

Embodied Conceivability: How to Keep the Phenomenal Concept Strategy Grounded

GUY DOVE AND ANDREAS ELPIDOROU

Abstract: The Phenomenal Concept Strategy (PCS) offers the physicalist perhaps the most promising means of explaining why the connection between mental facts and physical facts appears to be contingent even though it is not. In this essay, we show that the large body of evidence suggesting that our concepts are often embodied and grounded in sensorimotor systems speaks against standard forms of the PCS. We argue, nevertheless, that it is possible to formulate a novel version of the PCS that is thoroughly in keeping with embodied cognition, focuses on features of physical concepts, and succeeds in explaining the appearance of contingency.

1. Introduction

Physicalism requires that mental facts are metaphysically necessitated by physical facts. Yet the connection between the two appears to be contingent. It is thus incumbent upon proponents of physicalism to offer some explanation of this apparent contingency. The Phenomenal Concept Strategy (PCS) offers what is perhaps the most influential and widely used means of addressing this challenge.¹ According to the PCS, the appearance of

¹ The label ‘phenomenal concept strategy’ comes from Stoljar (2005). Proponents of the phenomenal concept strategy are physicalists who respond to epistemic arguments against physicalism by maintaining (i) that the existence of epistemic gaps between phenomenal truths and physical truths is consistent with the truth of physicalism – they are thus proponents of what Chalmers (1999) calls ‘Type-B Materialism’ – and (ii) that such epistemic gaps admit of a purely physical explanation insofar as they the products of certain features of our phenomenal concepts. Authors who defend physicalism from epistemic arguments by citing the nature of phenomenal concepts include: Loar, 1990, 1997, and 2003; Hill, 1997; Hill and McLaughlin, 1999; Tye, 1995, 1999, 2000, and 2003; Perry, 2001; Papineau, 2002 and 2007; Levin, 2007a; Balog, 2012; Diaz-Leon, 2008 and 2014; Elpidorou, 2013 and 2015b.

Address for correspondence: Department of Philosophy, University of Louisville, Louisville KY 40292, USA
Email: guy.dove@louisville.edu; andreas.elpidorou@louisville.edu

contingency arises because thinking about the connection between mental facts and physical facts involves the exercise of both physical and phenomenal concepts. But the exercise of those two kinds of concepts brings about a difference in introspective phenomenology: only the exercise of phenomenal concepts is thought to involve a distinctive phenomenologically-rich experience. It is precisely this difference in phenomenology – not the lack of a necessitation relation between the referents of the two types of concepts – that is assumed to give rise to the appearance of contingency.

Supporters of the PCS generally rely on intuitive psychological claims and distinctions to make their case. Our aim in this essay is to evaluate the PCS in light of recent empirical research on concepts. If it is true that mind-brain identity statements appear to be contingent, then psychology and cognitive science should help us to understand the nature of this appearance. When we look to cognitive science, though, a problem arises. A robust and growing body of evidence suggests that our concepts are often grounded in sensorimotor systems. On its face, this speaks against the explanation of the appearance of contingency offered by standard forms of the PCS (Shea, 2014). Specifically, it appears to be a mistake to insist that only the exercise of phenomenal concepts brings about a rich introspective phenomenology.

Even though it appears that standard versions of the PCS fail to hit their mark, we argue that it is possible to formulate a novel version of the PCS that is thoroughly in keeping with embodied cognition. The problem with standard versions is their assumption that the relevant distinction between phenomenal and physical concepts can be captured purely in terms of the presence (or absence) of phenomenal properties. We suggest that the employment of physical concepts involves a multimodal complexity that the employment of

phenomenal concepts lacks. The appearance of contingency in mind-brain identity statements can then be seen as a consequence of this phenomenological difference. Ultimately, it is the relative lack of a certain kind of phenomenological flexibility associated with the employment of phenomenal concepts that leads us to think that the referents of phenomenal concepts cannot be physical objects and events.

2. From Psychology to Metaphysics

In the concluding pages of *Naming and Necessity*, Saul Kripke famously advances an argument against mind-brain identity theories. Let us agree that ‘pain of type Φ ’ (hereafter abbreviated as ‘pain Φ ’) and ‘neural activity Ψ ’² are both rigid designators and that pain Φ , according to identity theorists, is identical to neural activity Ψ . The statement ‘pain Φ is neural activity Ψ ,’ if true, must be true necessarily. Yet the statement appears to be contingent: we can conceive of a possible world³ in which pain Φ occurs but there is no neural activity Ψ , and we can conceive of a possible world in which there is neural activity Ψ without the occurrence of pain Φ . This appearance of contingency is at odds with the purported metaphysical status of

² Many philosophers use the identity statement ‘pain is c-fiber firing’ as shorthand for the more general claim that pain is identical to some brain state or process. We avoid this locution because it is misleading. Not only is c-fiber firing neither necessary nor sufficient for pain experience, but this formulation suggests without argument that both pain (which is associated with different phenomenal properties such as stabbing, dull, etc. and comes in different varieties such as acute, chronic, neuropathic, psychogenic, etc.) and the relevant brain states or processes (which involve multiple cortical and subcortical systems) are inherently simple and one-dimensional. Our formulation is compatible with the likely complexity of both sides of the identity.

³ Our use of possible-worlds discourse leaves undecided many contentious philosophical issues including the semantic and logical structure of possible-worlds sentences and the ontological commitments of such a discourse. Such neutrality is intentional. Not only are our findings independent of how one interprets possible-worlds discourse but we also wish to reap the benefits of such discourse without incurring, at least at this point, any ontological costs. Our use of possible-worlds is thus similar to everyday use of mathematical, moral, or color discourse: more often than not, one employs such a discourse both effectively and profitably, without having to accept either a particular interpretation of such discourse or its ontological commitments.

the proposition expressed by the identity statement. If ‘pain Φ is neural activity Ψ ’ is true necessarily, then there can be no possible world in which pain Φ is not neural activity Ψ and in which neural activity Ψ is not pain Φ . Identity theorists thus owe us a story as to how an identity claim can appear to be contingent even though it is not. As Kripke puts it:

Someone who wishes to maintain an identity thesis [say, ‘ A is identical to B ,’ where ‘ A ’ names the sensation of pain and ‘ B ’ names a brain state] cannot simply *accept* the Cartesian intuitions that A can exist without B , that B can exist without A , that the correlative presence of anything with mental properties is merely contingent to B , and that the correlative presence of any specific physical properties is merely contingent to A . He must explain these intuitions away, showing how they are illusory (Kripke, 1980, p.148).⁴

The problem with the mind-brain identity thesis is that there seems to be no obvious way of explaining *away* the appearance of contingency (see also Kripke, 1971). Unlike other *a posteriori* necessary identity statements (e.g., ‘water is H_2O ’ or ‘heat is molecular motion’), the appearance of contingency in mind-brain identity statements is persistent.⁵

⁴ In the quoted passage, Kripke uses ‘ A ’ as the name for a *specific* sensation of pain, and not, as we do, as a name for a type of sensation.

⁵ Although Kripke’s argument was intended as an argument against identity theory, it can be easily turned into an argument against supervenience or metaphysical necessitation physicalism. Suppose that ‘ P ’ stands for the conjunction of all physical facts and laws about the world expressed in the fundamental vocabulary of a true and complete physical theory; ‘ I ’ stands for a ‘that’s all’ claim stating that what is expressed in P is the complete description of our world; ‘ T ’ stands for basic indexical information of the sort, ‘I am here’ and ‘It is now;’ and ‘ Q ’ stands for any true claim about phenomenal states. If either supervenience or metaphysical necessitation physicalism is true, then the conditional $PIT \supset Q$ must be necessarily true. But the conditional appears to be contingent: one can imagine a possible world in which PIT holds, but in which Q (say, ‘I am now in pain’) does not. If the conditional appears to be contingent, then proponents of supervenience or metaphysical necessitation physicalism, just like those of identity theory, need to respond to Kripke’s argument.

In recent years, many physicalists have offered a response to Kripke's challenge and something like a consensus has begun to surface. According to them, mind-brain identity statements should not be thought to be analogous to ordinary *a posteriori* identity statements of the sort 'heat is molecular motion,' for even though we can explain away the appearance of contingency in the latter case, the appearance of contingency in the former remains. Yet, this persistence of the appearance of contingency raises no insurmountable difficulties for physicalism. That is because proponents of physicalism can offer a physicalistically acceptable explanation of both the appearance of contingency and its persistency. Kripke's challenge is thus met not by explaining *away* the appearance of contingency, but by explaining why the appearance fails to go away.

In trying to account for the appearance and persistency of contingency, the following approach, which is integral to most versions of the PCS, has gained prominence. First, a distinction between two different ways of thinking about conscious experiences is drawn. Accordingly, one can think of experiences both *physically* and *phenomenally*. One thinks of experiences (one's own or others') physically if one thinks about them in terms of either their material constitution or their functional/behavioral profiles. In doing so, one picks out experiences as external, physical (or functional) properties, and does so via the use of what are often called 'physical concepts.'⁶ At the same time, one can also think of experiences in terms of their phenomenological character. In this case, one thinks of experiences from

⁶ For our purposes, what is crucial to note about physical concepts is that they permit us to conceptualize physical categories in a manner that is not restricted to one particular sensorimotor modality. The fact that physical concepts are such that they permit us to apprehend their referents from a multiplicity of modally distinct points of view underlies (at least partly) the claim that the referents of physical concepts are external or third-personal entities or properties. In other words, physical concepts, in light of the fact that they multimodal (in the sense specified above), are prime candidates of concepts that ought to figure in descriptions of how things objectively are (see Nagel, 1974, pp. 442f.) A more detailed explication of physical concepts is given in Section 5 and in our response to Objection 2 in Section 6.

within, so to speak, and in doing so one employs phenomenal concepts. Phenomenal concepts are the concepts that we use when, but arguably not only when, we introspectively notice or focus on the phenomenological character of our experiences. They refer to phenomenological properties (or qualities) and they do so in a first-personal and direct (non-relational) manner. Different proposals specifying the nature of these concepts can be found in the literature.⁷ However, as long as such accounts are enlisted in the service of physicalism, they must all hold that the referents of phenomenal concepts are ultimately physical. In other words, although phenomenal concepts may conceive of or present their referents phenomenally, they must still denote physical states or properties.

It is precisely on the basis of the distinction between physical and phenomenal concepts that many proponents of the PCS have found a way to respond to Kripke's challenge. More specifically, they have offered the following explanation for the appearance of contingency in mind-brain identity statements:

Difference in Introspective Phenomenology (DIP): Mind-brain identity statements involve both physical and phenomenal concepts. Entertaining such statements, therefore, requires the exercise of both physical and phenomenal concepts. But the exercise of those two different kinds of concepts brings about a

⁷ Some hold that phenomenal concepts are recognitional concepts that pick out their referents directly and that are individuated in terms of the possession of certain recognitional capacities (Loar, 1997; Tye, 2000; Carruthers, 2003). Others claim that phenomenal concepts are such that either they are partly constituted by the very phenomenological experience to which they refer, or their use involves versions of their referents (Papineau, 2002 and 2007; Chalmers, 2003; Block, 2006; Balog, 2012). Others argue that phenomenal concepts are indexical or demonstrative concepts and hold that their use involves something akin to an introspective 'pointing' ('this [kind of experience]') (Tye, 1995; Ismael, 1999; Perry, 2001; Levin, 2007a; Stalnaker, 2008; Schroer, 2010). Additional characterizations of the nature of phenomenal concepts, can be found in Sturgeon, 1994; Hill and McLaughlin, 1997; Hawthorne, 2002; Braddon-Mitchell, 2003; and Aydede and Güzeldere, 2005. For an account of the involvement of phenomenal concepts in introspective knowledge, see Gertler, 2001. And for an overview of phenomenal concepts, see Elpidorou, 2015b.

difference in introspective phenomenology. The exercise of phenomenal concepts typically involves a distinctive experience, viz., one that is similar or identical to the referent of the phenomenal concept deployed, whereas the exercise of physical concepts does not. It is precisely this difference in phenomenology that gives rise to the appearance of contingency. Example: Thinking about patterns of neural activity Ψ does not involve the same type of phenomenology that thinking about pain Φ involves. On account of this difference in phenomenology, we are misled to think that the concepts PAIN Φ and NEURAL ACTIVITY Ψ do not necessarily co-refer.

DIP can be traced back to Nagel's (1974, fn. 11) famous distinction between *sympathetic* and *perceptual* imagination. Note, however, that whereas Nagel's distinction is meant to explain the appearance of contingency in *imaginative* acts, DIP applies to ways of thinking about mind-brain identity statements that occur without the explicit engagement of imagination. Furthermore, Nagel's proposed model for explaining the appearance of contingency is often thought to require a distinction between two psychological mechanisms or faculties of the imagination (Doggert & Stoljar 2010, pp. 128-130). DIP requires no such distinction. Still, both DIP and Nagel's explanation of the appearance of contingency are premised on the existence of a difference in introspective phenomenology between thinking of or imagining mental states, on the one hand, and thinking of or imagining brain states, on the other.

Although a version of DIP can also be found in Lycan (1987, pp. 76-77), it is Loar (1990 and 1997) and Papineau (1993) that appear to be the first proponents of physicalism to have defended DIP in the form given above. For example, in his 'Phenomenal States,' Loar writes:

A phenomenal concept exercised in the absence of the phenomenal quality it stands for often involves not merely a recognitional disposition but also an image. And so, as a psychological state in its own right, a phenomenal concept – given its intimate connection with imaging – bears a phenomenological affinity to a phenomenal state that neither state bears to the entertaining of a physical-theoretical concept. When we then bring phenomenal and physical-theoretical concepts together in our philosophical ruminations, those cognitive states are phenomenologically so different that the illusion may be created that their references must be different. It is as though antiphenomenalist intuitions rest on a resemblance theory of mental representation, as though we conclude from the lack of resemblance in our phenomenal and physical-functional conceptions a lack of sameness in the properties to which they refer (1997, p. 302).⁸

Papineau's discussion of the 'antipathetic fallacy' reiterates Loar's diagnosis of the appearance of contingency (Papineau, 1993). In his *Thinking about Consciousness*, Papineau develops DIP even further:

[E]xercising a phenomenal concept will *feel* like having the experience itself. When you think imaginatively about a pain, or about seeing something red -- or even more, when you think introspectively about these experiences while having them – versions of these experiences themselves will be present in you...Now compare the exercise

⁸ A very similar passage can be found in the 1990 version of Loar's essay, see p. 90. The main difference between the two passages is that in the 1990 version Loar states that the respective deployment of the two types of concepts brings about two different psychological states without specifying that the main difference between them is one of phenomenology. Even so, the ensuing statement makes it clear that even in 1990 Loar had in mind a model that accounts for the appearance of contingency that is pretty close (if not identical) to DIP.

of some material concept which might refer to just the same conscious state. No similar feelings there...So there is an intuitive sense in which exercises of material concepts 'leave out' the experience at issue. They 'leave out' the pain and the technicolour phenomenology, in the sense that they don't activate or involve these experiences. Now, it is all too easy to slide from this to the conclusion that, in exercising material concepts, we are not thinking about the experiences themselves (2002, p.170).

There is a sense in which material concepts do 'leave out' the feelings. They do not use the experiences in question—they do not activate them, by contrast with phenomenal concepts, which do activate the experiences... This then offers a natural account of the intuitive feeling that conscious experiences must be distinct from any material states. This feeling arises because we have a special way of thinking about our conscious experiences – namely, by using phenomenal concepts. We can think about our conscious experiences using concepts to which they bear a phenomenal resemblance. And this then creates the fallacious impression that other, material ways of thinking about those experiences fail to refer to the felt experiences themselves (p. 171; compare this to Papineau, 1993 but also to Papineau, 2007, §4).⁹

⁹ In the quotes from Loar and Papineau one could perhaps discern two distinct explanations of the appearance of contingency. One is simply DIP; the other is DIP *plus* the claim that only the employment of phenomenal concepts bears a certain resemblance to their referents. In what follows, we do not address the second, extended version of DIP for two reasons. First, we are skeptical that the appearance of contingency can be accounted in terms of resemblance. Second, we do not think that an appeal to resemblance is necessary. We shall demonstrate how a revised account of DIP can explain the persistency of the intuition that phenomenal concepts and physical concepts do not co-refer.

In addition to Nagel (1974), Lycan (1987), Loar (1990) and (1997), and Papineau (1993) and (2002), other proponents of physicalism have thought that introspective phenomenology is crucial in offering a response to Kripke's challenge (see, e.g., Tye, 1999, p. 712f. and 2003, p.100; §17; Balog, 2012, pp. 29-30; cf. Hill, 1997; Sturgeon, 1994, pp. 231-232; Levin 2007b).¹⁰ Whether DIP (or something like it) is successful in explaining the appearance of contingency matters a great deal. Suppose that DIP is indeed accurate, then not only do proponents of physicalism have an explanation of the appearance of contingency in mind-brain identity statements, but also the offered explanation is one that is congenial to physicalism.¹¹ On the contrary, if DIP turns out to be incapable of explaining the appearance

¹⁰ One might wonder whether the demonstrative account of phenomenal concepts is also compatible with DIP. The answer to that question depends on how one characterizes demonstrative phenomenal concepts. It is customary to draw a distinction between two different characterizations of demonstrative phenomenal concepts: thin vs. thick (see, e.g., Levine, 2001, p. 82ff.; Levin, 2007a; Schroer, 2010; cf. Chalmers, 2007, p.178; Levine, 2007). According to the thin characterization, phenomenal concepts do not furnish us with a substantial grasp of their referents. As Levine puts it: such concepts 'are pointers we aim at our internal states with very little substantive conception of what sort of thing we're pointing at—demonstrative arrows shot blindly that refer to whatever they hit' (Levine, 2001, p. 84). On the contrary, a thick characterization of phenomenal concepts holds that the use of phenomenal concepts does provide us with a fairly good grasp of what it is like to have certain experiences. Such a grasp is intimately tied to an introspective phenomenology: we are able to form a substantive conception of those experiences because those experiences are introspectively presented to us. Consequently, a thick characterization is compatible with DIP and proponents of this account can make use of DIP in an attempt to explain the appearance of contingency. However, a thin characterization does not appear to be compatible with DIP. If demonstrative phenomenal concepts are taken to be empty pointers, then the introspective phenomenology required by DIP would be absent. In this essay, we will not be concerned with a thin demonstrative account of phenomenal concepts. Such an account has been met – rightly so, we believe – with resistance. Indeed, it has been argued that such an account cannot be a characterization of phenomenal concepts for it fails to account for the distinctive nature of phenomenal concepts. See, e.g., Levine, 2007a; Chalmers, 2003, and 2007; Levin 2007, p. 91. We are grateful to an anonymous referee for pressing us to address the relationship between DIP and the demonstrative account of phenomenal concepts.

¹¹ Citing a difference in introspective phenomenology is only the first step in providing a response to epistemic arguments against physicalism (Chalmers, 1996; Jackson, 1984 and 1986). Typically, proponents of physicalism who appeal to the nature of phenomenal concepts also hold that phenomenal concepts are conceptually isolated from physical or functional concepts. For example, the concepts PAIN Φ and NEURAL ACTIVITY Ψ are conceptually isolated insofar as one cannot deduce on the basis of *a priori* reasoning alone that the two concepts co-refer. It is on account of this conceptual isolation claim that proponents of physicalism can maintain that an epistemic gap between phenomenal truths and physical truths is not indicative of a corresponding ontological gap. Not only can a physical property be subsumed under more than one concept, but also, and more importantly, the fact that we cannot determine *a priori* that such concepts pick out the same entity does not entail that they do not.

of contingency, then one of the most widely accepted ways of responding to Kripke's challenge has to be given up. Even if this result does not imply the falsity of physicalism, it is certainly a strike against physicalism.

Our objective in this essay is to evaluate DIP in light of recent empirical research on concepts. If it is true that mind-brain identity statements appear to be contingent, the appearance of contingency is first and foremost a *psychological* fact: it is a fact about how the human mind operates when it entertains certain statements. But if it is a psychological fact, then psychology and cognitive science are poised to help us to understand the nature of this appearance of contingency and to evaluate whether DIP offers the correct explanation. Given the importance of DIP, it is surprising that proponents of physicalism have generally advanced it on intuitive grounds and largely without consulting empirical findings regarding the nature of conceptual representations.

We are not alone in recognizing this omission. Shea (2014) offers an attack on DIP that rests on the claim that empirical psychology fails to support the very idea of a meaningful phenomenological distinction between physical concepts and phenomenal concepts. In particular, he makes an appeal to the large body of evidence suggesting that our concepts are often embodied and thus grounded in sensorimotor systems. Roughly put, he argues that conceptual embodiment excludes DIP because physical concepts also contain experiential representations and their deployment can bring about a certain type of introspective phenomenology. Intrigued by this argument and somewhat surprised by its conclusion, we endeavored to examine the relationship of embodied cognition to DIP. What we found was ultimately more complicated and, to our minds, more interesting than we initially expected. While it is true that embodiment threatens most traditional formulations of DIP that focus on the special features of phenomenal concepts, it is possible to formulate a

new version of DIP that is thoroughly in keeping with embodied cognition and focuses on the features of physical concepts. In sum, a close consideration of the empirical evidence leads to a novel and heretofore unrecognized version of the PCS.

The paper will proceed as follows: In section 3, we review a number of findings that implicate the involvement of perceptual and motor representations in cognitive tasks. In section 4, we show how such findings, at least on their face, would seem to undermine DIP. The lessons that one can draw from embodied cognition, however, are not entirely negative. Instead, embodiment suggests a way of revising DIP. We present this revised account of DIP in section 5 and defend it from objections in section 6.

3. Embodiment and Conceptual Grounding

Concepts are important building blocks of human cognition. Cognitive scientists view them as bodies of knowledge that are stored in long-term memory and used in higher cognitive activities such as categorization, decision making, and language processing.¹² Traditionally, researchers have assumed that concepts were handled by an amodal representational system that was independent of the modality-specific systems associated with our experiences of the world (Anderson, 1983). Recently, though, this assumption has been challenged and there has been a general movement away from a disembodied view of concepts towards an embodied one in which they are significantly grounded in sensory and motor systems.

¹² Machery (2009) points out that, although philosophers and psychologists generally assume that they are talking about the same thing when they use ‘concepts,’ it may very well be the case that they are talking past each other. There is good reason to think that they asking different questions and seeking to explain different phenomena. We are not going to take a stand on this issue. Our contention is merely that some of the empirical research on this subject excludes standard versions of DIP but also supports a new embodied and grounded version.

A diverse and ever increasing body of evidence supports the thesis that action, emotion, and perception systems play an instrumental role in many types of conceptual processing (for extensive reviews see Barsalou, 2008; Fischer & Zwaan, 2008; Kemmerer, 2010). Because a full accounting of this evidence would take too long, we will limit ourselves to a brief description of some representative behavioral, brain imaging, and neuropsychological studies that provide an initial indication that our concepts are tightly intertwined with sensorimotor systems. For the sake of space and ease of presentation, we will focus on perceptual and action systems.

A number of behavioral studies implicate perceptual systems in semantic tasks. To give an example, Pecher, Zeelenberg, and Barsalou (2003) found a modality-switching cost associated with a property verification task. Participants verified verbally expressed facts involving one modality (such as the fact that *leaves rustle*) more rapidly after verifying a fact involving the same modality (such as the fact that *blenders make noise*) than after verifying a fact involving a different modality (such as the fact that *cranberries are tart*). More recently, van Dantzig, Pecher, Zeelenberg, & Barsalou (2008) found a similar modality-switching cost when participants alternated between a perceptual detection task and a property verification task.

Neuroimaging data provide further evidence of perceptual grounding. Martin, Wiggs, Ungerleider, and Haxby (1996), for example, compared neural responses in a naming task to line drawings of animals and tools. In addition to shared areas of activation, the animal drawings selectively activated early visual areas and the tools selectively activated premotor areas. Some caution is warranted because subsequent studies have generated inconsistent results with these categories (Gerlach, 2007). Fortunately a number of studies have found links between conceptual processing and activation in sensory areas. For instance, reading

odor-related words (e.g. *cinnamon*, *garlic*, and *jasmine*) elicits increased activation in the primary olfactory cortex relative to neutral control words (Gonzalez et al., 2006). In a carefully constructed study combining functional magnetic resonance imaging (fMRI) and recordings of event-related potentials (ERP), visual words with acoustic conceptual features activated auditory brain areas approximately 150ms after stimulus presentation (Keifer, Sim, Herrnberger, Grothe, & Hoenig, 2008). The rapidity and selectivity of this response suggests that is automatic and unconscious. Further support for conceptual grounding in perception systems is provided by clinical studies indicating that damage to perceptual areas can lead to conceptual deficits (Simmons & Barsalou, 2003). Damage to the somatosensory cortex, for example, may impair the visual recognition of facial expressions (Adolphs, Damasio, Tranel, Cooper, & Damasio, 2000) and damage to the left auditory association cortex may impair the perceptual and conceptual processing of sounds linked to everyday objects (Trumpp, Kleise, Haarmeier, & Kiefer, 2013).

Behavioral studies also implicate action systems in cognitive tasks. Glenberg and Kaschak (2002) uncovered an ‘Action-Sentence Compatibility Effect.’ Reaction times in a sensibility task decreased when response direction (a button pressed either away/toward the body) and the implied direction of action sentences (e.g. *Andy gave you the pizza/You gave Andy the pizza*) were congruent. Borghi, Glenberg, and Kaschak (2004) found a similar effect when participants were instructed to decide whether or not a word that followed a sentence named a part of the object mentioned in the sentence. Half of the selected parts occurred in the upper-portion of the object and half occurred in the lower-portion of the objects. Responses were faster when the direction of the key press movement (upward or downward) matched the part location.

One of the more striking examples of research implicating the motor system in semantic processing involves effector-specific activations in motor areas during language tasks (Kemmerer, 2010; Willems & Casasanto, 2011). Scorolli and Borghi (2007), for instance, found such an effect when they asked their participants to judge the sensibility of simple sentences containing a verb that referred to an action typically performed with the mouth, hands, or the feet. Subjects responded by pressing a pedal or speaking into a microphone. Response times with the microphone were fastest with ‘mouth-sentences,’ and response times with the pedal were fastest with ‘foot-sentences.’ This somatopic specificity fits with the findings of a number of brain imaging studies. Hauk, Jonstrude, and Pulvermüller (2004) had participants read similar action words and each type produced increased activation in the cortical regions associated with performing the relevant movements. Increased activation in effector-specific premotor and motor areas have been observed when participants heard action-related sentences (Tettamanti et al., 2005). Right- and left-handers have exhibited increased activation in the premotor areas that were contralateral to their dominant hands (Willems, Hagoort, & Casasanto, 2010). Buccino et al. (2005) demonstrated that listening to action-related sentences affected activity in the motor system. Motor evoked potentials (MEPs) recorded from hand and foot muscles were selectively modulated by hand-related and foot-related action sentences respectively. Pulvermüller, Hauk, Nikulin, and Ilmonemi (2005) carried out a repeated Transcranial Magnetic Stimulation study in which they weakly stimulated different parts of the motor system while participants performed a lexical decision task on arm- and leg-related action words. Response times increased with arm-related words when there was weak stimulation of left hemisphere areas associated with arm-movement and with leg-related words when

there was weak stimulation of motor areas associated with leg-movement. Response times were not modulated in a control condition with a faux stimulation.

Admittedly, there have been some criticisms of embodied cognition. These fall into three broad types. The first questions the relative scope of the role played by sensorimotor systems in our concepts. Some have pointed out that most of the evidence for embodiment involves concrete concepts (Chatterjee, 2010; Dove, 2009; Mahon & Caramazza, 2008; Weiskopf, 2007) and suggest that it is reasonable to doubt the inference that all concepts are equally embodied. The second proposes that the engagement of the sensorimotor systems is epiphenomenal, perhaps the result of something like spreading activation (Mahon & Caramazza, 2008; Weiskopf, 2007). The third questions the methodological assumptions behind this research. For example, it is often pointed out that many of the studies merely indicate a correlation between sensorimotor activation and conceptual processing and thus fail to exclude alternative explanations for this activation (Machery, 2007; Mahon, 2015).

Clearly, these issues are substantial and resolving them is beyond the purview of this essay. We offer some initial responses to each, though, in order to establish the plausibility of our approach and show that it does not require adopting an overly radical form of the embodiment thesis. We contend that, despite the existence of controversies surrounding how to properly characterize embodiment (Meteyard, Cuadrado, Bahrami, Vigliocco, 2012; Shapiro, 2011), the claim that concepts are grounded to some significant extent is well supported. With respect to the question of scope, we suggest that a reasonable interpretation of the extant evidence is that it supports the proposition that many concepts (particularly concrete ones) are dependent on experiential systems¹³ (Dove, 2011; Louwerse & Connell,

¹³ Following a convention of the embodied cognition literature, we are going to use the term *experiential systems* as shorthand for the action, emotion, and perceptual systems associated with our

2011; Markman & Brendl, 2005). With respect to the question of causal relevance, we suggest that the rapidity and apparently automatic nature of the observed effects throws into doubt the claim that they are epiphenomenal (Keifer, Sim, Herrnberger, Grothe, & Hoenig, 2008; although for a contrary view see Mahon, 2015). It is also worth noting that some of the evidence outlined above, such as that provided by neuropsychological case studies and TMS interventions, more directly implicates a causal role for sensorimotor systems. Finally, with respect to the question of methodology, we suggest that an embodied approach is supported by a defeasible inference to the best explanation. As should be the case with any empirical theory, time will tell.

In the end, the notion that some concepts – importantly, some *non-phenomenal* concepts – are grounded is supported by a robust body of evidence (for reviews of this evidence see Fischer & Zwaan, 2008; Kemmerer, 2010; Kiefer & Pulvermüller, 2012; Meteyard, Cuadrado, Bahrami, Vigliocco, 2012). Although the theoretical implications of conceptual grounding are not fully settled, there is good reason to think that experiential representations employed during our interactions with the world are often re-activated during many cognitive tasks (Barsalou, 2008; Gallese, 2005; Hesslow, 2012). This re-activation appears to be fast and automatic. Different theories may provide different accounts of the functional role of this engagement of perceptual, motor, and emotion systems – for example, viewing it in terms of simulations (Barsalou 1999), action schemas (Glenberg, 1997), or the dynamic application of sensorimotor skills (van Elk, Slors, & Bekkering, 2011) – but there is a widespread recognition that such engagement is central to our concepts.

experience of the world. *Experiential representations* and *experiential processes* are elements of these systems. Some of these will have associated phenomenal properties but some will not. Roughly put, we are leaving room for unconscious aspects of experience.

Few would deny that we often have related phenomenal experiences when employing physical concepts. Thinking about physical objects and events will often elicit mental imagery associated with those objects and events. Standard forms of the PCS generally presume that this phenomenal experience is in some significant sense external to the employment of the concept. An embodied perspective in which our concepts are grounded in sensorimotor systems throws this presumption into question. After all, phenomenal experience is a fundamental feature of perception and action. The relevant multimodal imagery is therefore part of – not separate from – the exercise of the concepts. An embodied account thus connects the phenomenology associated with physical concepts to our ability to think with them.

4. An Elusive Distinction?

The upshot of the last section is that our physical concepts are likely to be at least partially grounded in experiential systems. This creates a problem for supporters of DIP: If the exercise of physical concepts generally involves these systems, then there may be no clear distinction between them and phenomenal concepts. In other words, the purported specialness of phenomenal concepts appears to vanish into thin air.

Recognizing this problem, Shea (2014) develops an argument against proponents of the PCS who employ the purported difference between the exercise of phenomenal and physical concepts in accounting for the appearance of contingency in mind-brain identity statements. Objecting to DIP, Shea contends:

This tactic fails because the phenomenological difference between exercise of phenomenal and physical-functional concepts relied on to date is empirically unsustainable; and there are reasons to doubt that there is any relevant difference in the phenomenology of the exercise of the two types of concepts that could do the required explanatory work. My objection has two strands. First, exercise of physical-functional concepts can carry perception-like phenomenological properties. Second, exercise of phenomenal concepts need not (p. 559).

He then goes on to conclude:

Caught between these two strands, it is hard to see that there could be a general phenomenological difference between the exercise of phenomenal and physical-functional concepts (p. 560).

The thrust of the argument is clear, without a general phenomenological difference, one cannot explain the illusion of contingency in terms of phenomenological properties.

Given the potential importance of this argument, it should be examined carefully. According to Shea, research suggests that the employment of physical concepts may contain phenomenological properties (insofar as such an employment would give rise to a phenomenologically-rich introspective state) and that the employment of so-called phenomenal concepts may not. We take the first claim to be a reasonable extension of an embodied and grounded approach to concepts. For it to be false, the experiential representations responsible for the processing of physical concepts would have to *never* be conscious. This strikes us as unlikely and unsupported by the relevant empirical findings.

The second claim requires more discussion. The empirical evidence supports the notion that experiential systems are automatically engaged in conceptual tasks. Supporters of embodiment point to this automaticity as evidence that these representations are functionally relevant to conceptual processing and not epiphenomenal. Where is the empirical support for the claim that phenomenological properties are not required? That is, what is the evidence that supports the claim that the exercise of phenomenal concepts does not have to render *conscious* some of the experiential representations involved in these concepts? Shea does not cite any but, instead, seems to think that such a claim is uncontroversial. He holds that by entertaining thoughts such as ‘I am not currently having a red sensation’ one deploys the phenomenal concept RED SENSATION¹⁴ without at the same time instantiating the property to which the concept refers.¹⁵ One might object to Shea’s claim by insisting that no deployment of a phenomenal concept is such that it can occur without conscious access to the relevant experience. We are skeptical of the success of such a response, however, because it renders phenomenal concepts too special. Given that most researchers hold that concepts can be unconsciously exercised, the possible absence of perception-like phenomenological properties with phenomenal concepts follows almost by definition. Certainly, a fair amount of work would need to be done to justify the claim that a particular

¹⁴ Phenomenal concepts are about conscious states. Given that realism and externalism are active topics in the philosophy of color (for a thorough discussion of the theoretical terrain see Cohen 2009), it would be presumptuous to claim that RED is a phenomenal concept. For that reason, we will discuss the phenomenal concept, RED SENSATION.

¹⁵ The thought, and ultimately objection to the PCS, that phenomenal concepts can be deployed without instantiating the properties to which they refer does not originate in Shea, 2014. Papineau (2006) discusses this objection and attributes it to Tim Crane and Scott Sturgeon. Block 2006 attributes the same objection to Kirk Ludwig.

concept – let alone an entire class of concepts – must always be accompanied by specific mental imagery.¹⁶

We do not challenge either of Shea's central claims. Does this mean that we agree that the PCS cannot work? No. There are two weaknesses in Shea's argument. The first weakness is that, contrary to Shea's formulation of the PCS, it does not require the existence of a *general* phenomenological difference between physical and phenomenal concepts. All that is needed is a specific phenomenological difference that emerges in the context of the judgment of contingency. After all, the relevant explanandum of DIP is this judgment and not the general character of phenomenal concepts. The important question, then, is whether the exercise of the relevant concepts in the context of the contemplation of contingency leads to a significant phenomenological difference or not.¹⁷ Significantly, this contemplation is likely to involve a considerable amount of conscious reasoning. Thus, even if we accept that the employment of phenomenal concepts does not necessarily give rise to an associated introspective phenomenology, the employment of phenomenal concepts in the context of thinking about mind-brain identity statement will very likely yield an introspective phenomenology. The second weakness is that he assumes that the purported phenomenal difference is limited to the mere absence/presence of perception-like phenomenal properties. However, there may be alternative ways of making the relevant distinction. For instance, a quantitative or qualitative distinction defined over phenomenal properties may be possible. Below, we outline and defend such a distinction.

¹⁶ For additional reasons against the contention that the exercise of phenomenal concepts necessarily involves conscious awareness of the experience of their referents, see McDonald, 2004; Ball, 2009; and Tye, 2009.

¹⁷ A close examination of the Loar and Papineau quotes provided above as examples of DIP reveals that both restrict their claims to circumscribed applications of the relevant concepts. Loar explicitly limits his claims to the context of 'philosophical ruminations' and Papineau limits his claims to the context of thinking 'imaginatively.'

To recap, evidence of conceptual embodiment appears to throw into question the notion that there is a general phenomenological distinction between physical and phenomenal concepts. If such a distinction is unsustainable, then standard attempts to explain the appearance of contingency in mind-brain identity statements using DIP will not work. However, the situation is not as hopeless as it may seem at first. The PCS can be rescued by providing an account that identifies an introspective phenomenal difference that emerges in the context of contingency judgments and involves more than the mere presence of experiential properties.

5. DIP Reformulated

If embodied theories of cognition are even partially correct, then the neural resources generally used for perception, action, and emotion can be recruited when we entertain thoughts about the world around us. As noted above, such embodiment would exclude any distinction between phenomenal and physical concepts that relies on the supposed absence of phenomenological properties during the employment of physical concepts. The question at hand is whether or not it is possible to draw a more sophisticated distinction between the introspective phenomenology that is associated with the employment of the two types of concepts – at least within the specific context of the sort of philosophical deliberation involved in generating contingency judgments. We think that such a distinction can be drawn.

A core idea of an embodied approach to cognition is that the employment of concepts typically involves the simultaneous engagement of multiple sensorimotor and affective neural systems. In other words, embodied cognition is committed to the *de facto*

multimodality of our concepts. The following passage expresses a fairly standard embodied view of conceptual structure:

A concept is an aggregated memory of aspects of experience that have repeatedly received attention in the past, and incorporates perceptual, motor, affective, introspective, social, linguistic and other information. For instance a concept of *dog* could potentially include a host of perceptual-motor information, possibly including visual information of the color and shape of a dog, tactile information regarding the feel of a dog's coat, olfactory information of the smell of a dog, auditory information of a dog's bark, motor information about patting a dog, social information about the status of dog's in human households, along with positive or negative affective valence depending one's experience with dogs in the past. Any time the word 'dog' is encountered, a subset of these aspects will be retrieved to suit the task at hand. (Lynott & Connell, 2010, p. 2)

From a general embodied perspective, the employment of a concept in a particular situation involves bringing experientially derived information that is stored offline to bear on a current, online cognitive task. What separates this approach from the traditional one (where online processing is handled by a functionally independent amodal symbol system) is the claim that the representations employed in our concepts are fundamentally grounded in our modality-specific interactions with the environment we inhabit.¹⁸ Online cognitive processing

¹⁸ Admittedly, all of the information outlined above could be encoded in an amodal representational system. This means that we cannot categorically rule out a traditional symbolic account (Machery, 2007). We believe, though, that the brain imaging and neuropsychological evidence outlined above favors the view that much of this information is encoded in representations that are indigenous to specific sensorimotor and affective neural systems.

involves the selective engagement of experiential states and which representations are employed at any given moment will depend in large part on the situated context and the relevant task. Thinking about dogs, for instance, can involve visual representations, olfactory representations, auditory representations, and even touch representations. On account of the different types of representations involved with the concept DOG, the concept DOG is said to be multimodal. Indeed, most of our concepts are multimodal in precisely this sense: not only do they encode a rich array of experientially derived information (information that was derived from more than one sense modality), but also their employment involves the simultaneous and selective engagement of multiple sensorimotor and affective neural systems.¹⁹ Physical concepts are particularly likely to be multimodal in their realization. After all, the presupposition is that they refer to external objects and events, which can be experienced in multiple ways. In fact, concepts that refer to external objects and events have to be multimodal. By their very nature, the referents of those concepts are ones that permit our multimodal interaction with them.

It is important to recognize that a commitment to conceptual grounding does not require a commitment to the universally quantified claim that all realizations of our concepts are multimodal. Nothing in the theory excludes unimodal realizations. Indeed, even though concepts are *generally* multimodal, phenomenal concepts are likely to be an exception to this generalization. By definition, these concepts are about singular experiences such as seeing red and feeling pain. These experiences are in an important sense unimodal. In other words, unlike concepts that refer to external objects or events, which can be experienced in multiple

¹⁹ Within the embodied cognition literature, there is an active debate concerning the status of abstract concepts such as JUSTICE, ODD NUMBER, and ELECTRON. Some contend that these are fully embodied (Gallese & Lakoff, 2005; Prinz, 2002; Wilson-Mendenhall, Simmons, Martin, & Barsalou, 2013) and others suggest that they may require multiple types of representations (Borghi & Cimatti, 2009; Dove, 2009; Louwerse, 2011). Both of these responses are compatible with our embodied version of DIP, which focuses on phenomenological flexibility.

ways, there is typically only one way to experience the referents of phenomenal concepts. The phenomenal concept RED SENSATION, for example, engages the visual system. Putting aside cases of synesthesia (which we discuss below in the objections and replies section), we neither touch, nor hear, nor smell, nor feel our red sensations. Unlike physical concepts, phenomenal concepts encode modality specific information, and, crucially, their employment activates modality specific neural systems.

One challenge faced by our approach is the existence of an ongoing controversy concerning how to properly individuate sensory modalities. Some philosophers defend a sparse, moderate view of the senses that lines up roughly with our folk psychological preconceptions and others defend more fine-grained view that identifies a greater number of individual senses. In part, this debate is driven by the need to develop a neuroscientifically tractable conception that can be applied comparatively to non-human sensory systems (Keely, 2002). It is also driven by a recognition that the various means by which scientists and philosophers attempt to individuate sensory modalities may not converge on a single solution to this problem (Macpherson, 2011). Our intention is to appeal to a notion of sensory modality that is tied to unified perceptual experiences while recognizing that other ways of individuating the senses may be useful and give different results. This potential mismatch has seemed problematic in two types of cases: instances where there are cross-modal illusions created by the influence of one modality on another (O’Callaghan, 2008) and instances where a unified experience seems to be the result of coordinated operations in multiple senses (Fulkerson, 2011). A good example of the latter is the experience of flavor when eating food (Fulkerson, 2014). This experience appears to depend on aroma, taste, texture, and even temperature; thus, it can be meaningfully described as multisensory. While

the existence of cross-modal illusions and multisensory experiences poses important challenges for theories of the senses, our approach can handle both of these cases.

In developing the distinction between multimodal and unimodal concepts, what is crucial for our purposes is the fact that physical concepts display a kind of flexibility that phenomenal concepts lack. Thinking with physical concepts is flexible insofar as we can think of the referents of those concepts using a number of modally distinct representations. Furthermore, and rather importantly, no particular modality seems to enjoy an inherent privilege over the others: that is, there are a number of (modally) different ways of thinking about the referents of physical concepts. Such flexibility however seems to be absent in the case of phenomenal concepts for they do not permit us to think of their referents in modally distinct ways. We still have to think of the referents of phenomenal concepts in a particular way. And that is the case, even if some experiences are multisensory. In the end, we are using the term ‘unimodal’ as a shorthand for a kind of experiential specificity – one that can be associated either with phenomenologically unified experiences in one sensory modality (as in the case of seeing red or hearing middle C) or with phenomenologically unified ‘multisensory’ experiences (as in the case of flavors).

Ultimately, what we want to suggest is that it is possible to offer an embodied version of DIP. Recall the fundamental idea behind DIP: ‘When we then bring phenomenal and physical-theoretical concepts together in our philosophical ruminations, those cognitive states are phenomenologically so different that the illusion may be created that their references must be different’ (Loar, 1997, 302). Originally, Loar and others thought that the cognitive states involving phenomenal concepts were phenomenologically different from those involving physical concepts insofar as only the former involved a rich introspective phenomenology. As we have seen, evidence from cognitive science suggests that

phenomenological properties may also be involved in the employment of physical concepts as well. However, this does not mean that there is not a significant phenomenological difference between the cognitive states associated with the employment of the two types of concepts. The difference lies in the fact that phenomenal concepts are phenomenologically circumscribed whereas physical concepts are phenomenologically open and flexible.

When we carefully consider a conscious experience, say, the experience of seeing red, we think of it unimodally.²⁰ However, when we think of neural stimulation, we think of it multimodally. The employment of a physical concept has a multimodal complexity that is lacking from the employment of a phenomenal concept. The appearance of contingency in mind-brain identity statements appears then to be a straightforward consequence of the phenomenological difference involved in the employment of the two types of concepts. The idea here is simple: we have come to associate multimodality with physical objects and events. When this multimodality is absent however from our employment of phenomenal concepts, it is natural for us to think that the referents of phenomenal concepts cannot be physical objects and events. Consequently, it is natural for us to think that phenomenal and physical concepts do not co-refer.

Our account builds upon a series of previous attempts to offer an explanation for the persistency of the appearance of contingency in mind-brain identity statements by utilizing features of the concepts involved in those statements. Although our account is consistent with the overall approach of such attempts, what we offer here differs markedly from such accounts. First, we do not insist that the employment of physical concepts fails to

²⁰ Even if our natural tendency is to think of the experience of seeing red in a multimodal fashion (including, perhaps, an affective dimension), the particular task of judging contingency requires filtering out these factors just as thinking about the shape of a pug requires filtering out texture, color, smell, and sound. In other words, this selectivity is entirely consistent with an embodied approach to concepts. For a further discussion of these issues see our discussion of objections and replies below.

have an associated phenomenology. In fact, we have shown that such a contention runs in the face of a robust and diverse body of evidence from the cognitive sciences. Second, we hold that even though it is possible for the employment of both types of concepts to have an associated phenomenology insofar as the employment of both activates sensorimotor neural mechanisms, there is still an important difference in their associated phenomenology. On account of this difference, it is tempting to think that the two types of concepts do not co-refer. Finally, previous attempts of accounting for the persistence of the appearance of contingency have excessively focused on the nature of phenomenal concepts. As a consequence, they failed to take sufficient notice of the multimodal representations that are associated with the deployment of physical concept. Such an oversight, we contend, misled theorists to think that only phenomenal concepts have an associated introspective phenomenology. Once we allow that physical concepts also have an associated introspective phenomenology, another way of accounting for the appearance of contingency makes itself evident. One can account for the appearance of contingency by noting the contrast between the multimodal character of physical concepts and the unimodal character of phenomenal concepts.

6. Objections and Replies

We anticipate four main objections to the account of the appearance of contingency that we have offered. In this section, we present these objections and offer rejoinders.

Objection 1. The unimodal-multimodal difference does nothing to show that phenomenal concepts and physical concepts co-refer.

Reply. Our account is not supposed to demonstrate that phenomenal concepts refer to physical properties: the aim of the paper is neither to provide a positive argument for the veracity of physicalism nor to respond to conceivability arguments against physicalism. What the offered account aims to provide is *simply* an explanation of a purely psychological phenomenon, one that has been thought to have important metaphysical ramifications. All that we are offering, in other words, is a plausible and empirically-informed explanation of the observation that mind-brain identity statements appear to us to be contingent. For present purposes, a demonstration of the necessary status of such statements is neither given nor needed. If phenomenal concepts and physical concepts do in fact co-refer, as physicalism requires that they do, then there must be a psychological story to be told as to why the two appear not to co-refer. This essay is telling precisely that story. And although such a story, at least by itself, does not suffice to defend physicalism, it is still a necessary part of a broader account that could rescue physicalism from epistemic arguments.

Objection 2. The unimodal-multimodal difference does not account for the appearance of contingency.

Reply. The objection aims to demonstrate that merely noting a contrast between the multimodal character of physical concepts and the unimodal character of phenomenal concepts does not amount to an explanation of the observation that mind-brain identity statements appear to be contingent. The objection thus fits with a general criticism of the PCS, which claims that the presence of a phenomenological distinction fails to adequately explain the appearance of contingency (Doggett & Stoljar, 2010). Before responding to this

objection it is important to clarify what it means to provide such an *explanation*. As mentioned above, explaining the appearance of contingency is not tantamount to showing something about the metaphysical status of mind-brain identity statements. To explain the appearance of contingency is to provide a purely psychological account that makes it *plausible* that one will think – when one entertains a mind-brain identity statement and considers its modal status – that the statement is contingent. But we have precisely offered such an account. When one thinks about the modal status of a mind-brain identity statement, one is employing, at the same time, both phenomenal concepts and physical concepts. The joint employment of these concepts leads to an introspectively ‘perceived’ or ‘noticed’ contrast between the characters of the two types of concepts. On account of this contrast, one finds it natural to conclude that the two types of concepts do not co-refer.

It is crucial to note that our explanation does not amount *simply* to the claim that the appearance of contingency is the result of the employment of two types of concepts. We also offer a reason why such a joint employment is responsible for the appearance of contingency. A consequence of the multimodality of physical concepts is that no particular modality is essential to their realization. Indeed, a basic assumption among embodied theories of concepts is that sensorimotor systems are selectively engaged on any given occasion due to the context and the task involved. For instance, sound, shape, and movement but not color and touch might be engaged when trying to categorize something running across the yard. Phenomenal concepts do not enjoy this sensorimotor flexibility, particularly within the context of philosophical rumination. Indeed, they exhibit sensorimotor rigidity. We suggest then that the associated phenomenological difference – the ability to conceptualize physical categories in a flexible manner and the inability to conceptualize phenomenal concepts this way – gives rise to the appearance of contingency.

It is this phenomenological difference that leads one to conclude that the two types of concept do not co-refer. If so, then the appearance of contingency arises from the specific character of phenomenal and physical concepts and not from the mere act of combining distinct types of concepts (cf. Doggert & Stoljar, 2010).

Lastly, the offered explanation of the appearance of contingency is, at least in broad strokes, in agreement with the explanation offered by DIP. Thus, one cannot think that DIP provides a plausible explanation of the appearance of contingency and yet deny that our account does the same. In other words, proponents of the PCS who wish to account for the appearance of contingency in mind-brain identity statements should give up the standard formulation of DIP and accept instead our embodied variant of it. If one is antecedently committed to physicalism, then it is very tempting to try to deal with Kripke's objection by providing a psychological explanation of the appearance of contingency. Our account not only offers a psychological – and thus physicalistically acceptable – explanation of Kripke's observation, it also offers one that is in line with recent work on embodied cognition.

Objection 3. Phenomenal concepts are not unimodal.

Our explanation of the appearance of the contingency is premised on the claim that phenomenal concepts are unimodal. But are they? There are different ways in which one can try to motivate the claim that phenomenal concepts are not unimodal. Before we consider some of those ways, it is important to clarify two views of phenomenal concepts, both of which are congenial to our purposes. The first view treats phenomenal concepts as *essentially* unimodal concepts. Accordingly, the employment of a phenomenal concept is such that necessarily includes only representations that are of the same sensory modality to that of the

referent of the concept. For example, the employment of the phenomenal concept RED SENSATION is such that necessarily invokes (consciously or unconsciously) a set of visual representations that are related to the experience of seeing red. The second view of phenomenal concepts does not treat phenomenal as essentially unimodal. Rather, it allows that phenomenal concepts, just like the majority of our concepts, are multimodal. Still, the view insists that (a) the nature of the representations invoked by the employment of phenomenal concepts is context-specific and (b) within the context of consciously thinking about the ‘hard’ problem of consciousness, the employment of a phenomenal concept becomes unimodal. For instance, when thinking about the modal status of the sentence ‘Red sensation is identical to a set of neural processes,’ one employs the phenomenal concept RED SENSATION in a unimodal way. To employ the concept in this context is to filter out everything that is *not* the sensation of seeing red. This ‘filtering out’ process is one that we often and unconsciously do. For instance, thinking about dogs in contexts that we are interested in their smell, we employ the concept DOG in a way that filters out many of our associated representations of that concept that are not olfactory representations. Thus, this second view of phenomenal concepts holds that even if phenomenal concepts are not essentially unimodal, they are *contingently* unimodal: in the context of conscious contemplation regarding the modal status of mind-brain identity statements, phenomenal concepts act as filters that allow us to focus on specific qualitative features of our experiences.

For the purposes of this paper, we wish to remain neutral on whether phenomenal concepts are essentially or only contingently unimodal. Although we are inclined to accept the view that phenomenal concepts are only contingently unimodal, there is no need to adjudicate this difficult issue here. Recall that the relevant explanandum of our account is the

psychological observation that mind-brain statements appear contingent *when we consciously deliberate about their modal status*. In the specific context of thinking about the modal status of mind-brain statements, both views of phenomenal concepts predict that their employment will be unimodal.

In what follows, we consider reasons against the claim that phenomenal concepts are unimodal. We show that even if those reasons can be taken to suggest that phenomenal concepts are not essentially multimodal, they do nothing to undermine the weaker claim that they are contingently unimodal.

Objection 3.1. The case of synesthesia. ‘Synesthesia’ refers to the statistically rare capacity to experience the merge of different sense modalities. Synesthetes, for instance, feel voices, see music, smell colors, and even taste shapes. Consider the following reports of such experiences (all quoted from Cytowic, 2002, p. 1):

What first strikes me is the color of someone’s voice. [V—] has a crumbly, yellow voice, like a flame with protruding fibers. Sometimes I get so interested in the voice, I can’t understand what’s being said.

Spearmint tastes like cool, glass columns. Lemon is a pointed shape, pressed into my face and hands. It’s like laying my hands on a bed of nails.

I enjoy music that has wavy metallic lines, like oscilloscope tracings. My favorite music has movement that extends beyond my peripheral vision. I really like music that makes the lines go up.

Phenomenal concepts, we claimed above, are unimodal insofar as their employment (at least in the context of thinking about mind-brain identity statements) gives rise to the activation of neural mechanisms that match the sensory modality of the manner in which we come to experience their referents.²¹ The case of synesthesia, one might suggest, speaks against the claim that the referents of phenomenal concepts are experienced only via one sense modality. If a synesthete both hears and sees sounds, then not only the information encoded by the phenomenal concept of a specific sound will be multimodal but also the employment of that concept will very likely activate neural mechanisms related to distinct sense modalities.

Reply. The problem that synesthesia raises for our account is more apparent than real. Granted, synesthetes have modally-fused experiences that appear to involve multiple perceptual systems. Functional neuroimaging studies have observed activation of color processing areas of the visual cortex with the auditory presentation of spoken number words (Nunn et al., 2002) and the visual presentation of achromatic number graphemes (Hubbard, Arman, Ramachandran, & Boynton, 2005). Other studies detect activation of somatosensory areas with synesthetic auditory-tactile experiences (e.g. Beauchamp & Ro, 2008). In keeping with an embodied and grounded perspective, there is also behavioral and neural evidence

²¹ In light of our previous discussion regarding the vexing issue of individuating the senses, it is worth emphasizing that our use of the term ‘unimodal’ permits the possibility that certain phenomenologically unified experiences are inherently multisensory. Therefore, even if some phenomenal concepts turn out to be multisensory (e.g., the ones that we use to introspectively examine the phenomenal character of flavors), they are still meaningfully unimodal insofar as their employment involves an experiential specificity and inflexibility that is absent from paradigmatic multimodal concepts such as physical concepts. Synesthesia seems to be a more problematic kind of multisensory experience than these examples because of its phenomenological complexity.

that synesthetic experiences can be generated by some synesthetes performing mental imagery tasks (Aleman, Rutten, Sitskoorn, Dautzenberg, & Ramsey, 2001; Grossenbach & Lovelace, 2001; Spiller & Jansari, 2008). Yet, conceding modally-fused experiences does nothing to show that they are incapable of isolating the two modally distinct aspects of their experiences. Indeed, synesthetes's own descriptions of their experiences strongly suggest that they are able to discern these modally distinct features of their experiences. They *hear* music and at the same time they *see* colors or shapes. This point holds even though there are some individual differences with respect to how synesthetes describe their phenomenological experience (Ward & Mattingly, 2006). Regardless of how intimately connected or fused the two modally distinct aspects of their experiences are, synesthetes still recognize them as being modally *distinct*. As long as synesthetes can isolate aspects of their experience as properly belonging to their respective sense modalities, then it is enough to show that phenomenal concepts can be (at least *contingently*) unimodal. One employs a phenomenal concept when one thinks about one's experiences. Thus, when synesthetes think about one modal aspect of their experiences, then they think of that aspect by employing a unimodal phenomenal concept.²²

Objection 3.2. Phenomenal concepts are not perspectival. If phenomenal concepts are unimodal, then it seems plausible to suggest that phenomenal concepts are *perspectival* (Tye, 1995, chapter 6). That is, phenomenal concepts are perspectival insofar as one can come to possess a phenomenal concept only if one experiences that to which the concept refers. For

²² The case of synesthesia does not differ *radically*, one might even suggest, from the manner in which we experience our environment. Our experiences are modally complex: they typically involve the objects of more than one sense modality. Still, we are capable, at least most of the time, of isolating and focusing on the contributions of each modality.

instance, one is said to be in possession of the phenomenal concept RED SENSATION, only if one has had a red experience. Although the claim that phenomenal concepts are perspectival is widely accepted (see, e.g., Papineau, 2007; Block 2006) and has been utilized in providing a response to Jackson's knowledge argument (Loar, 1997; Tye, 2003), recently such a claim has been met with resistance (see, e.g., Stoljar, 2000, 41 n.15; McDonald, 2004; Ball 2009; Tye 2009). If it turns out that phenomenal concepts are not perspectival, then the claim that phenomenal concepts are unimodal is threatened.

Reply. It is not our aim to explicate the possession conditions of phenomenal concepts. Nor do we wish to critically assess arguments in support of the claim that phenomenal concepts are not perspectival (see instead Alter, 2013; Elpidorou, 2012 and forthcoming; Veillet, 2012). Instead, we shall grant that phenomenal concepts are not perspectival. Consequently, we accept that one can come to possess them even if one did not have the relevant experience. Still, accepting that phenomenal concepts are not perspectival only militates against the claim that phenomenal concepts are essentially unimodal. The concession that phenomenal concepts are not perspectival does nothing to undermine that phenomenal concepts are not *contingently* unimodal. And this weaker claim is all that we need.

In fact, we predict that a subject who possesses the phenomenal concept RED SENSATION but who has never had the experience of seeing red, will not find the statement 'Red sensation is brain activation' contingent, at least not in the same manner that we do. Such a prediction is consistent with our account. The joint employment of phenomenal and physical concepts by the experienced-deprived subject will not yield an appearance of contingency because there is no contrast between multimodal and unimodal concepts. The subject's relevant concepts would be both multimodal.

Objection 4. The unimodal-multimodal difference accounts for too much. One could argue that the provided account of the appearance of contingency ought to be rejected for it predicts that certain statement should appear to be contingent, even though those statements do not appear to be so (see Yablo, 2009; cf. Levin, 2007b). Consider the following two statements:

- (1) Rocks feel pain.
- (2) Pain Φ is neural activity Ψ .

One could hold that (1), contrary to (2), does *not* appear to be contingent. Statement (1) is necessarily false and thinking about (1) does not yield an appearance of contingency. But the lack of the appearance of contingency when we are thinking of (1) poses a problem for our position. Or so one could suggest. (1), just like (2), involves the joint employment of phenomenal and physical concepts. But if we are right to insist that the reason why (2) appears to be contingent is because thinking about (2) involves the joint employment of unimodal and multimodal concepts, then (1) should also appear to be contingent. It also involves the employment of unimodal and multimodal concepts. Yet (1) does not appear to be contingent. Therefore, our account of explaining the appearance of contingency cannot be correct.

Reply. We have two responses to offer to the aforementioned objection. First, it is rather unclear whether the claim that (1) does not appear to be contingent should be accepted as a datum. Couldn't we imagine possible worlds in which there are breathing, moving, and

indeed sentient rocks? And don't such imaginary worlds contribute to an appearance of contingency? After all, in the 1970's all it took to create 'pet rocks' were pairs of glued on eyes.²³ Certainly, part of the joke was the impossibility of rock consciousness. But another part was the ease with which we are able to imbue inanimate things with sentience. Indeed, the list of seemingly inanimate things to which humans have attached sentience is quite diverse and extensive. Granted, what we imagine when we think of moving, breathing, and sentient rocks might be something that is rather confused. Perhaps our confusion is similar to the one that occurs when we imagine *impossible* objects such as purple gold or floating iron bars. Still, in both cases, there is at least a *prima facie* appearance of contingency.

Second, even if we accept that (1) does not appear to be contingent, this concession still fails to raise serious problems for our position. What we have offered in trying to account for the appearance of contingency in mind-brain identity statements is not a list of necessary and sufficient conditions for the appearance of contingency. The fact that the appearance of contingency in (2) is due to the contrast between multimodal and unimodal concepts does not mean that such a contrast suffices for the appearance of contingency. In fact, our concept ROCKS involves information that runs counter to the possibility of ascribing certain sensations to the referent of that concept (Levin, 2007b). Thus, the joint employment of multimodal and unimodal concepts will not *necessarily* give rise to an appearance of contingency. What it is also needed is that the information encoded in one concept is congruent with the information encoded in the other. In the case of the ROCKS and PAIN, however, this condition is not met. Our ordinary understanding of rocks is such

²³ See http://en.wikipedia.org/wiki/Pet_Rock. For advice on how to care for a pet rock see <http://www.wikihow.com/Care-for-Your-Pet-Rock>.

that precludes the attribution of sensation to them. It is due to that incongruity between the information encoded in the two concepts that the appearance of contingency is suppressed.

Our position also offers a response to a related objection to the PCS found in Stoljar (2005) and (2006, p. 193f.). Consider the following statement:

(3) If x is a number, then x is not a red sensation.

Stoljar argues that examples such as (3) are problematic for the PCS for the following two reasons. First, the PCS predicts that (3) should appear to be contingent but no such appearance is present. Second, if (3) is a priori, then there are conceptual connections between phenomenal concepts and other concepts. But if such conceptual connections exist, then don't they threaten the presumed a posteriori status of mind-brain statements and conditionals?

Given what came before, our response to Stoljar's claims ought to be clear. First, even if some versions of the PCS strategy do predict that (3) should appear to be contingent, our account makes no such prediction. We are not committed to the claim that every sentence that has both unimodal and multimodal concepts is such that will give rise to an appearance of contingency. The appearance of contingency, we hold, does not only depend on the presence of a unimodal-multimodal contrast but also on the information encoded in the concepts used in a sentence. In the case of (3), just like that of (1), the information encoded in NUMBER is such that does not permit the possibility of treating numbers as being identical to sensations. Indeed, whatever the ontological status of numbers may be, it is clear to anyone who is in possession of the concepts NUMBER and RED SENSATION that numbers are not sensations. Second, the PCS does not hold that phenomenal concepts bear no

conceptual ties *whatsoever* to other types of concepts. In fact, it is due to the presence of such ties between NUMBER and RED SENSATION that (3) both is a priori and fails to give rise to an appearance of contingency. What is crucial for the PCS is the claim that phenomenal concepts are conceptually isolated from physical or functional concepts insofar as there are no *sufficient* conditions for being a phenomenal state that can be specified *a priori* in physical or functional terms (see also Diaz-Leon, 2008 and Balog, 2009). The fact that (3) is a priori does nothing to undermine the PCS's contention that such sufficient conditions cannot be given a priori.

7. Conclusion

In this essay, we have argued for two conclusions. First, the way in which proponents of the PCS have typically explained the appearance of contingency in mind-brain identity statements does not withstand empirical scrutiny. A large body of evidence suggesting that our concepts are often embodied and grounded in sensorimotor systems undermines the contention that only the exercise of phenomenal concepts brings about an introspective phenomenology. As such, DIP fails to provide an adequate model for the appearance of contingency. Second, even if the standard formulation of DIP has to be rejected, we have shown that one can offer a novel version of DIP that is thoroughly in keeping with embodied cognition and which successfully succeeds in explaining the appearance of contingency in mind-brain identity statements. Phenomenal concepts, at least when deployed within the context of philosophical ruminations regarding the mind-body problem, are unimodal. On account of this unimodality, the deployment of phenomenal concepts exhibits both a type of simplicity and sensorimotor rigidity. That is to say, unlike physical concepts,

the deployment of a phenomenal concept includes only representations of a specific sense modality and, as a result, one can conceptualize the referents of phenomenal concepts in only one (modally specific) manner. From an introspective perspective, the deployment of physical concepts appears very different from that of phenomenal concepts. It is on account of such a difference that one is misled to conclude that the two types of concept do not co-refer.

Our embodied version of DIP is not one that has been previously advanced in the literature; it does not demand the involvement of two different faculties or two types of imagination (Nagel, 1974; Hill & McLaughlin, 1999); it does not commit us to theses regarding the possession and acquisition conditions of phenomenal concepts; and, most importantly, it does not rest merely on intuitive grounds. It is time, we believe, that participants in debates in the metaphysics and epistemology of modality pay close attention to how the human mind *actually* functions when they consider the potential contributions of psychological factors to philosophical problems. Even if what we have offered is not the last word on the topic, it is at least an empirically-informed beginning.

Guy Dove
Department of Philosophy
University of Louisville

Andreas Elpidorou
Department of Philosophy
University of Louisville

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