1. Introduction

According to Descartes, sense-perception involves three basic stages or “grades.” Here they are in summary:

1. Physical events or states engage the body’s nervous system, leading to complex effects in a certain part of the brain.

2. These brain states give rise to various mental states, among them qualitative “sensations.” The mental states typically do not resemble their physical antecedents.

3. The intellect makes judgments based on these mental states. Some of the judgments refer to states of the body, others refer to “things outside us.” (AT VII, 436; CSM II, 294–295)

As it stands, this schematic description says very little about the process by which brain states give rise to mental states, and especially to the qualitative states that Descartes calls “sensations” — for instance, of scarlet, pain, warmth, bitterness, shrillness, and so forth. It is clear

1. ‘AT’ refers to Adam and Tannéry (1964–76), and is cited by [volume, page]. I have consulted and often used the translations in Cottingham, Stoothoff, Murdoch (1984) [CSM, two volumes]. Citations from Descartes’s correspondence are taken from Cottingham, Stoothoff, Murdoch, and Kenny (1991) [CSMK].

2. Vinci (2005) argues that judgment or reasoning of some sort is already involved in grade (2) awareness of primary qualities, as well as in the mental “projection” of secondary qualities onto the primary qualities. The model I defend here can remain neutral on this issue, since it is focused solely on the production of secondary quality sensations.

3. Smith (2005) helpfully disambiguates six different uses of ‘sensation’ in Descartes and argues that in its technical philosophical usage it refers to a “modal complex” consisting of both material and mental modes. Hoffman (1990), similarly, claims that a sensation is a single mode that “straddles” the body and the mind. MacKenzie (1990) argues, by contrast, that sensations are purely mental and non-representational awarenesses of secondary qualities — she calls them “qualia.” The primary qualities or “sensible mechanical properties” of objects, on the other hand, are “directly perceived” by the mind via figures in the brain: in other words, to attend to a brain state
that the pineal gland is involved and that sensations do not resemble the brain states that caused them. But Descartes’s murkiness about the details has led to much confusion, and some commentators have concluded that there is “no coherent account” of body-mind relations in sensation to be had, that such relations are “impossible” in Descartes’s system, or that Descartes was woefully “incurious” about the issue.4

The project of this paper is to challenge such defeatist conclusions by providing an account of the details that is cogent in the sense of being (i) consistent with the vast majority of the texts, (ii) positively supported by a significant number of texts, (iii) compatible with Descartes’s overall metaphysical picture, and (iv) philosophically more attractive, at least by Cartesian lights, than its main rivals. Like other accounts, it does not avoid an ultimate appeal to the inscrutable divine will, and so it is not fully explanatory from a naturalistic point of view. But it does provide a deeper explanation than its rivals by putting off that appeal as long as possible. The fact that the account is not only minimally coherent but also cogent in the sense just outlined, I will suggest, constitutes a cumulative case for ascribing it to Descartes.

Examining this aspect of Descartes’s philosophy is worthwhile for at least two reasons. First, if we can acquire a cogent account of the body-mind relations involved, we will sharpen our picture of the mind-body union in general. That picture, of course, is at the center of Cartesian metaphysics, and it has been the subject of countless controversies in the three-and-a-half centuries since. Second, the case of

Descartes here illustrates the way in which an attractive kind of explanatory naturalism can motivate both theory selection and, for historians of philosophy, theory ascription.

A. Problems for body-mind relations

The thesis that brain states efficiently cause sensations, for Descartes, runs into a number of objections in both the historical and the contemporary commentaries. Perhaps the most prominent objection is that the very idea of a physical state’s efficiently causing a mental state is unintelligible in the Cartesian system (cf. Gassendi, AT VII, 344–345; CSM II, 238–9). Some seventeenth-century models of efficient causation between finite substances involved the influx of a quality (or type of quality) — motion, force, etc. — from cause to effect.5 But such a “transseunt” relation clearly requires that the cause and the effect are able to have at least one type of quality or quantity in common, and thus (on a substance-mode ontology) that the cause and the effect are substantially similar or alike.6 Call this the “likeness requirement”: it says that an efficient cause and its effect must be able to possess the same type of mode.

Given the likeness requirement, the obstacles facing dualist accounts of body-mind relations seem formidable. Descartes says in the Passions that “the soul is of such a nature that it has no relation to extension, or to the dimensions or other properties of the matter of

4. Cf. Keeling (1934, ch. 6); Guéroult (1968, 84); Radner (1971) and (1985a); Broughton (1986); Wilson (1991, 293n); Clarke (2003, 258). The ascription of incuriousness is by Bennett (2001, 106–7).

5. Descartes seems to apply such a model to the body-body case. In the Principles, for instance, he lays out the third law of motion and employs terms like “reciprocal impulses” and “transfers of motion” (AT VIIIa, 64–66; CSM I, 242–3). Thus Nadler says that in the body-body case, something literally passes from cause to effect, either because the cause gives up something to the effect or because it multiplies something of its own to share with the effect (1994, 38). Gorham (2003) likewise claims that models of any sort of intelligible causation have to involve quality-transfer or influx of some sort. But this, like most things in Cartesian scholarship, is controversial. Garber (1993) argues, for instance, that body-body causation is not efficient and does not involve influx. Della Rocca (1999) and Schmaltz (2008) claim, by contrast, that body-body causation is efficient but still doesn’t involve influx.

6. Latin: transeunt — prp. of transire, meaning "to go from one to the other, to go across."
which the body is composed” (AT XI, 351; CSM I, 339). In the Synopsis to the Meditations, he says that the nature of mind and the nature of body are “not only different, but in some way opposite” (AT VII, 13; CSM II, 9–10). Such substantial “heterogeneity” presumably makes it impossible for bodies to transfer or communicate modes to minds, and thus seems to make the transeunt model inapplicable to body-mind relations.

Descartes’s own response to the heterogeneity objection is strikingly nonchalant. In a 1643 letter to Elisabeth, he claims that relations between mind and body do not work in the same way that efficient body-body relations do, and that the mind “can act on and be acted on by” (peut agir et patir avec) the body (AT III, 664–67; CSMK 217–19). Similarly, in a 1646 letter to Cleselier that was published with the 1647 edition of the Meditations, Descartes says that perplexity about body-mind relations “arises simply from a supposition that is false and cannot in any way be proved, namely, that if the soul and the body are two substances whose nature is different (deux substances de diverse nature), this prevents them from being able to act on each other” (AT IX-A, 213; CSM II, 275, my emphasis). Such assertions appear to lift the likeness requirement, at least in some cases, and thus to allow for non-transeunt models of efficient causation. That impression is confirmed in The Description of the Human Body (1647–8), where Descartes provides a model of mind-body causation that has the mind changing the “determination” (i.e., direction) of the motion of animal spirits in the brain without changing its quantity or expending any force itself (AT IX, 225–226). Directional change of this sort does not involve the token- or type-transfer of motion or other qualities from cause to effect, and so mind-on-body action, at least on this model, does not require substantial likeness. The point here is that, given his comments about the nonstandard nature of mind-body interaction generally, and the nonstandard model of mind-on-body causation he sketches in the Description, it seems highly unlikely that Descartes would adopt a standard transeunt model in the case of body-on-mind causation in sensation. The problem, of course, is that it is not clear what sorts of alternatives are available.

A second, related obstacle for models of body-mind efficient causation arises from Descartes’s “causal containment” principle:

The fact that ‘there is nothing in the effect which was not previously present in the cause, either in a like or in an eminent form’ is a primary notion which is as clear as any that we have; it is just the same as the common notion ‘Nothing comes from nothing.’” (AT VII, 135; CSM II, 97. cf. AT VII, 41; CSM II, 28)

This containment principle, which is supposed to follow from the ex nihilo nihil fit principle, says that an efficient cause has to contain its effect either “formally” or “eminently.” Body-body causation typically involves “formal” containment: the cause actually exemplifies the quality or type of quality that is then produced in the effect. But a spiritual substance can’t contain extension in this formal way, and so Descartes follows scholastic tradition in holding that God “eminently” contains extension and its modes, and thus that divine creation and conservation of the material universe still satisfies the containment principle.

9. In her early book, Margaret Wilson says that substantial heterogeneity precludes efficient causation between finite substances (1978, 215). But in a later article she changes her mind and accepts the “tenuous” claim that there is room for bodies to be at least partial efficient causes of some mental states (1991, 299–300). Other recent advocates of efficient causation between heterogeneous finite substances include Richardson (1982), Bedau (1986), Loeb (1981), O’Neill (1987), Rozemond (1999), and Schmaltz (1992, 2008). None of these commentators, however, appeals to the model I offer below to explain how this works.

10. The ability that fire has to cause other things (e.g., wood) to go black was cited in the scholastic period as an example of eminent containment. The fire is not itself black, but it has the power to cause blackness in other things. It is not clear whether Descartes would accept this example, however, given that
Descartes’s commitment to the containment principle may threaten the claim that the brain can efficiently cause states in the mind. A third obstacle facing accounts of efficient body-mind relations arises from Descartes’s apparent acceptance (at least in his later works) of the doctrine of the innateness of all ideas — and of sensations in particular. In his 1647 *Comments* on Regius’s treatise, Descartes says that the total dissimilarity between brain states and mental states implies that even “the ideas of motions and figures themselves are innate to us.” But if this is the case, then “all the more must the ideas of pain, colors, sounds, and the like be innate, such that the mind is able to exhibit them to itself on the occasion of certain corporeal motions (*occasione quorundam motuum corporeorum*).” Descartes concludes that “there is nothing in our ideas which is not innate to the mind or the faculty of thinking,” and that the body can only ever “transmit something which, at exactly that moment, gives the mind occasion to form these ideas by means of the faculty innate to it” (ATVIIIB, 359; cf. CSM I, 304). Taken in the usual way as a non-trivial claim about substantive mental dispositions, the universal innateness doctrine obviously threatens the claim that there is genuine efficient causation between brain and mind in sensation.

### B. Non-transcendent solutions

Recent commentators have tried to sidestep one or more of these obstacles by adopting models of body-mind relations that take seriously the claim (evident in the passage just quoted, for instance) that brain states are mere “occasions” for the production of mental states. Humean-style *associationism* is the simplest of these: it says that tooken brain states of some type X are consistently followed by token

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11. Daisie Radner was one of the first Anglophone commentators to note that the notion of eminent containment is tricky, and that insofar as we can understand it, the containment principle seems to imply that bodies cannot eminently contain ideas. Radner also argues that the containment principle is what motivates the likeness requirement (Radner (1985a) and (1985b)).

12. I do not mean to insist that the dilemma here is exhaustive: as mentioned in a previous note, O’Neill (1987) analyzes eminent containment as involving more than *simply* the ability to cause, and yet less than full-blown formal containment. Such an analysis would place more substantive constraints on what can cause what. See also Seager (1988, 125–6), Wilson (1991, 290f.), Lennon (1998), Gorham (1999), Gorham (2003), and Schmaltz (2008, 64–71).

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What is significant for present purposes is simply that the containment principle seems to hold, for Descartes, even in contexts where the likeness requirement has been lifted.

Unfortunately, the notion of “eminent” or “higher form” containment is nowhere near as clear as Descartes himself suggests. The central problem can be put in the form of a dilemma. On the one hand, if substance A eminently contains mode b only if A is able to cause b in some substance, then the containment principle starts to look trivial — it says that A cannot be the cause of b unless A can cause b. But Descartes clearly thought of this as a substantive principle placing genuine restrictions on what can cause what. On the other hand, if eminent containment requires that A formally contain or exemplify b, then the principle is not trivial, but the distinction between formal and eminent containment has largely been lost. I won’t try to resolve this dilemma here; instead, I simply want to point out that bodies clearly cannot formally contain the sensations that they cause in minds, and that unless eminent containment of an effect simply (and somewhat trivially) means “having the ability to cause” that effect, it will be hard to show how bodies can eminently contain sensations either. If this is correct, then even in contexts where the likeness requirement is lifted,
sensations of some type $Y$, and that this constant conjunction is sufficient to count as a causal relation. The presence of an $X$-token is thus the *temporal* occasion of the appearance of a $Y$-token. But the associationist model intentionally offers no deeper explanation of why this is so.\(^{14}\)

*Strong occasionalism* offers somewhat more by way of explanatory depth, since it posits not only the constant conjunction of $X$'s and $Y$'s, but also God's ongoing volition as the ground of this connection. Strong occasionalists thus read Descartes as anticipating Malebranche here: when an $X$-state is caused in a certain human brain, God wills (other things being equal) that a $Y$-state occur in a certain human mind. The $Y$-states we're concerned with (i.e., sensations) do not resemble anything in the extended world, and so their qualitative character or phenomenology must be a function of the inscrutable divine will.\(^{15}\)

Finally, *natural institution* models have the finite mind causing $Y$-states *in itself* on the occasion of $X$-states occurring in the brain, and doing so in accordance with preordained laws.\(^{16}\) Natural institutionalism thus offers an explanation of body-mind correlations that goes deeper than mere associationism: it says something about why $X$'s are always followed by $Y$'s. It also goes deeper than strong occasionalism by replacing the direct appeal to God's ongoing volitions with an appeal to standing physico-psychological laws. The model reaches explanatory bedrock soon thereafter, however, by invoking divine volition as the primordial ground of these laws.\(^{17}\)

My goal in what follows is to highlight the explanatory advantages of a different model of the causal relations between body and mind in sensation. Like the other non-transeunt models, the one I defend here involves no transfer of qualities (tokens or types) from physical cause to mental effect, and so problems about heterogeneity do not arise. Further, like natural institutionalism, the present model has the finite mind itself playing a genuine causal role in the production of sensations. This makes it consistent with the universal innateness doctrine: a brain state $X$ counts as causing a mental state $Y$ just in case $Y$'s production is a result of the *finite mind* (rather than God's) standing disposition to produce a $Y$-state in itself when presented with an $X$-state in the brain.

The hallmark of the present model concerns the manner in which the brain states are presented to the mind, as well as the nature of the mental dispositions involved. John Yolton (1984) included a brief on behalf of such a model in a broader survey of the period: he called it the "semantic model." I will use "semantic-causation model" (SCM) here, however, in order to emphasize that this version of it views the relations between brain and mind as both semantic and genuinely (though not transeuntly) efficient-causal. As we shall see, these characteristics

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14. Advocates of associationist interpretations include Loeb (1981, 137ff) and Richardson (1982). Wilson (1991) thinks that associationism is *philosophically* speaking the best model of body-mind causation, but that it is impossible to make it fit with the vast majority of texts. It's unclear to me, too, how the associationist model could incorporate Descartes’s containment principle.

15. Garber is the most prominent advocate of the strong occasionalist reading (1993). The term “natural institution” is Descartes’s own: he says in the Sixth Meditation that “nature has instituted (qui institutus est a natura) that this motion should produce in the mind a sensation of pain” (AT VII, 87; CSM II, 60). Prominent advocates of natural institutionalism include Nadler (1994), Simmons (1999), Shapiro (2003a), and Schmaltz (1992). In (2008), Schmaltz argues that the naturally instituted brain-mind relations are grounded in the *natures* of body and mind, and thus that the relations are efficient-causal in a non-transeunt way. Other natural institutionalists are less explicit about whether they view such institution as grounding genuine efficient-causal relations or not.

16. Simmons (1999) and (2001), and Shapiro (2003a), emphasize Descartes’s claim that some of the natural institutions are designed to promote the welfare of the body-mind union (cf. AT VII, 87). Thus, on their versions of the model, there may be a story to tell about God’s aims in connecting certain $Y$-states to certain $X$-states. Shapiro further argues that some of the body-mind connections—the ones in which the mental state is a passion—are subject to limited reform by the mind itself, again in order to promote the welfare of the union. But no such teleological story is available to explain the phenomenological character of many secondary quality sensations, and so there is still an ample helping of explanatory bruteness or arbitrariness contained in these models. That said, the model I offer below is designed to be compatible with the “teleological” scenarios emphasized by Simmons and Shapiro.
give the SCM important advantages over other models from an explanatory point of view.

Here is a preliminary sketch of the SCM. Motions engendered by nerve impulses traveling from other parts of the body produce “figures” on the interior surface of the brain. These give rise to corresponding figures on the surface of the pineal gland, or to patterns of movement in the gland itself. The figures or patterns need not resemble in any non-trivial way the events or objects in the world that caused the initial nerve impulses; still, they play the role of signs to the mind, which then produces in itself the sensory ideas that the figures signify. The sensations (the secondary qualities of these sensory ideas) also bear no resemblance to either the external objects or the signs in the brain that occasion the ideas. Still, in virtue of playing this signifying role, the brain states count as occasions of the mind’s immanent efficient causation of the sensations. This means that the SCM is a non-transient model that can account for the “occasion” talk in Descartes’s later texts. But it is not a strong occasionalist model, since it says that in virtue of playing the signifying role, the brain states also count as efficient causes of the mind’s activity, and thus as efficient — albeit remote and accidental — causes of the sensations themselves. The semantic system involved is grounded in the powers and dispositions of human brains and human minds — powers and dispositions that result from a divine creative act. Thus the figures in the brain count as “natural” rather than “conventional” signs. 18

Questions immediately arise. Is it even so much as intelligible to claim that the immaterial mind somehow attends to a portion of the extended brain? Is a semantic-causal relation really a kind of efficient-causal relation? Does the apparent arbitrariness of a connection between sign and signified diminish the explanatory power of the model? And is the SCM consistent with Descartes’s view that the mind is somehow “passive” in sense-perception and also transparent to itself? I will aim to address these systematic questions along the way. The next section, however, is focused primarily on textual issues. It would be nice to argue that the SCM just obviously has better textual support than any of its competitors, but unfortunately that is not so, and in any case there is no room here to make a detailed comparison. Still, it is worth highlighting the numerous passages throughout Descartes’s writings that suggest that brain states serve as natural signs for the mind and, in virtue of doing so, count as partial efficient causes of the resulting sensations. Section 3 contains a systematic argument for the SCM’s internal coherence as well as its explanatory superiority over rival models. Section 4 takes up a final and very influential textual objection.

2. Textual Issues

A. Favorable Passages

In the last of the Meditations (1641), Descartes argues that “corporeal things exist” and that they are somehow responsible for our sensory ideas of bodies (AT VII, 79–80; CSM II, 55). But how are they so responsible?

My next observation is that the mind is not immediately affected by all parts of the body, but only by the brain, or perhaps just by one small part of the brain.... Every time this part of the brain is in a given state, it shows the same thing to the mind, even though the other parts of the body may be in a different condition at the time. (AT VII, 86, my emphasis) 19

Note the characterization of the body-mind relationship here: only “one small part of the brain” is “immediately” involved in the process by which mental states are produced, and its involvement consists in “showing” (or, as Descartes says a few lines later, “indicating” or “exhibiting” [exhiberet]) something to the mind. Two pages further on

18. For a contemporaneous account of this distinction, see Arnauld and Nicole (1996, 36–8).

19. CSM renders this passage in a way that is even more sympathetic to the SCM: “Every time the brain is in a certain state, it presents the same signals to the mind” (CSM II, 59–60, my emphasis).
throughout his career to describe the relation of mind to brain. He clearly does not think of the mind as wholly passive or receptive with respect to brain states; rather, the mind “applies itself” to the brain, “contemplates,” “views,” or “considers” the signs that it finds there, and then produces in itself the sensations that they signify to it. What Descartes says in the Comments of 1647 suggests, furthermore, that he regards the process as involving a quasi-interpretive capacity on the part of the mind: sensations are produced by the mind “on the occasion of certain corporeal motions” in the brain, and “there is no similarity between these ideas and the corporeal motions” (ATVIIIB, 359, CSM I, 304, my emphasis). This means that the mind cannot simply be attending to brain states in having sensations, as one commentator has suggested (Kemp Smith 1952); rather, it must be both attending to them and treating them as somehow “indicating” the wholly dissimilar ideas that it instantaneously produces in itself.

This last point is anticipated in the Treatise on Light (written 1629–33) where Descartes claims that God has “established some sign (certain signe) which would make us have the sensation of light, even if this sign (signe) contains nothing in itself which is similar to this sensation.” Again, given the wholesale dissimilarity between the brain state and the sensation, simply attending to the brain states won’t be enough to count as sensing the light. Rather, the mind must be actively responding to the brain states as signs to produce the sensation of light in itself, and a fortiori as signs of the light itself. Only then can the brain state “make us have the sensation of light (nous fasse avoir le sentiment de la Lumiere)” (AT XI, 4; CSM I, 81).

In the last work that Descartes published — the Passions of the Soul of 1650 — we once again encounter language that evokes the SCM. At section 43, for instance, Descartes says that what happens when we try to remember some object or state we’ve already encountered is that the neural “spirits” discover some old “traces” or pathways and “enter into these pores more easily when they come upon them, thereby producing in the gland that special movement which represents (représente) the same object to the soul, and makes it recognize (connoître)
the object as the one it wanted to remember.”21 There are many complexities here, but the main point for our purposes is that the patterns of movement in the brain somehow represent an object to the mind, and that this involves, among other things, a memorial reproduction of some of the qualitative sensations (e.g., colors) that we had upon first perceiving the object. At section 94 of the same work, Descartes says something similar about the origin of the sensation of pleasure we take in the strength of the body:

What we call titillation or a delightful sensation always consists in the fact that objects of the sense are exciting some movement in the nerves which would be capable of harming them, if they did not have enough strength to withstand it or if the body were not well disposed. This produces an impression in the brain which, being instituted by nature to testify (témoigner) to this sound disposition and this strength, represents it to the soul as a good which belongs to it. (AT XI 399; CSM I 362, my emphases)

The impressions in the brain testify to the mind about the strength of the body — they speak of it, signal it, represent it — and this involves, among other things, the production of a sensation of delight in the mind. Given that the impressions and the sensation are wholly dissimilar, the testifying and representing (if we are to take these notions literally) must be performed via some kind of natural semantic system.22

So far, we have seen that there are passages from many of Descartes’s works that promote both the “direct inspection” component and the “natural sign” component of the SCM. Other things being equal, I think, these passages and others like them23 constitute a reasonably strong textual case for the SCM.

B. Kinds of causes

We have just considered some of the passages in Passions of the Soul that seem friendly to the SCM. Descartes also says in that work, however, that “the perceptions we refer to things outside us, namely to the objects of our senses, are caused by (sont causeés par) these objects, at least when our judgments are not false” (AT XI, 346–47; CSM I, 337). Again, Passions is Descartes’s final published work, and he seems content here to speak of physical objects causing or, elsewhere, “arousing” sensory ideas in the mind without using the qualifying terminology of signs or occasions.24 Such passages need not trouble friends of the SCM, however, once it becomes clear that although the body-mind relationship in sensation is indeed a semantic and thus broadly-speaking “occasion” relation, it may also be an efficient-causal relationship — albeit one in which the bodily states are remote rather than proximate efficient causes of sensations. In other words, the SCM doesn’t bar bodily states from counting as (partial) efficient causes of sensations, provided they do so in virtue ofsignifying the sensation that the mind proximately causes in itself. The brain state thus counts as both an occasion for the production of, and a partial efficient cause of, the resulting sensation.25

In support of this, note that in the Comments Descartes discusses

21. “En forte que ces esprits, rencontrant ces pores, entrent dedans plus facilement que dans les autres; au moyen de quoy ils excitent un mouvement particulier en la glande, lequel represente à l’ame le meme objet, & luy fait connoître qu’il est celuy duquel elle vouloit se souvenir” (AT XI, 360).
22. Descartes goes on in this passage to say that the sensation of pain itself can “signify” (signifier) bodily damage to the mind. Here we have a mental state signifying something to the mind. But this is fine as far as the SCM is concerned: natural signification can be performed either by brain states or by mental states, although the model itself is focused on the significance of brain states.
23. Consider also Optics 4 (AT VI, 112; CSM I, 165); Principles 198 (AT IXB, 322–3; CSM I, 285); and CSMK 344, 356.
24. See also letter to Elisabeth of May 1646 (AT IV 408).
25. The model here is thus different from Gaukroger’s, on which the “single act” of perception can be fully and adequately ‘characterized in two ways, in terms of a causal-mechanical process and a significatory process’ (1995, 282). It is true that the sensory process is both semantic and causal, of course, but there doesn’t seem to be a way of adequately characterizing it as wholly ’causal-mechanical,’ given the dissimilarity between brain states and the sensations that they cause.
the way in which sensations are produced, and there makes the explicit distinction between “proximate” and “remote” efficient causes:

[S]omething can be said to derive its being from something else for two different reasons: either the other thing is its proximate and primary cause, without which it cannot exist, or it is a remote and merely accidental cause, which gives the primary cause occasion to produce its effect at one moment rather than another. Thus workers are the primary and proximate causes of their work, whereas those who give them orders to do the work, or promise to pay for it, are accidental and remote causes, for the workers might not do their work without instructions. (AT VIIIIB, 360; CSM I, 305)

This passage says that a remote cause X of a given effect Y is something that “occasions” the action of the proximate and primary cause of Y. Although there is no explicit claim here that such a remote cause counts as an efficient cause, there is also nothing in the passage that rules out such a conception. Moreover, we clearly do often think of remote causes as at least partial efficient causes: it is not just the ball but also Joe — the person who threw the ball — that causes the window to break. It’s not just her spoken utterance but also Jane — the person speaking — that causes me to entertain the proposition that her utterance expresses. The ball’s flying or the words’ being uttered could have been caused by other things, of course, and thus Joe and Jane are “accidental” causes of the window’s breaking and my entertaining that proposition. Still, as things actually stand, we think of them as partial efficient causes of the ultimate effects.

Given that it is common for us to conceive of remote causes as partial efficient causes, I see no reason for Descartes to revise this conception in cases where the remote cause does its work by occasioning the work of something else, rather than by actually transferring motion or other quality tokens or types. In the foregoing passage, Descartes strikingly says that the effect even “derives its being” from the remote cause, although the relation from cause to effect here is patently non-transcendent. Providing for the being (esse) of a thing is a role that is traditionally reserved for the efficient cause (and often for God as the primary efficient cause). This clearly indicates that it is not just the mind but also the brain state and the external object that are part of the total efficient cause of the sensation. Of course, that same brain state could have resulted from a less remote physical mechanism (another event in the brain caused by an ingested hallucinogen, say), and so the distal object counts as an “accidental” cause of the brain state. Likewise, the mind alone, or God alone, could have produced the sensation, and so the brain state counts as an “accidental” cause of the mental state. But as things actually stand, the distal object is a remote, partial efficient cause of the brain state in virtue of the various mechanistic body-body relations, and the brain state is a remote, partial efficient cause of the sensation in virtue of the various semantic body-mind relations.

I have been arguing that proponents of the SCM do not have to give up the claim that bodily states are efficient causes of sensations; they merely have to avoid claiming that the former are proximate efficient causes that do their work by way of transferring qualities or types of qualities. This means that texts in which Descartes says that

26. Cf. Wilson (1991, 298), who warns against assuming that Descartes shares Malebranche’s conviction that occasional causation (which Malebranche construes in strong occasionalist terms) cannot also be efficient causation. Descartes seems to think that causes whose work is mediated by “occasions” may in some cases still be considered genuine efficient causes.

27. Here I differ with Schmaltz, who takes “remote” to be temporal notion, and thus argues that brain states can’t be remote causes of ideas “since the ideas are formed at the exact moment that the motions approach the mind” (2008, 151). In the boss/work case that Descartes cites, there is clearly a temporal gap between when the orders are given by the boss and when the worker performs the work. But I see no reason to think that this temporal gap is an essential part of the concept Descartes is using. Malebranche presumably considers all occasional causes to be remote, but he would not (I suspect) want to say that God’s action as the true cause occurs after the action of the occasional cause.

28. Note that this is not the way Yolton articulates his prototype of the SCM in (1992). Rather, he says that insofar as there is a semantic relation, there cannot be a genuine efficient causal relation. This seems odd, given that ordinary
the brain state “produces” or “causes” sensations need not trouble the friend of the SCM. Indeed, we find hints of this sort of semantic-causal hybrid model as early as the Treatise on Light, in which Descartes says that the mind produces the idea of light in itself when it is causally “affected” by the action that signifies [that idea]” (AT XI, 4, my emphases).

That said, there are still some awkward passages that suggest that the brain states, rather than the mind, are proximate efficient causes of sensory ideas, and contain no qualifying language about occasions or natural signs. The first sentence of the passage from the Sixth Meditation quoted above, for instance, has the mind being “immediately affected” (immediate affici) by states in the brain (AT VII, 86). And in the Principles, Descartes says that sensations are the “immediate result” (immediate consequentes) of figures or patterns of movement in the brain (AT VIIIA, 316; CSM I, 280). Finally, Optics 6 says that “it is the movements [on the surface of the pineal gland] which, acting directly upon our soul in so far as it is united to our body, are ordained by nature to make it have such sensations” (AT VI, 130; CSM I, 167, my emphasis). Descartes may be speaking loosely about the precise nature of body-mind relations in passages like these, of course, but in light of them it must be conceded that the textual case for the SCM is not irresistible. In deciding which model to ascribe to Descartes, then, we will have to go beyond textual evidence and consider systematic costs and benefits as well.

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C. Strong occasionalism and mere metaphors

Before turning to systematic issues, I want to make two final points by way of textual analysis. First, the passages from the later works in which Descartes uses the language of “occasions” to describe body-mind relations are sometimes taken to support a strong occasionalist model along Malebrancean lines. But it should be clear by now that this language is fully consistent with other accounts (such as the SCM and natural institutionism) on which brain states occasion the mind rather than God to produce mental states. Indeed, Descartes often explicitly attributes the production of mental states to the finite mind (cf. AT VIII B, 360ff; CSM I, 305ff/AT VIII A, 322; CSM I, 285), and he nowhere ascribes the production of sensory ideas to God alone.29

Second, Margaret Wilson once noted that Descartes’s talk of the mind inspecting or attending to the signs in the brain might be construed as “merely ‘metaphorical’—a harmless façon de parler” (1991, 308). She adopted that construal in her early book (1978), and other prominent commentators still favor it (Simmons 2003; Schmaltz 1997). Wilson herself, however, changed her position and declares in a later paper on this topic that there are good reasons to be skeptical of the metaphorical reading (1991, 308ff). For one thing, Descartes explicitly says in the early Rules that a description of body-mind causation in which the brain acts as a proximate cause, like a “seal” on the “wax” of the mind, is “merely an analogy” and that in fact “nothing quite like this power is to be found in corporeal things” (AT X, 415; CSM I, 42). But he never says anything like that with regard to the claim that the mind attends to states of the brain. On the contrary, the passages above are from mature works like the Meditations, Replies, Principles, and Comments, and they seem quite unequivocal, providing the only account in those writings of the way the mind receives information in sense-perception. Wilson goes so far as to say that the use of neural signs (such as words on a page) certainly do seem to be doing some efficient causal work in their readers. Yolton’s insistence on this opposition may have led commentators who prefer efficient causal readings of sensation to dismiss all talk of signs by Descartes as merely metaphorical. Peter Slezak, for instance, rejects Yolton’s model because it putatively does not involve efficient causal relations, and then claims that the only alternative is to “read Descartes as offering… a straightforward causal story about the origins of sensation in the bodily movements of filaments, pores, and animal spirits” (2000, 554). But it is not at all clear how this “straightforward” story can account for the production of mental sensations in a substance dualist context. I find it encouraging that in some later reflections on this topic, Yolton seems willing to entertain the thought that certain semantic relations might count as non-standard efficient causal relations ((1996, 73–4) and (2000)).
“presentation” and mental direct inspection language to describe body-mind relations is “extremely pervasive” in the texts (ibid.).

Another reason for being wary of the metaphorical reading is that, in the (somewhat less authoritative) Conversation of 1648, Burman reports that he explicitly asked Descartes whether he meant to say that the mind literally “inspects (inspicere)” the brain, and that the answer was affirmative. Such inspection is a “special mode of thinking,” Descartes said, “which occurs as follows”:

When external objects act on my senses, they print on them an idea, or rather a figure, of themselves; and when the mind attends to these images imprinted on the gland in this way (quando ad eas imagine quae in glandula inde pinguntur advertit), it is said to have sensory perception.
(AT V, 162; CSMK 344, my emphasis)

Taken together, these considerations make it unlikely that Descartes himself intended his talk of mental attending to the brain to be a mere metaphor. And of course direct inspection of the brain is an essential component of the SCM.30

Alison Simmons is another prominent commentator who, like Wilson, takes such texts seriously and thus admits that the SCM offers an “intriguing” interpretation of Descartes on body-mind causation, at least from a textual point of view. In the end, however, Simmons concludes that the model is “implausible” — again because it construes talk of the mind “turning towards” or “attending to” signs in the brain as literal rather than metaphorical. Her evidence for thinking that this

Simmons’ stated reasons for preferring a metaphorical reading are that Descartes places an “as it were” (veluti) after “contemplates” here, and that he “offers this account of imagination only as a possible explanation for how it works, not as the account he endorses” (2003, 561n).

By way of response, however, note that although there is a veluti in this passage, no such qualifications appear in the analogous passages from the Replies and other texts that I cited above. Further, although it’s true that a few lines later Descartes says that this account allows him to make the “probable conjecture that the body exists,” the conjecture is not really about the structure of body-mind relations in particular, but rather about the existence of brain/body/external world in general. Indeed, the passage reads as though Descartes is presenting his considered model of the neuro-psychology involved but doesn’t yet take himself to be able to prove the existence of bodies and the external world generally, and thus to prove that this model has an actual instance. If this reading is correct, then there is no clear reason to think that once he is in that position later in the Sixth Meditation, he would revoke the account of imagination laid out above. And, as Simmons concedes, that account clearly includes the “direct inspection” component of the SCM.

30. This “direction inspection” component is also part of Kemp Smith’s model according to which having a sensation just is directly attending to brain states (1952, ch.2). But as we have seen, in addition to a direct inspection component, the SCM also includes a “natural sign” component according to which there is a quasi-interpretive act of the mind involved in going from the mechanistic qualities of brain states to the awareness of sensations. Kemp Smith’s model neglects this latter component, and thus cannot (it seems to me) make sense of Descartes’s claims about the lack of similarity (similitudinem) between brain states and sensations (cf. AT V11B, 359; CSM I, 304).
3. Systematic Issues

A. Neural Semantics

Even if we allow that the “direct inspection” doctrine and the “natural sign” doctrine are meant to be taken literally, there are still a number of systematic issues to address: (i) First, why think that the mind is able to attend directly to the physical world at all? And (ii) why does it do so at exactly one part of the brain and no other? Finally, (iii) how or in virtue of what do the brain states signify something to the mind?

(i) An initial response to the first question might simply be “Why not?” Although the res cogitans and the res extensa are two really distinct substances that do not communicate modes, there is nothing unintelligible about the claim that the first is able to attend directly to the second. Elsewhere, however, Descartes seems committed to the view that the mind is only directly aware in a self-conscious fashion of states of the mind. And of course phenomenological considerations confirm this. Thus, I want to suggest that that the best way to handle talk of the mind “attending directly” to signs in the brain is to interpret the awareness as non-cognitive. This suggestion requires some discussion.

It is commonplace in contemporary philosophy of mind to distinguish between extensional and intensional awareness, and I think that distinction can be of service here. Extensional awareness is such that for any object O, “awareness of O” can be substituted in a truth-preserving fashion for “awareness of P” if and only if P is identical to, or at least a part or aspect of, O. For example, suppose (in a non-Cartesian spirit) that some token-token identity theory about the mind is true such that every mental state is in fact identical to a physical state. Then our extensional awareness of some mental state P will count as awareness of some brain state O just in case P is identical to, or at least a part or aspect of, O.

What I will call cognitive awareness does not have this extensional character. Rather, as Brandt and Kim pointed out long ago, “epistemological and psychological verbs of propositional attitude are ‘intensional’ and govern ‘referentially opaque’ contexts; e.g., ‘S knows that,’ ‘It is evident to S that,’ and ‘S is pleased that’” (1967, 536). Thus, even if a mental state is in fact identical to a brain state, S may not be cognitively aware of the latter in being cognitively aware of the former. Indeed, S might be cognitively aware of a mental state and not even have the concept of a brain state. But that doesn’t prevent S from being non-cognitively aware of the brain state.

We have to be cautious about employing this extensional/intensional distinction in a discussion of Descartes’s theory of sensation. For although there are models of the Cartesian mind according to which awareness of a mental state just is awareness of a brain state (again, see Kemp Smith 1952), that is not the case on the SCM. Instead, the neural presentation is a part or aspect of the larger operation of the mind-body union, another part or aspect of which is the qualitative sensation. This suggests that the entire operation of the union should be regarded as the object of extensional, non-cognitive awareness, and the sensational part or aspect of that operation as the object of intensional, cognitive awareness. If we keep this important caveat in view, I believe the distinction can be useful: it reminds us that “a person can be directly aware of x in [a non-cognitive] sense and yet there may be no sentence ‘…x…’ involving the name x such that he knows or believes that …x…” (Brandt and Kim, 535). Again, the SCM says that the Cartesian mind has precisely that sort of direct though non-cognitive awareness of the complex operation whereby the brain presents patterns to the mind, and the mind instantaneously produces in itself the sensations that those patterns signify. The mind is non-cognitively, extensionally aware of this entire union operation—including the brain state, of course—but it is only cognitively, intensionally aware of the ultimate sensational part or aspect of that operation.

An obvious objection to all of this is that it is inconsistent with Descartes’s commitment to the full transparency of the mind to itself. I will postpone a consideration of that objection until Section 3C below. For now, let’s consider Descartes’s answer to the second question posed at the beginning of this section.

(ii) Why is it that the mind directly attends to one bit of the physical world and no other? This is a place where the SCM is somewhat
inarticulate from an explanatory point of view, though no less so than other models. The answer to the question is simply that this attending is a function of the way God orchestrated the mind-body union. The mind is not extended, of course, and so it cannot be literally located in the space possessed by the pineal gland. However, in the course of unifying a soul and a particular human body, God ordains that the former should have its “principle seat” in the pineal gland (AT XI, 142–3; CSM I, 102/AT VIII A, 319–20; CSM I, 283/AT I, 263; CSMK 40). The SCM says that an important result of this union is that the mind attends directly (though non-cognitively) to the motions and figures in a certain part of the brain. This explains why a particular subject has the perspective of a particular body on the rest of the extended world, why she feels the pains that correspond to that body’s afflictions, and so forth.

Descartes is relying on 17th century neurophysiology here, but this needn’t render the idea of a particular mind attending to a particular brain unintelligible. Earlier we saw that (setting aside larger problems regarding substance dualism in general) there is nothing obviously incoherent about the suggestion that parts of extended reality can be directly inspected by an immaterial mind. Likewise, it seems at least conceivable (setting aside larger problems regarding theism in general) that the omnipotent God could construct a finite mind such as to be directly aware, in a variation on the Scholastic conjunctio spiritualis, of one small part of the physical world. The account is not fully explanatory, of course, since it doesn’t tell a detailed story about the processes involved — and especially about how the divine volition works. But this inarticulacy is shared by other accounts, and it is also theologically principled: Descartes thinks that the ways of the Almighty are myste-

(31) William of Auvergne was one of Descartes’s predecessors in Paris who famously postulated a direct “spiritual connection” between the mind and physical objects in sense-perception. Cf. Marrone (1983, 66–7). In Descartes’s case, the connection obtains between the mind and a very limited set of physical objects or states in the brain: “It is the soul that sees, and not the eye, and it sees immediately only through the intervention of the brain” (AT VI, 141).

32. MacKenzie (1990, 127ff) draws heavily on the Optics in offering an account of how sensory awareness of primary, mechanical qualities (as opposed to secondary qualities) is produced via “direct awareness” of natural signs in the...
With respect to qualitative sensations, however, it is hard to see how such things even could resemble their physical cause. How could there be any non-trivial similarity between the taste of ice cream or the sensation of scarlet, on the one hand, and a pattern in the brain on the other? Thus Descartes develops an account that can comprehend both scenarios. In doing so, he clearly rejects both scholastic forms and isomorphic resemblances as the primary basis of the mind’s ability to find significance in the patterns on the pineal gland.

But if not resemblance, then what? In the *Treatise on Light*, just as in the *Optics*, Descartes points out that the perception of others’ utterances can evoke in us — via learned conventions — mental ideas of things whose qualities bear no resemblance to the utterances in question. He goes on to ask, in a passage that was partially quoted earlier, “Why could nature not also have established some sign (signe) which would make us have the sensation of light, even if the sign contained nothing in itself which is similar to this sensation? Is it not thus that nature has established laughter and tears, to make us read joy and sadness on the face of men?” (AT XI, 4; CSM I, 81). The thesis suggested by this passage, again, is that the union of the mind and body is so orchestrated that the mind can directly attend to the patterns of movement in the brain and do something akin to “reading” or interpreting them as signs of various mental ideas. Thus the brain states

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33. There is evidence that this ecumenism is rhetorically motivated — an irenic attempt by Descartes to keep those who are attached to a resemblance account of sensation interested in his overall theory. See AT VI, 112–13; CSM I, 185.

34. Rozemond (1999, 462ff) develops a non-transeunt model in which she repeatedly refers to brain states as “natural signs” and thus sounds as though she is open to something like the SCM. In the end, however, she denies that the mind is genuinely aware of or interpreting the signs in the brain, and says that Descartes only means to adopt “part” of the sign model — namely, the part that says that efficient causal relations can hold between two wholly dissimilar things. This makes it hard to distinguish Rozemond’s view from that of other natural-institution theorists who treat talk of signs as a kind of

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35. See *Passions* 44, 50, 107, 136, and 211, as well as Shapiro (2003a) and (2003b).

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ample handlings of arbitrariness at just this point. Humean models, in particular, have little more to say about the causal laws linking two events than that they are descriptions of constant conjunctions that we associate by custom or habit. It is not clear how such associationist theories are any less “arbitrary” or explanatorily “complacent” than natural institutionalism or the SCM. And yet they claim many enthusiastic adherents in contemporary philosophy.

Second, I want to suggest that rival models offer even less by way of explanation than the SCM does on this score, and thus that the objection is slightly less pressing against the latter. We have already seen that associationism is wholly silent about why X-states are followed by Y-states, and that strong occasionalism makes an immediate appeal to ongoing, inscrutable divine volitions. According to natural institutionalism, on the other hand, one of the things “arbitrarily established” at creation is a set of laws of the type:

(L) If an X-state occurs in the human brain, then the human mind associated with it will (ceteris paribus) produce in itself a Y-state (sensation).

God does not act each time in accordance with L; he merely ordains all the L-type laws when creating brains and minds. But there is no further explanation of why a token X-state is followed by a token Y-state.

At bottom, of course, the SCM also appeals to divine volition as the ground of the semantic relations involved in body-mind causation. But

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before doing that the SCM provides another level of naturalistic explanation: it says that the finite mind itself, in virtue of its created nature, possesses the capacity to attend to the X-states and “read” them as significant. The regularities in our mental experience are thus explained by appeal to the fact that our brain states trigger this disposition in certain regular ways, rather than by appeal to arbitrarily preordained laws of association.

This difference between the models on offer is subtle but important; it can be illustrated in the following rudimentary diagram:

Taking each descending arrow to represent another level or layer of explanation, the diagram makes it clear how the SCM goes one level “deeper” than competing non-transcendent models by postponing appeal to the inscrutable divine will as long as possible. A particular X-Y sequence is explained by the fact that X is a natural sign of Y, and that fact is in turn explained by appeal to a quasi-interpretive capacity of the finite mind — the capacity to “read” X’s as signs of Y’s. Descartes says that we can grasp what such a capacity is like, at least by analogy, since we know what it is like to read texts, understand spoken utterances, interpret others’ facial expressions, and so on. It is only when we try to go even deeper and explain the interpretive capacity itself — the capacity in virtue of which the mind “reads” X’s as signs of Y’s — that we have to abandon scrutable naturalistic explanations and appeal to the will of the creator.

36. Wilson (1978, 211). It is controversial among commentators whether what Descartes calls the “union” of body and mind simply consists in these correlations, or whether the union consists in something more fundamental that explains these correlations. The SCM, of course, takes the latter view. Cf. Schmaltz (2008, 135–140).

37. Recall that the Y-states here are sensations in the technical sense — i.e., awarenesses of secondary qualities. So even if the goal of preserving the mind-body union offers a partial teleological explanation of the perception of primary qualities, and of the lawlike regularities by which sensations are formed, appeal to that goal provides no explanation of why a particular qualitative phenomenology (awareness of scarlet, say) is caused by a particular type of brain state. See Simmons (2001) for a discussion of the “latent teleology” in Descartes’s account of sensation.
I think that this slight difference in explanatory depth is one that would matter to someone with rationalist inclinations. Descartes thinks he can prove God’s existence, but as opposed to a thoroughgoing rationalist like Leibniz he is content to appeal to God’s will as a kind of explanatory bedrock.\textsuperscript{38} Still, Descartes’s rationalist inclinations lead him to locate that bedrock as far down in the theoretical landscape as possible. In other words, Descartes follows a methodological policy that might be called qualified explanatory naturalism — the policy of not resorting to supernaturalistic appeals until naturalistic explanations have been exhausted.\textsuperscript{39} We can find qualified explanatory naturalism at work throughout the Cartesian texts: in the Third Meditation, for instance, Descartes considers and rules out all the naturalistic causes of the idea of a perfect being before simply appealing to God himself as the cause. And in explaining how belief in the external world can be justified in the Sixth Meditation, Descartes considers all possible naturalistic sources of that justification (natural propensity, the teachings of nature) before invoking a veracious creator. What we find in the SCM is an explanation of body-mind relations in sensation which Descartes has no internal reason to rule out — as we have seen, it’s not obviously incoherent to suggest that the mind could have this ability to “read” or “inspect” the brain and take the neural states to be significant. And, moreover, Descartes says he has independent, empirical reason to think that the mind is able to “read” signs in the other cases he cites: facial expressions, gestures, natural languages, and so forth. Thus the SCM is coherent, has some independent plausibility, and does not appeal to God as quickly as rival models do. This combination of theoretical virtues, I want to suggest, gives the SCM a crucial systematic advantage.\textsuperscript{40}

The claim I have just been defending is likely to be the most controversial one in the whole paper. Let me try to provide a better grasp of it by considering more closely the other-minds analogy just mentioned (again, this is Descartes’s own analogy at AT XI, 4; CSM I, 81, though the details are mine). Suppose that there is a world in which God or dains laws such that a person, $S$, upon seeing someone else, $J$, smiling and laughing, simply finds herself with the beliefs that $J$ is happy, $J$ is in good spirits, $J$ is joyful and the like. Likewise when $S$ confronts someone else, $K$, groaning and wincing, the laws prescribe that $S$ simply finds herself with the true belief that $K$ is in pain. $S$ has no evidence for these beliefs, nor does she perform any inference or engage in any act of interpretation to arrive at them. They just pop into her head, though she finds over time that their so popping occurs in a regular and lawlike fashion whenever she confronts instances of those behavior types.

Now compare this with a world in which $S^*$ sees $J^*$ smiling and laughing, at some level \textit{takes this to mean} that $J^*$ is happy and joyful, and then forms her beliefs accordingly. Likewise, $S^*$ takes $K^*$’s groaning and wincing behavior to \textit{mean} that $K^*$ is in pain, and goes on to form the belief that $K^*$ is in pain. In this world, $S^*$’s mental constitution is such that she finds experiences of bodies significant in the way described, and takes them to mean what they do, even though she does not herself go through any self-conscious cognitive process of inference or interpretation in arriving at the beliefs in question. At the

\textsuperscript{38} Given Descartes’s voluntarism, of course, appeals to divine volition may at times be more “brute” than those of rationalists who think that even God adheres to the principle of sufficient reason.

\textsuperscript{39} “Naturalistic” here contrasts with “supernaturalistic” rather than “immaterial” or “unmechanistic.” Thus a “naturalistic explanation” can appeal to finite minds. This means that qualified explanatory naturalism under discussion here is not the same policy as the one that Desmond Clarke ascribes to Descartes according to which we must employ \textit{mechanistic} explanation as long as possible before appealing to things that are officially “beyond the limits of [such] explanation” — \textit{i.e.}, finite minds as well as God’s mind (2002, ch.1). The two policies are compatible, of course.

\textsuperscript{40} The pre-critical Kant is another moderate rationalist who is committed to this kind of qualified explanatory naturalism and often invokes it against intelligent design theorists who, “as soon as a provision of nature is recognized as useful, [have] a general tendency to explain it directly in terms of the intention of the Divine Will, or, at any rate, in terms of an order of nature which has been especially and artificially instituted” (1902-2, 2:119). According to Kant, qualified explanatory naturalism is a safeguard against the sort of “lazy reasoning” which would impede scientific progress by undermining the search for naturalistic explanation. At the same time, it is “qualified” enough to be consistent with theistic creation doctrines.
level of $S^*$'s cognitive awareness, there may be merely the perception of bodily behavior, and then the belief that $J^*$ or $K^*$ is in a certain mental state. But at the non-cognitive level, $S^*$ is aware of and doing something akin to reading this bodily behavior in accordance with a complex semantic scheme that is grounded in a long history of neural evolution.

Larger issues regarding the nature of meaning and the problem of other minds have to be set aside here. The important point is that there is a crucial explanatory difference between a perceptual state’s being a *sign* whose meaning the mind is able to grasp, and its being *merely associated* with some other state in accordance with a preordained law. It is the same difference—the difference between taking something to be meaningful and simply having a reaction brutally produced in the mind in accordance with a law—that distinguishes the SCM from the natural institution accounts. For a qualified explanatory naturalist like Descartes, simply noting that there are correlations between brain states and mental states and then immediately appealing to divine institution is like an American football coach deciding (for no clear reason) to punt on the third down rather than on the fourth. It’s not that punting is always wrong; it’s that it should only be done on the fourth down. Likewise, given that the SCM offers another level of naturalistic, creaturely explanation of body-mind relations, Descartes has no need to appeal to the bruteness of the divine will right way. It’s not that punting to divine institution is always wrong; it’s that it should only be done on the explanatory fourth down—*i.e.*, after all naturalistic explanations have been exhausted. If this is correct, then it constitutes, I submit, a solid systematic reason to ascribe the SCM to a qualified explanatory naturalist like Descartes.\[43\]

C. Transparency

I mentioned earlier that another prominent concern about the SCM and other models in which the mind directly inspects or attends to the body stems from the doctrine of mental self-transparency. Wilson and other critics claim that the SCM is simply incompatible with the Cartesian doctrine that the mind is “supposed to be conscious of its perceptions.” We are not aware of any brain-reading activity, of course, and neither are we aware of the brain states themselves *qua* brain states. Our awareness is only of “cups and saucers, tables and chairs, other human bodies, and the like” (1991, 308). In support of this objection, critics typically cite the passage in the Second Replies where Descartes defines a “thought” (*cogitatio*, *pensée*) as “including everything that is within us in such a way that we are immediately aware of it. Thus, all the operations of the will, the intellect, the imagination and the senses are thoughts” (AT VII, 160; CSM II, 113).

The first thing to note by way of response is that it is not clear how to read the quantifiers in this passage. Is Descartes saying that everything that is a thought is such that the subject is immediately aware of it, as the objectors to the SCM assume? Or is he rather saying that everything that a subject is immediately aware of is in fact a thought? The fact that the extension of the concept of thought is said to “include” everything that is available to immediate awareness pushes in favor of the latter, less restrictive reading. If that is correct, then the extension\[43\]...
of thought may, for all we know, also include states that are not transparently available.44

Second, the distinction made earlier between kinds of awareness allows defenders of the SCM to avoid postulating a discrete, fully subconscious faculty of the Cartesian mind, and this helps to blunt the edge of the present objection. The SCM says simply that the brain states that mediate between external objects and sensory ideas are not available to cognitive awareness. But those states and their semantic content are aspects of the entire mind-brain union operation, and that operation is an object of non-cognitive awareness. Thus no appeal to a level of mind below all awareness is required.

Third, it is not clear from this passage which parts or aspects of an “operation” a subject must be cognitively aware of in order to count as being aware of the operation per se. We have seen that Descartes draws an explicit analogy in The Treatise on Light between the mind’s processing of neural signs and its “reading” of others’ facial expressions. In that case, the mind interprets the relevant states and gains information from them, even though the subject is surely not cognitively aware of all parts or aspects of this interpretive operation. The analogy thus suggests that advocates of the SCM can claim that every “operation” – i.e., every “thought” – is available to “immediate” cognitive awareness insofar as some part or aspect of every operation – the sensational part or aspect – is so available.

This suggestion gains plausibility when we note that it would be absurd for Descartes to claim that every part of every mental operation is transparently available to the cognitive mind. Introspection confirms this, of course, and Descartes himself suggests as much in a famous passage from the Optics: cognitive awareness of primary qualities like extension and relative distance arises from “a mental act which ... involves a kind of reasoning quite similar to that used by surveyors” but which is not itself, presumably, available at a cognitive level (AT VI, 138–140; CSM I, 170–72). In the Sixth Replies, furthermore, Descartes argues that operations like this are performed by the intellect and involve “rational inferences;” but are at the same time a result of ingrained “habit” and not typically such that we can “distinguish [them] from simple sense-perception” (AT VII, 438; CSM II, 295).

This is most clear when the perceiving subject lacks the concepts or sophisticated calculation skills required to make these inferences at a cognitive level. But note that I am not suggesting here that there is a similar sort of “reasoning” involved in the process of sensation-production. The point is rather that Descartes explicitly allows that there are some aspects of some mental operations of which we are not cognitively aware, even when these operations involve a kind of reasoning or judgment. And if such a high-level operation of mind can operate partially under the cognitive radar, then it seems arbitrary to insist that the explicitly non-

45. Other commentators seem to recognize this point as well. Thus, Williams cites a passage from the Fourth Replies as one in which “Descartes makes it clear that we do not have to be conscious of all the mind’s powers or potentialities — though mind is consciousness, not all properties of mind have to be properties for consciousness” (Williams 1978, 113n3). The passage referred to is the one where Descartes says that “I believe that the soul is always thinking for the same reason that I believe that light is always shining, even though there are not always eyes looking at it ...” (AT VII, 246). In other words, the soul is always thinking even if it is not always cognitively aware of that thought, just as light is always shining, even without someone’s being aware of it (Thanks to Elliot Paul for bringing the Williams reference to my attention). Amelie Rorty, speaking more specifically of body-mind relations in sensation, says that information from the body presents “essential, decipherable clues about the properties of physical objects” — clues which must then be “interpreted by the mind.” Clearly we are not cognitively aware of these interpretive processes in perception, although we are so aware of their sensational upshot (1992, 373). Hatfield claims that the brain provides “information” to the mind, and that our ideas of objects are then “constructed through an unnoticed process of reasoning” (1992, 351, 355). Clarke refers to the “spontaneous triangulation” and “unconscious comparison with other objects” that occurs in the perception of relative distance (2003, 59–60). MacKenzie’s account of the sensory representation of primary qualities includes the caveat that “the mind does not know the causal background system and does not even access (in consciousness) the relevant brain states, nonetheless these brain states enable the mind to sense the properties they represent” (1990, 133). And Caton, in a discussion of the process involved in producing sensory ideas, claims that for Descartes “none of it is a conscious activity” (1973, 85).

44. Thanks to Elliot Paul for helpful discussion here.
rational operation of producing sensations must be fully transparent to cognitive awareness.

D. Innateness
A final systematic point in favor of the SCM is that it resolves some infamous tensions between the doctrine of the mind’s passivity in sense-perception and the doctrine of universal innateness. In the Sixth Meditation, Descartes claims that he has “a passive faculty of sensory perception, that is, a faculty for receiving and recognizing the ideas of sensible objects.” This claim is based on the premise that sensory ideas are produced “without my cooperation, and often even against my will” (AT VII, 79; CSM II, 55). And this premise is of course indispensable to the proof in that Meditation of the existence of external objects. At the same time, as we have seen, Descartes is committed in the Comments to the doctrine that “there is nothing in our ideas which is not innate to the mind” and that external objects merely “transmit something which, at exactly that moment, gives the mind occasion to form these ideas by means of the faculty innate to it” (AT VIII B, 359; CSM I, 304). And so the mind is somehow supposed to be both passively receiving sensory ideas and yet still active in their production!

Some commentators view the tension between these two doctrines as irresolvable, or even conclude that Descartes collapses into incoherence on this score.46 The SCM, however, succeeds in showing how the mind can be active in the immanent production of sensations, while also being prompted to engage in that activity by brain states that are not under its direct control. So from the SCM’s point of view it seems just right to say, as Descartes does in the Rules, that the mind is “sometimes active, sometimes passive” in sense-perception (AT X, 415; CSM I, 42). The mind is passive in respect of the way that brain states are presented to it, but it then actively produces in itself the sensations that these brain states signify. It is also active, as we have seen, in the non-cognitive “reasoning” about brain states that produces sensory ideas of primary, mechanical qualities. Still, because the latter, active processes are not the object of cognitive awareness and not under the direct control of the will, we still feel ourselves to be passively receptive to the ideational aspect of the overall operation, and this is sufficient for the purposes of the Sixth Meditation anti-skeptical argument.47 The fact that a model of Cartesian sensation can alleviate the tension between two of Descartes’s entrenched commitments while still preserving a reasonable version of the transparency doctrine should add substantially to its appeal.48

4. Eyes within our brain
There is one final textual objection to consider. I have left it for the end because interpreting it correctly requires a grasp of the details of the entire account. Here is the relevant passage, from the Optics:

Now, when this [retinal] picture thus passes to the inside of our head, it still bears some resemblance to the objects from which it proceeds. As I have amply shown already, however, we must not think that it is by means of this resemblance that the picture causes our sensory perception.

47. Rules is of course an early and somewhat unreliable text. Still, it is noteworthy that already there Descartes says that the mind is “sometimes active” in the sense-perceptual process. Recall also that in Optics 6, Descartes claims that there is a “kind of reasoning” involved in the calculation of distance and other geometrical properties. Vinci (2005) argues that this means there is a kind of judgment involved even in grade (2) sensory response—i.e., in the production of ideas of sensible primary qualities. And, as mentioned in note 45, above, many other commentators take there to be some sort of noncognitive process of reasoning at work in the formation of such ideas, whether or not this process involves explicit judgment. If Vinci et al. are right about this, then Descartes must view the mind as in some way “active” in the formation of our sensory ideas of primary qualities, even though at the level of volition and cognitive awareness the mind is wholly “passive” (a point that is crucial, again, for the external world proof in Meditation 6). The SCM makes an analogous claim regarding the role of the mind in the production of secondary-quality sensations.

48. Natural institution models may be able to say something similar here; if so, this point will not favor the SCM over them. It does, however, recommend natural institutionism and the SCM over other occasional models.

of these objects—*as if there were yet other eyes within our brain with which we could perceive it.* Instead we must hold that it is the movements composing this picture which, acting directly upon our soul in so far as it is united to our body, are ordained by nature to make it have such sensations. (AT VI, 130; CSM I, 167, my emphasis)

One prominent commentator claims that this passage alone provides sufficient reason to refrain from “saddling” Descartes with views like the SCM,\(^49\) and many others cite it as an important piece of evidence against them.\(^50\)

But notice, first, that Descartes is focused here on developing an argument against the view that the corporeal “pictures” transmitted from the retina to the brain represent external objects by way of *resembling* them. The fact that this is the real target of the passage is clear from the fact that Descartes speaks of brain states “acting directly upon the soul.” We have found reasons elsewhere to think that the language of *proximate* efficient causation in passages like this does not reflect Descartes’s considered view. But if he is speaking loosely here about the causal structure of body-mind relations, then it seems extremely hasty to take this to be a definitive passage that decisively rules out the SCM.

Second, Descartes says nothing here about the claim that there is a faculty of the *mind* that surveys brain states and then produces corresponding mental states. On the contrary, he simply denies that there is a purely *physical* faculty “within our brain” that serves this purpose. Since the SCM specifically says that the interpretation of brain states is performed by a faculty of mind (working as a part of the union), the passage in fact offers no evidence whatsoever against it.\(^51\)

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\(^49\) Hatfield (1992, 354).

\(^50\) For example, Wilson (1991), Simmons (2003), Rozemond (1999), and Schmaltz (1992), (2008).

\(^51\) Vinci (2005, 54–57) makes much the same response to this objection. I’m grateful to an anonymous referee for calling my attention to this article, which I hadn’t seen when initially writing this section of the paper.

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**Descartes on Sensation**

5. Conclusion

Descartes remarks in the *Optics* that once belief in the resemblance between brain states and external objects is abandoned “the problem is to know simply how [such states] can enable the soul to have sensory perceptions of all the various qualities of the objects to which they correspond” (AT VI, 113; CSM I, 166). Many commentators have become defeatist about finding a cogent model of sensation that deals with this problem. I have argued here, however, that the SCM provides an account that is well grounded in the texts, internally consistent, and compatible with Descartes’s other philosophical views. Although it appeals at bottom to the incomprehensibility of God’s orchestration of the mind-body union, the SCM is no more brute in this respect than competing models. On the contrary, it promises more explanatory depth than its rivals by postponing the appeal to the divine will as long as is possible given the constraints of the Cartesian system. Further, the SCM’s postulation of various mind-body union operations that are not available in all respects to cognitive awareness is both true to the introspective data and able to resolve some longstanding tensions between Descartes’s commitments to the mind’s passivity in perception and the innate origin of ideas. All of this taken together indicates that although the SCM does not provide a *completely* naturalistic explanation of body-mind relations in sensation, it does go a long way in that direction while still offering textual and systematic advantages over rival models. There is thus, I submit, a strong cumulative case for including the SCM in any rational reconstruction of Descartes’s theory of body-mind relations.\(^52\)

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