Implication of cognitive phenomenalism seems to lead to an explanatory obligation to explain why, of all the ways cognitive phenomenal states, sensory phenomenal states, and functional states might have been matched up, they tend to be matched up in ways that respect rational norms.

The analogy should not be interpreted too strictly. Many have argued that the alleged problem arising from the ‘fine-tuning’ of the laws of nature is in reality a pseudo-problem, emerging from a certain kind of selection bias. This is compatible with the cognitive fine-tuning problem being a genuine problem, or at least a genuine problem *assuming cognitive phenomenalism*. The analogy is only intended as a heuristic device.

There is, however, one important commonality between the two fine tuning arguments, and that is in both cases it is hard to see how biological natural selection could help with the problem. In the case of the traditional fine-tuning argument, biological natural selection cannot help as we are seeking an explanation of facts about the universe which preceded the emergence of biology: fundamental laws of nature and initial conditions of the universe.¹⁴ The problem with using biological natural selection to help with the cognitive fine-tuning problem is slightly different. In this case, the difficulty is that any evolutionary account of the emergence of thought already assumes a solution to the cognitive fine-tuning problem. Consider an explanation of the fact that humans have a desire for food and sex, in terms of the fact that eating and copulating is beneficial to the survival of the organism and/or its species. Any such explanation implicitly assumes that humans will tend to respond in a rationally

¹³ There is a great deal of literature on this topic. Swinburne (1979/2004, ch. 8) appeals to the fine-tuning of the universe to argue for the existence of God.

¹⁴ Smolin (1997) has defended a solution to the fine-tuning problem involving a principle of natural selection governing the birth of universes. Even here, however, we are not relying on *biological* evolution to solve the problem.

appropriate way to the desire for food and sex, i.e. by trying to get those things. It is only given this assumption that the desires for food and sex are conducive to survival. But this is the very thing that the cognitive fine-tuning problem demands an explanation of. Similarly, an evolutionary explanation of why we have sensory experience in terms of its survival advantage implicitly assumes that our beliefs will be significantly rationally guided by our sensory experience. And this assumption is the very thing that the cognitive fine-tuning problem demands an explanation of.

To be clear: I'm not saying that there is anything wrong with standard evolutionary explanations of thought, e.g. of the fact that humans desire food and sex. It is arguably not the job of such evolutionary explanations to solve the philosophical problem of cognitive fine-tuning. Compare: evolutionary explanations also involve reference to individuals and their properties, but evolutionary biologists are not obliged to solve the philosophical problems raised by Bradley's regress that threaten the coherence of such notions.¹⁵ And in any case, for many theories of thought the cognitive fine-tuning problem will simply not arise (in a moment we will explore a non-phenomenalist view for which this problem does not arise). The point is just that given that evolutionary explanations already assume that the functional states of an organism are (more or less) rationally appropriate relative to its thought content, and that its thought content is (more or less) rationally appropriate relative to its sensory consciousness. And for this reason evolutionary explanations cannot help with explaining this fact; or at least more would need to be said to show how they could.¹⁶

(v) Necessary connections and a non-modal formulation of the problem

Faced with the problem outlined above, the cognitive phenomenalist might try to argue that, although cognitive phenomenal states, sensory phenomenal states, and functioning states are all *distinct* from each other, they are nonetheless *necessary connected* to each other in certain specific ways, such that mix and match cases are impossible. Call this the 'Necessary Connections Solution' to the modal formulation of the cognitive fine-tuning problem. More would need to be said. Cognitive

¹⁵ The worry is rooted in Bradley's famous regress argument against the possibility of external relations (Bradley 1935: 643; van Inwagen 1993: 35–6).

¹⁶ The cognitive fine-tuning problem would arise for anyone who thinks that cognitive states are distinct from sensory states and from functional states, and so in a sense it is not dependent on a commitment to cognitive states being *phenomenal*. However, one is most likely to be driven to this view because one is a cognitive phenomenalist and a robust realist about consciousness (and as I explain in section VI cognitive phenomenologists have good reason to be robust realists about consciousness).

phenomenalism seems to imply that these three kinds of state are distinct, which gives us *prima facie* reason to take them to be modally independent. However, there are various ways in which the Necessary Connections Solution might be developed.

One option is to adopt the ‘powerful qualities’ thesis, associated with John Heil and C. B. Martin, according to which categorical states are identical with causal powers.¹⁷ The robust realist component of robust cognitive phenomenalism is defined in opposition to functionalism about consciousness. However, as I emphasized in footnote 6 when defining robust cognitive phenomenalism, the ‘functionalism’ in question is best understood as the thesis that facts about consciousness are grounded in *pure functional facts*, i.e. facts which can be wholly grasped in causal terms (together perhaps with terms referring to sensory inputs and behavioural outputs). This kind of functionalism is to be distinguished from the powerful qualities view; according to the latter view properties have an irreducibly categorical nature, it’s just that each categorical nature is identical with a certain kind of causal power.

By adopting this view, the robust cognitive phenomenal might hold that, although each state of cognitive phenomenology has a fully categorical nature (in line with robust realism), that fully categorical nature essentially grounds a functional state. This would rule out the possibility of cognitive phenomenal states and functional ‘floating free’ from each other. *Ex hypothesi* Inverted Ian has the cognitive states that an actual human could have – the cognitive phenomenology which constitutes desiring bodily damage and desiring to avoid sex and burger consumption – but in him those states have very different causal powers than they would in an actual human being – in Ian they lead to avoidance of bodily damage and the seeking out of sex and burgers. If states of cognitive phenomenology are identical with their causal powers, then this is impossible.

Another possibility is that the cognitive phenomenalist might make sense of the necessary connections solution by adopting a form of holism. Elijah Chudnoff has explored this option, specifically as a response to Pautz’s argument.¹⁸ Chudnoff defines ‘phenomenal holism’ as the view that partial phenomenal states depend on the total phenomenal state to which they belong; so, for example, the anxiety I am currently feeling depends for its specific character on the entire conscious experience with which it co-exists: my current visual, auditory, tactile, experiences, my whole emotional state, etc.

¹⁷ Martin 2007 and in Armstrong et al 1996, Martin & Heil 1998, Heil 2003, 2012, Strawson 2008.

¹⁸ Chudnoff 2015, chapter 5.

If phenomenal holism is true, and if actual states of sensory phenomenology always go along with states of cognitive phenomenology and vice versa, it follows that isolation cases are impossible, at least isolation cases involving actual states of cognitive and sensory phenomenology. To see this, consider one of my sensory states *S*. According to phenomenal holism, *S* is dependent on my entire current conscious experience *E*, which we are assuming contains at least one state of cognitive phenomenology *C*. Given that *S* is dependent on *E*, *S* cannot exist without *E*; and whenever *E* exists, *C* exists as part of it. Hence, there is no possible conscious experience involving *S* but not *C*. The possibility of (actual) sensory consciousness without cognitive consciousness is ruled out (the same form of argument could be used to rule out cognitive consciousness without sensory consciousness). Indeed, given phenomenal holism, for any state of cognitive phenomenology *C* and any state of sensory consciousness *S*, if *C* is actually co-experienced with *S*, then *C* cannot exist without *S* (and vice versa).

These claims would need to be articulated and defended in more detail, but there is the potential here for a plausible response to the modal formulation of the cognitive fine-tuning problem. And if the Necessary Connections Solution is plausible, then this spells further trouble for Pautz's Modal Independence Argument, as it provides a way for the cognitive phenomenalist to agree with Pautz that his mix and match cases are impossible whilst maintaining cognitive phenomenalism. However, even if these do allow the cognitive phenomenalist to respond to the modal formulation of the cognitive fine-tuning problem, the essential problem is not removed. For even if there are necessary connections between cognitive phenomenal states, sensory phenomenal states and functional states, we still require an explanation as to why those necessary connections respect rational norms.

Let me develop this claim through in relation to each of the above strategies for making sense of the Necessary Connections Solution. Firstly, consider the powerful qualities view. Proponents of this view advocate an identity between categorical properties and causal powers, but they still allow a conceptual distinction between these two ways of thinking about properties. In other words, for any given property, we can think of it *qua* categorical property or *qua* causal power. It is this that makes the distinction between the powerful qualities view and a 'pure powers view'; according to the latter there is nothing more to the nature of the property than what can be grasped in causal terms.

Now suppose there is an identity between the state of cognitive phenomenology which constitutes a desire to eat burgers and a causal power which leads an individual to try to eat burgers. To conceive of the state *qua* state of cognitive phenomenology would be to conceive of it in terms of what it's like to have it, which is also to conceive of it in terms of its phenomenally constituted thought content, i.e. as a

desire to avoid eating burgers. To conceive of that state *qua* causal power would be to conceive of it in terms of what it does, i.e. (very roughly) to conceive of it as a state that causes the individual to seek burgers. For an analytic functionalist, descriptions of these states will be analytically equivalent: for an individual to desire burgers just is for her to instantiate some complex functional state. But for a robust realist adopting the powerful qualities view, the two descriptions are a priori distinct: the former description picks out an intrinsic state of thought-constituting phenomenal character, whilst the latter description picks out that same state in terms of what it essentially does.

There is still something that needs explaining here. There is a normatively appropriate match between the phenomenally-constituted content of the state (which we apprehend when conceiving of it in terms of what it's like), and the behavioural effects of the state (which we apprehend when conceiving of it *qua* dispositional state). It is rationally appropriate for a cognitive state with the content of being a desire for burgers to be matched with a dispositional state of seeking out burgers; it is incumbent on the powerful qualityist robust cognitive phenomenalist to explain the fact that there is a rationally appropriate match between these two ways of describing the state. For the reductive functionalist, there is no question: to desire burgers just is (roughly) to be in a functional state of seeking out burgers. But for the powerful qualityist cognitive phenomenalist to desire burgers is to have an intrinsic state of with a certain phenomenal character. That intrinsic state of cognitive phenomenology has certain causal powers essentially, but the question still remains: why is it that those essential causal powers fit with the content constituted by the intrinsic phenomenal character, in a way that respects norms of practical rationality?

As Thomas Nagel points out:

Explanation, unlike causation, is not just of an event, but of an event under a description. An explanation must show why it was likely that an event *of that type* occurred. We may know the causes of several members of a family in near succession, but that will not explain why several members of that family died, as such, unless there is some relation among the causes of the individual deaths that makes it antecedently likely that they would strike the group – such as a vendetta or a genetic disease.¹⁹

The powerful qualityist robust cognitive phenomenalist owes us an explanation of why an event falling under a certain phenomenal description is appropriately matched to an event falling under a certain

¹⁹ Nagel 2012: 47.

causal description. Of course, if the view is true, then these two descriptions are necessarily co-extensive. And if we knew for certain that powerful qualityist cognitive phenomenalism was true, then we may just have to accept the rationally appropriate match as an unexplained fluke. But I take it that (like any other philosophical view) we don't know for certain that powerful qualityist cognitive phenomenalism is true; and if the view ends up entailing that the rationally appropriate match between these two descriptions of cognitively conscious states is an unexplained fluke, then this fact strongly counts against its truth.

Turn now to the phenomenal holist form of the Necessary Connections Solution. This gives us an account of why actual states of sensory phenomenology cannot float free of actual states of cognitive phenomenology: if the state of cognitive phenomenology C that realizes my belief that there is a table in front of me depends on my whole current experience E, and E essentially involves a sensory experience of a table S, it follows that C and S cannot exist without each other. But this does not in itself explain why my states of cognitive phenomenology and my sensory phenomenology are necessarily connected *in such a way as to respect rational norms*, as is exhibited for example by the rationally appropriate match of C with S.

Here's another way of putting the point against both of these forms of the Necessary Connections Solution. My demand in this paper is for an explanation of why allegedly distinct states – cognitive phenomenal states, sensory phenomenal states and functional states – are matched together in rationally appropriate ways. To say 'They just are' isn't a good answer; but to say 'They just are necessarily' isn't a good answer either.

This demand for explanation is not unreasonable, as can be seen from the fact that it is a demand that standard non-phenomenalist (or semi-phenomenalist) accounts of thought can answer. After raising challenges to cognitive phenomenalism, Pautz goes on to contrast the view with the form of a priori functionalism defended by David Lewis.²⁰ Lewis combines functionalism with interpretationalism, to form the view that: for an individual I to have a thought with content P is for it to be part of the best interpretation of I that she has P, where 'best interpretations' are constrained by norms of rationality. The norms of rationality include a *behaviour rationalization principle*, according to which all things being equal an individual tends to have beliefs and desires that makes her behaviour largely rational. To take an example pertinent to our current concerns: if it is part of the best interpretation of John's behaviour

²⁰ Pautz 2013: section 4. He builds on Lewis 1974.

that he desires burgers – because, for example, he eats a lot of burgers – then it is thereby the case that John desires burgers. By bringing rational norms into the analysis of thought, Lewis's a priori functionalism explains why thought and rational behaviour are matched together in such a way as to respect rational norms: all it is for John to desire burgers is for it to be part of the (rational-principle-respecting) best interpretation of his behaviour that he desires burgers.

In the final part of his paper, Pautz outlines a form of a priori functionalism which embraces elements of the Phenomenal Intentionality Research Program; a view he calls 'phenomenal functionalism.' On this view both facts about sensory consciousness and facts about behavioural functioning are included in the facts relevant to the best interpretation. Lewis's functionalism includes a *principle of charity* in the norms of interpretation, such that all things being equal an individual's beliefs are objectively reasonable given one's history of sensory experiences and evidence. Pautz argues that there is a lack of clarity in Lewis's view as to what 'evidence' amounts to, and he tries to plug this gap by understanding evidence as sensory consciousness, which he takes to be richly intentional. On the resulting view, for Sarah to have the belief that there is a table in front of her is for it to be the case that the (rational-principle-respecting) best interpretation of her sensory states and behavioural states ascribes to her the belief that there is a table in front of her. This has the potential to explain the appropriate match between Sarah's sensory state of seeing a table in front of her and her belief that there is a table in front of her: the norms of rationality involved in the analysis of thought favour such appropriate matches.

The problem for the robust cognitive phenomenalism is that, given that thought is constituted by phenomenology, it's hard to see how rational norms could be involved in the analysis of thought. And if rational norms do not come into the analysis of thought – into what it is to have thought – then it's somewhat mysterious why thoughts tend to respect rational norms in their relationships with sensory states and functional states.²¹ This creates a demand for explanation, a demand which remains even if these relationships are necessary rather than contingent. Thus, the modal assumption involved in the modal formulation of the cognitive fine-tuning problem can be dropped, leading to a non-modal formulation of the problem:

The Cognitive Fine-Tuning Problem (non-modal formulation) – The cognitive phenomenalist is obliged to give an explanation of why cognitive phenomenal states, sensory phenomenal states, and functional states tend to be matched in rationally appropriate ways.

²¹ See Rosen 2010 for more detail on the notion of metaphysics analysis I am working with here.

(vi) Non-robust solutions

How could the cognitive phenomenalist solve, or circumnavigate the cognitive fine-tuning problem? One option is to deny or dilute some of the commitments of robust cognitive phenomenalism. To remind ourselves, the commitments are as follows:

- (A) Thoughts are identical with, or constituted of, states of cognitive phenomenology,
- (B) *Robust Realism about Consciousness* – Facts about consciousness are not grounded in functionalism facts.

There are two ways of denying (A). One option is to deny the existence of cognitive phenomenology, whilst nonetheless holding that thought is grounded in consciousness. This may remove part of the problem: if there is no such thing as cognitive phenomenology, then perhaps there is no longer an obligation to explain the supposed rationally appropriate matchings of cognitive phenomenology with sensory phenomenology.²² However, if the states of consciousness underlying thought are distinct from functional states, we may still be left with a difficulty explaining rationally appropriate matchings between cognitive states and functional states. A more radical way of denying (A) is to hold that the grounding of thought has nothing to do with consciousness. Depending on the details of the alternative view of the grounding of thought, this has the potential to remove the problem altogether. We saw above how certain forms of a priori functionalism can explain cognitive fine-tuning by bringing constitutive principles of rationality into the analysis of what it is to have thought. However, this more radical denial of (A) gives up on the whole project of trying to explain thought in terms of consciousness. If the cognitive fine-tuning problem rules out this project, then that is a significant conclusion.

In between the view that thought is entirely grounded in consciousness, and the view that the grounding of thought has nothing to do with consciousness, is Pautz's view – phenomenal functionalism – according to which thought is grounded in facts about sensory consciousness in conjunction with functional facts. I have in this paper no objections to this view, but it is itself a significant rowing back

²² Whether even this problem goes away will depend on the details of the view. There could still be a need to explain the rationally appropriate matchings between those states of sensory phenomenology which ground cognition and those which don't.

from the project of explain all mental representation in terms of consciousness.²³ Again, it is dialectically significant if the cognitive fine-tuning problem forces us to this position.

The cognitive phenomenalist might try to avoid the cognitive fine-tuning problem by accepting (A) but denying (B). Thus, she might hold that thought is grounded in cognitive consciousness, but that at a more fundamental level facts about cognitive consciousness are grounded in functional facts. Once we bring in this more fundamental grounding relationship, the rational connections between cognitive phenomenal states and functional states might be explained in terms of functional analyses of states of cognitive phenomenology, leading to a solution to (or avoidance of) the cognitive fine-tuning problem resembling that of the a priori functionalist discussed above.

This strategy preserves the letter of cognitive phenomenalism – thought is accounted for in terms of a distinctive kind of cognitive consciousness – but the reduction of consciousness undermines its spirit. Recall that the Phenomenal Intentionality Research Program (PIRP), of which cognitive phenomenalism is one aspect, is put forward as a bold new approach with avoids many of the difficulties facing non-phenomenalist rivals. Many proponents of PIRP have pressed challenges to causal accounts of representation, e.g. the disjunction problem and the problem of accounting for determinate content, and then used this as the basis for a defence of PIRP.²⁴ As they see it, PIRP is to be preferred on the grounds that it avoids these difficulties which plague causal theories of representation. But if we explain representation in terms of consciousness, but then explain consciousness in terms of functional facts, then the problems proponents of PIRP point to for causal accounts are going to re-emerge at this more fundamental level, and the digression via consciousness will have achieved nothing. This is why a commitment to robust realism about consciousness goes naturally with cognitive phenomenalism; without it PIRP loses many of its alleged advantages over rival theories of mental representation.

None of this is decisive, but it gives the cognitive phenomenalist reason to want to hold onto the commitments of robust cognitive phenomenalism. At the very least we can say that it is dialectically significant if the cognitive fine-tuning problem forces the robust cognitive phenomenalist to drop some

²³ Even when we take into account the two standard qualifications to PIRP discussed in footnote 5, Pautz's view is still a significant rowing back from the aims of PIRP as they are standardly understood.

²⁴ Mendelovici & Bourget 2014 argue for PIRP on the basis that it avoids the disjunction problem that plagues tracking theories. Horgan & Tienson 2002, Strawson 2008, Horgan & Graham 2012 all argue that functional facts can't secure determinate content; and that a commitment to phenomenal intentionality is needed for this.

of these commitments. Thus, we have reason to examine the prospects for a solution to the cognitive fine-tuning problem consistent with the commitments of robust cognitive phenomenalism.

(vii) Robust Solutions

How might the cognitive fine-tuning problem be solved without giving up any of the commitments of robust cognitive phenomenalism? The only options I can think of are ones that are wildly at odds with naturalism about the mind.²⁵ Here are a few possibilities.

Option 1: Divine intervention or pre-established harmony

One proposed solution to the standard fine-tuning problem is intelligent design. If the universe was brought into existence by an intelligent being who wanted to bring about life, then we arguably have an explanation of why the laws and initial conditions of the universe are exactly as they need to be for there to be life: the intelligent creator made them that way in order to allow for the possibility of life. Analogously, the robust cognitive phenomenalist might explain the cognitive fine-tuning in terms of the action of God to ensure an appropriate match between cognitive phenomenology and sensory/functional facts.

This might be done either by constant intervention: e.g. God sees that Dawkins' functional states are suited to atheism, and so ensures that Dawkins has cognitive phenomenology to ground belief that God doesn't exist, e.g. God sees that Ian has a cognitive phenomenological desire to avoid burgers, and so ensures that the causal powers of that state lead him to avoid burgers. Alternately, it might be proposed that God has set up parallel deterministic systems of mental and physical in such a way that, despite there being no interaction between the two, they will inevitably run in harmony, i.e. cognitive phenomenal states, sensory phenomenal states and functional states will always be matched in a way that reflects rational norms. In either case we explain the appropriate matches in terms of God's desire to create rational creatures.

²⁵ What is naturalism? I am attracted to Gideon Rosen's (201: 111) definition, 'The naturalist's fundamental thought is that certain peculiar aspects of our world—the human world—are not among the fundamental features of reality. Human beings think; most of nature doesn't. Human beings are governed by norms; most of nature isn't. These (more or less) distinctively human aspects of reality may be genuine; but according to the naturalist, they are not fundamental.' Even without a specific definition, it seems clear that the robust solutions considered here are inconsistent with most understandings of what metaphysical naturalism amounts to.

This explanation of course bears the ontological cost of a commitment to God. And in the case of constant divine intervention, there is also arguably an inelegance in the postulation of a 'micro-managing' deity.

Option 2: Value-Involving Laws

Are there atheistic solutions to the cognitive fine-tuning problem? Thomas Nagel has recently expressed sympathy for the possibility that teleological laws might explain the emergence of life, consciousness, and rationality. The essential characteristic of teleological laws, for Nagel, is there being *temporarily historical* in their operation:

The laws of physics are all equations specifying universal relations that hold at every time and place among mathematically specifiable quantities life force, mass, charge, distance, and velocity. In a non-teleological system the explanation of any temporally extended process has to consist in the explanation, by reference to those laws, of how each state of the universe evolved from its immediate predecessor. Teleology, by contrast, would admit irreducible principles governing temporally extended development.²⁶

Two conditions must be satisfied in order for there to be teleological laws of this kind:

1. The non-teleological laws are non-deterministic.
2. The teleological laws make it the case that: of the possibilities left open by the non-teleological laws, those possibilities which constitute progress towards the 'ends' of the teleological laws are significantly more likely than those that don't. As Nagel puts it, 'Teleological laws would assign higher probability to steps on paths in state space that have a higher 'velocity' towards certain outcomes.'²⁷

It is not obvious that teleological laws need be value-involving, as the ends 'aimed at' by the laws might not be of value. But the teleological laws favoured by Nagel are value-involving, in so far as the goals are defined in terms of are irreducibly normative, e.g. the goal of rationality.

In order to solve the cognitive fine-tuning problem, the cognitive phenomenalist may postulate a basic law stipulating that conscious physical systems instantiate the most rationally appropriate cognitive

²⁶ Nagel 2012: 92.

²⁷ Nagel 2012: 93. This terminology is from Nolan and Hawthorne's (2006) detailed account of what it would be for there to be teleological laws.

phenomenology relative to its sensory and functional states. Unlike Nagel's teleological laws, such a law would not obviously be temporally historical. It could be supposed that states of cognitive phenomenology arise at time T in order to match the functional and sensory states instantiated at the time immediately prior to T; and hence the law would not (at least not obviously) need to 'anticipate' some future possibility. However, like Nagel's favoured teleological laws, such a law would clearly be value-involving, in the sense that in its most basic formulation it makes reference to an evaluative notion.

Several problems remain. Firstly, one might worry that the problem has merely been deferred, not solved. For perhaps we now need an explanation of why, of all the laws we might have had, the actual laws aim at rationally appropriate cognitive phenomenology. Even supposing the intelligibility of laws aiming at things of value, such laws are clearly not inevitable. Indeed laws aiming at rationally appropriate cognitive phenomenology seem rather unlikely, given all of the other conceivable laws which would fail to secure rationally appropriate cognitive phenomenology. What then explains the fortunate fact that the actual world contain laws which ensure a rationally appropriate match, rather than laws which fail to?

One option might be to embrace the axiarchism defended by John Leslie, i.e. the view that facts about value can themselves have a causal impact on the world.²⁸ Thus, it could be held that: (i) there is a law of nature L that ensures an appropriate match between cognitive phenomenal states, sensory phenomenal states and functional states, and (ii) L obtains because it is good to have a rationally appropriate match between these three kinds of state.

A further problem with this solution is that it threatens to render conscious thought epiphenomenal. The proposal is that there are laws that make it the case that the cognitive phenomenal states which arise in any given organism are always appropriately matched to its functional and sensory states. But if cognitive consciousness always arises *in response* to functional facts, then it doesn't seem that it can play a role in *determining* functional facts, including the causes of behaviour.

Option 3: Irreducible rational responsiveness/Libertarian free will

One aspect of the cognitive fine-tuning problem is the obligation to explain why thought and behavioural dispositions tend to be appropriately matched. One way of explaining this might be to

²⁸ Leslie 1979.

postulate a basic capacity to respond to reasons. Few philosophers deny that humans have a capacity to respond to reasons, but it is a working assumption of naturalists that that capacity is not fundamental, but is ultimately grounded in some more basic physical facts which do not involve responsiveness to reasons. However, it seems at least coherent to suppose that there are creatures which have a basic capacity to respond to reasons. This is presumably how we imagine angels, or God for that matter. We can imagine the agent Gabriel perceiving that Marie's illness is causing her pain, recognising that this gives him a reason to heal her, and then responding to that reason by healing Marie. As an immaterial creature, Gabriel's capacity to respond to reasons would presumably be basic rather than grounded in some more fundamental nature.

In contrast to angels, human beings are, at least in part, material beings. It could nonetheless be supposed that the human capacity to respond in an appropriate way to reasons is metaphysically basic. This is likely to be conceived of as a kind of libertarian free will/and or agent causation. Substance dualists may suppose that this capacity is a property of the immaterial soul. Emergentists may suppose that it is an emergent capacity of the human organism. In either case, such a postulation could be used to explain the appropriate match between cognitive phenomenology and (certain) functional states: in virtue of this capacity human beings tend to respond appropriately to reasons which their cognitive phenomenology make apparent to them. For example, suppose Sarah desires to eat burgers. This gives her a reason her a reason to eat burgers. Now if Sarah has a basic capacity to respond to reasons, then perhaps through exercising that capacity she will develop the disposition to respond to that reason; and perhaps in this way we can explain the fact that her behavioural disposition in this case is rationally appropriate with respect to her desire.

Much more detail would need to be added, and many questions answered, in order to turn this skeletal proposal into a fully worked out theory. How does this basic capacity interact with more standard forms of physical causation in the organism? Unlike Gabriel, a human's actions are mediated via changes in the brain and body. How does the basic capacity to respond to reasons 'co-ordinate' with physical processes in the body and brain in order to produce human action. Why doesn't the capacity to respond to reasons always work optimally, ensuring that humans are always perfectly rational? When the basic capacity to respond to reasons comes into conflict with instinctive drives, what decides which wins out? These are hard questions. However, there are detailed accounts of agent causation and libertarian free will, and it is possible these questions could be answered with reference to these accounts.²⁹ If these

²⁹ O'Connor 2002, Lowe 2008, Steward 2010.

questions can be answered satisfactorily, then there is the potential for an explanation of the fact that human behavioural dispositions tends to be appropriately matched to thought content.

There are other aspects to the cognitive fine-tuning problem. We might also ask why humans have rationally appropriate cognitive phenomenology in the first place, and in particular why humans have cognitive phenomenal states which are appropriate relative to their sensory phenomenal states, rather than the kind of ill-fitting cognitive phenomenology exhibited, for example, by Dotty Dawkins. However, if we can (via the postulation of a basic capacity to respond to reasons) account for the fact that humans tend to respond in a rational way to the reasons made manifest to them by their conscious experience, then there is the potential for a Dawinian solution to the other aspects of the cognitive fine-tuning problem. For there is now arguably a survival advantage in an organism's having beliefs that are rationally appropriate relative to the information made available by its senses: such an organism will be disposed to behave in an appropriate way relative to those beliefs, which will plausibly be beneficial for its survival. There is also the potential to explain why humans don't tend to have desires like Inverted Ian: assuming they behaved in a rationally appropriate way relative to those desires, i.e. by trying to satisfy them, they wouldn't survive long.

Again much, much more would need to be said. But overall this seems to me the most promising of the three options we have discussed.

Conclusion

I have raised what I take to be a very hard problem for cognitive phenomenalism: the obligation to explain why in human beings cognitive phenomenal states, sensory phenomenal states, and functional states tend to be matched together in rationally appropriate ways. Other theories of thought avoid this problem, by holding that what it is for a human H to have thought T is for it to be the case that H behaves in such a way (and perhaps has the kind of sensory consciousness such that) the ascription of T to H is rationally appropriate. But principles of rationality do not come into the account of thought offered by the cognitive phenomenalist. As I have tried to show, this makes it very hard to see how the robust cognitive phenomenalist can solve the problems I have outlined.

The only options I can think of – God, value-involving laws of nature, or basic capacities to respond to reasons – are wildly at odds with naturalism. It is extremely significant if these are the only options, as robust cognitive phenomenologists do not in general take themselves to be pursuing a project in radical

opposition to naturalism, and indeed some have positively argued that they are not.³⁰ Of course it may be that I simply haven't the imagination to work out a naturalistically kosher way for the robust cognitive phenomenalist to solve the cognitive fine-tuning problem. Still, the robust cognitive phenomenalist who wants to be a naturalist is obliged to succeed where I have failed. In the absence of a naturalistic solution to this problem, the naturalist philosopher has good reason to reject cognitive phenomenalism.

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³⁰ Mendelovici & Bourget 2014 defend phenomenal intentionality theories against the charge that they are in tension with naturalism. They argue that this would be the case only if naturalism could not account for consciousness, which would make naturalism implausible. What I have outlined in this paper points to a tension between naturalism and cognitive phenomenalism which remains even if there is no tension between naturalism and realism about sensory consciousness.

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