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Review Essay

Metaphysics or science: The battle for the soul of philosophy of mind

Michael Silberstein

Beyond Reduction: Philosophy of Mind and Post-Reduction Philosophy of Science

Steven Horst

New York: Oxford University Press, 2007

223 pages, ISBN: 0195317114 (hbk); \$60.00

1. Overview

It seems to me that there are two kinds of book reviews: one in which the reviewer simply summarizes the book and then evaluates it on its own terms, and another opinionated type of review in which the occasion is used to start a broader and perhaps more wide ranging conversation with the author and the community. This is a review of the latter sort, but let me begin by doing the former. First, the book is exceptionally well written and very well organized. It is also, at times, funny in a wry, dry, and even subliminal fashion. I use this book in my classes and I think philosophy of mind would be greatly improved if it absorbed some of the lessons in Horst's book. I know of no better book to reform and reinvigorate philosophy of mind than this one.

Moving on to content and specific structure, here is a brief overview. Chapter 1 examines several varieties of naturalism in philosophy of mind versus other areas like epistemology and science. Horst argues that "naturalism" is committed to the following two claims: mental phenomena can be *explained in naturalistic* terms (i.e., intertheoretically reduced a la Nagel or Carnap); and mental phenomena *metaphysically supervene upon and are determined by* physical phenomena as described

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by the natural sciences. Horst thinks that former is both necessary and sufficient for the latter given that the reducing theory provides a “Conceptually Adequate Explanation” (CAE) of the reduced theory: “an explanation of A in terms of B is conceptually adequate just in case the conceptual content of B is sufficiently rich to generate that of A without the addition of anything fundamentally new” (p. 33). He thinks that if you accept CAE then you ought to accept the “Negative Epistemology-to-Metaphysics Connection” (Negative EMC): “the [principled] irreducibility of A to B entails that A does not [metaphysically] supervene upon B” (p. 30).

Chapter 2 elaborates the canonical positions in philosophy of mind: reductive physicalism, nonreductive physicalism, eliminativism, dualism, and Mysterianism. To each view he puts the following two questions: (a) can the phenomena of the non-mental special sciences be explained in naturalistic terms? and (b) do such phenomena metaphysically supervene upon physical facts? Horst claims that every view tends to answer “yes” to the first question and that sets up the following to appear unique: mental phenomena, and the failure to reduce mental phenomena.

The backdrop for all these positions is the assumption that reduction and supervenience are the norm *outside* of psychology. It is this assumption that makes the appearance that there are explanatory gaps in the case of psychology seem unacceptable to reductionists and eliminativists, and seem like a unique and sexy problem to dualists, Mysterians and nonreductive physicalists. It is thus the linchpin that holds together an entire problematic in philosophy of mind today. (p. 46)

Horst notes that this unexamined assumption of successful intertheoretic reduction in the non-mental special sciences (and thus proof of metaphysical supervenience) drives much of the logic in various quarters of philosophy of mind: first, historically the plausibility and success of intertheoretic reduction is what drove physicalism and not the other way round; second, the naturalist’s assumption that any special science phenomena (mental or otherwise) must either be reduced to be real or it must be eliminated; and third, dualism’s assumption that because the mental alone is unique in failing to be reduced, it must constitute another fundamental element along side the physical.

Chapter 3 argues that philosophy of science no longer supports the assumption of widespread intertheoretic reduction in the non-mental special sciences and has thus abandoned the “metatheoretical” norm of intertheoretic reduction. Rather, the lesson of philosophy of science is that intertheoretic reduction (certainly as characterized by many philosophical accounts such as the Nagel model) is rare in the natural sciences.

This ends part 1 of the book and brings us to part 2, wherein Horst addresses the implications of post-reductionist philosophy of science for the canonical views in philosophy of mind. Obviously, his main conclusion is that given the state of disunity in the natural sciences, there is no longer much warrant for believing that: (a) physicalism (or naturalism) is highly probable; (b) that phenomena must be reduced to be real; or (c) that mind is unique in resisting intertheoretic reduction—though he grants it may be unique for other reasons and may have special problems being reduced. Chapter 4 specifically examines reductionism and eliminativism in the

philosophy of mind and argues that disunity in the natural sciences shows that mind is not unique simply for being irreducible. Chapter 5 focuses on dualism and chapter 6 on nonreductive physicalism and Mysterianism, arguing again that rampant disunity in the natural sciences suggests that the shared assumption that mind is unique in its irreducibility is not well founded. Explanatory gaps and failures of intertheoretic reduction are the norm in science and not the exception. In short, all the canonical views in philosophy of mind are in trouble because they are predicated upon the dubious assumption that naturalism (or physicalism) is true of the nonmental special sciences.

Part 3 is primarily concerned with what philosophy of mind ought to do in the post-reductionist world and what its conceptual foundations ought to be. This section of the book is driven by the following four agenda-setting questions (p. 127):

- (1) What is the origin of scientific pluralism (disunity) and failure of intertheoretic reduction?
- (2) Is the Negative EMC tenable, and how would we decide?
- (3) In light of scientific disunity are we warranted in believing that everything other than mind (metaphysically) supervenes on fundamental physics?
- (4) Is there good reason to believe that the explanatory gap with respect to mind is truly unique?

Horst argues that none of the canonical positions in philosophy of mind canvassed here have adequate resources to successfully discharge these questions. He claims that disunity in the natural sciences ought to lead to re-thinking in philosophy of mind. If the philosophical project of reductionism fails then we ought to reconceive philosophy of mind. Horst argues that we should turn to a universal “*philosophical pluralism*” as a way out. Chapters 7–8 examine two kinds of pluralism: Dupre’s “Promiscuous Pluralism,” a realist pluralism with a radically expanded ontological inventory, versus “Cognitive Pluralism,” which is the idea that mind understands the world through special-purpose idealized *models*—this is the grand human cognitive architecture—and each model employs a representational system suited to its individual problem domain:

It is “cognitivist” in that it traces features of our *understanding* of the world to features of our *cognitive architecture*, that is, to empirical facts about how minds like ours model features of the world. It is also, in some ways, a *pragmatist* position, in that the nature of our explanatory interests and of our interactions with the world also plays a role in determining the form of models in science and outside it. It is a *pluralist* position in that it holds that we relate to the world through an irreducible plurality of special-purpose models that are not reducible to a single common denominator or unifiable into a single axiomatic system. Indeed, if a worldview is anything like an all-encompassing axiomatic system, we do not have anything so global as a worldview at all. Instead, we triangulate the world by deploying various models, each of which is good enough for particular things. In some cases, like successful scientific theories, these models are very good indeed, and apply very broadly. However, the partial and idealized character of these models, qua cognitive models, poses barriers to their integration into a single supermodel. (pp. 127–128)

Horst calls Cognitive Pluralism a “deep design principle” of human cognitive architecture, and claims that Cognitive Pluralism in scientific reasoning is just a subset of cognition generally. Needless to say, he champions Cognitive Pluralism over Promiscuous Pluralism. As well, in these chapters, Horst provides one of the best discussions I have seen on various types of *idealizations* in scientific models.

Regarding his answers to the preceding four questions, Horst claims first that Cognitive Pluralism best explains why disunity reigns in science (chapters 7–8). Second, chapter 9 discusses the *metaphysical* implications of Cognitive Pluralism, arguing from the latter to skepticism about the metaphysical project of “necessitarian metaphysics.” That is, Cognitive Pluralism may not be compatible with relying too heavily on possible-worlds semantics, the assumption of metaphysical supervenience underlying it, and the project of modal metaphysics to reveal the “deep, fundamental, and mind-independent structure of metaphysical reality” (p. 186). That is, he wishes to cast skepticism upon Negative EMC.

2. Cognitive Pluralism

To understand Horst’s argument one has to appreciate more fully where Cognitive Pluralism fits in the scheme of ontological perspectives:

Indeed, in one sense Cognitive Pluralism is not a thesis about metaphysics or ontology at all, and is ecumenical between rival views. That is, it is not a thesis about what I have called “*positive ontology*” or “*inventory ontology*”: the question of what is included in the inventory of the world. In exactly the same way, the Kantian and Pragmatist models of cognition are not (positive) metaphysical or (inventory) ontological theses Thus what they are rejecting is not something on the order of materialism or dualism, but a kind of deep *realism*, which their followers are sometimes wont to call “naïve realism.” Naïve realism is the uncritical assumption that the world divides itself, in a unique, canonical, and mind-independent way, into objects and properties Kantians and Pragmatists reject the realist assumption that the division of the world into objects is independent of minds, practices, interests, or conceptual schemes. Cognitive Pluralism shares this view, but additionally rejects the hypothesis that the division is unique or canonical Cognitive Pluralism of the sort I am proposing, by contrast, is skeptical of the supposition that there is anything as comprehensive and consistent as a Quinean conceptual scheme or frame of reference. Rather, there are a number of local models of portions or aspects of the world, each of which assumes its own positive ontology, and it is at best an open question whether these can be integrated into something both comprehensive and consistent. (pp. 184–185)

At the beginning of Horst’s book one might have expected a frontal assault on the unification of the special sciences by the natural/biological sciences and naturalism itself, by arguing that given Negative EMC and the failure of science to provide CAE, we ought to reject naturalism and its implications for philosophy of mind. However, what we see instead is that, by appealing to disunity in science, Horst wants to cast doubt on the very idea of necessitarian metaphysics and any argument based on Negative EMC or *Positive EMC*: that the [in principle] intertheoretic reduction

of A to B entails that A metaphysically supervenes on B. This is in part because he realizes that the frontal assault is only warranted at the ideal limit of scientific investigation, that is, CAE must fail *in principle* in order to argue against naturalism *via* Negative EMC. The naturalist is always free to argue that the failure of CAE in the present is a function of ignorance that will be remedied in the future.

Horst's actual argument against Negative EMC (and thus necessitarian metaphysics) is of a more neo-Kantian or Pragmatist bent:

Negative EMC is plausible insofar as one assumes that reasoning based on our concepts is a good way to investigate the real and fundamental natures of things-in-themselves, and hence to uncover deep metaphysical truths. In short, it relies on a good measure of realism and rationalism, albeit not of nativism. Cognitivism, on the other hand, treats our concepts, not as reflecting Lockean real essences or Kantian noumena, but as things-as-represented-in-partial-and-idealized-models. This considerably deepens the suspicion of our intuitions based on conceptual analysis. *Now* the issue is not simply whether our *present* concepts reflect an adequate understanding of their objects, but whether *any possible* concept could do so.... To the extent that necessitarian metaphysics is to be about things-in-themselves and not things-as-represented-in-model-M, a cognitivist view of our concepts ought to engender suspicion about just how far exercises in necessitarian metaphysics can take us. (pp. 190–191)

If Horst is right, then we are *never* in a position to make any inductively strong inferences about grand *metaphysical* theses like naturalism/physicalism or dualism based on the state of unity or disunity in science. This would obviously be bad news for all the canonical positions in philosophy of mind as well as Promiscuous Pluralism. In case it is not obvious, this is bad news for nonreductive physicalism, and Mysterianism as well, because they both presuppose that the mental metaphysically supervenes on the physical (physicalism) based on their illicit assumption of unity in the non-mental natural sciences. While it is true that Cognitive Pluralism is a kind of Mysterianism writ large, unlike the former, it is *essentially* neutral about “positive” ontological claims like physicalism. Thus, Cognitive Pluralism answers “no” to questions 3 and 4 above.

3. Naturalism

Chapter 10 harkens back to the question of naturalism: can naturalism embrace Cognitive Pluralism and vice-versa? Horst argues that it depends on the meaning of the word “naturalism”:

In epistemology and philosophy of science, “naturalism” tends to signify an approach that rejects aprioristic armchair methods in favor of approaches that are closely informed by, and perhaps even continuous with, the sciences. In this sense, my project [Cognitive Pluralism] *is* “naturalistic.” Cognitive Pluralism, as I have developed it, is a kind of paradigm case of a view of the mind that is driven by evidence taken from a number of the sciences of the mind. And I regard its plausibility as being beholden to further evidence from those fields. (p. 200)

He also says that: “on my characterization, Cognitive Pluralism, like Idealism and Pragmatism, is a paradigmatically non-naturalist view” (p. 201). What does he mean by this? First, obviously Cognitive Pluralism is a rejection of “naturalism” as originally defined by Horst at the beginning of this review and, for example, it therefore “denies that everything about the mind can be understood in non-mental terms” because

as a pluralist theory, it calls into question the very assumption there is a single, unitary thing that might plausibly be called “*the* framework of nature” as it is understood by the natural sciences.” If “the framework” implies a unitary, all-encompassing model, I deny that there is any such thing, even in such areas as physics and chemistry, much less biology. (p. 200)

Second, Cognitive Pluralism leaves open the possibility that the natural sciences as a whole are not complete in principle and that: “we are natural beings, *among other things*. But some of these other things cannot be explained by appeal to the natural sciences” (p. 201). That is, Cognitive Pluralism does not entail that the ontology of the natural sciences is fundamental and furthermore, it is not incompatible with the positing of supernatural entities such as God, immaterial souls, etc. Finally, because, à la Cognitive Pluralism, the mind is responsible for carving up and schematizing the world, creating the hierarchies of the sciences, etc., there is a real sense in which mind is more fundamental than physical and biological phenomena which it categorized and conceptualizes (p. 201).

4. Evaluation

By way of reviewing Horst’s book and evaluating his arguments, and in the interest of full disclosure, let me begin with points of agreement. I also have argued for many years that all the canonical positions in philosophy of mind and many of its aforementioned driving assumptions are *wrongly* predicated on the *inaccurate* belief that unity of science (intertheoretic reduction à la Nagel or Carnap) is the norm in the non-mental special sciences. I have also explicitly argued that such wrong headed thinking is part of the basis for the inherently insoluble and thus spurious hard problem of consciousness and the so-called explanatory gap (what Horst calls “necessitarian metaphysics”). And I too claimed that philosophy of mind ought to be rebuilt upon a different foundation in light of the actual state of play in the natural sciences (Silberstein, 1998, 2001, 2002). I have also championed a form of *explanatory pluralism*, though it does not entail Horst’s Cognitive Pluralism, as we shall see (Chemero & Silberstein, 2008a). Horst says his aspirations for the book are as follows (p. 6):

- (1) Bring philosophy of mind into closer dialogue with contemporary philosophy of science and cognitive science/neuroscience itself.
- (2) Persuade both philosophy of mind and philosophy of science that Cognitive Pluralism is true.

- (3) Give solace and comfort to those who think that naturalism/physicalism is implied by science itself.

I have advocated strongly for the first goal as well and I have argued that most attempts in the literature to argue from science alone to naturalism/physicalism/causal closure, etc., are not inductively strong (Silberstein, 2006), per Horst's third goal. He is absolutely right to point out that arguments for causal closure, for example, are typically weak and question begging and that science by itself does not constitute strong evidence for closure; rather, causal closure is a purely *metaphysical* add-on to science that requires an independent argument (p. 103). Therefore I am completely on board with Horst in rejecting armchair metaphysics in favor of a particular kind of naturalism. My worry at the end of the day is that Cognitive Pluralism is really no friend to the kind of naturalism we should be practicing. Indeed, Cognitive Pluralism might have the effect of turning naturalism of a sort upon itself. It is clear that Horst wants Cognitive Pluralism to be an empirical hypothesis; but, as I will suggest below, the worry is that Cognitive Pluralism undercuts any grand inferences from science to Cognitive Pluralism itself. That is, Cognitive Pluralism is a grand unified theory about the design of the human mind, and yet Cognitive Pluralism tells us that science is never in a position to justify any such globally unifying theories no matter what its state of unity or disunity. Cognitive Pluralism is a kind of skepticism about overarching claims in general.

Where I part company with Horst, and I suspect many others of diverse metaphysical stripes will as well, is on what philosophy of mind should do in light of the failure of Positivist philosophy of science. To begin, I am not persuaded by Horst that Cognitive Pluralism is true and is the best explanation for the disunity in science; I also worry that Horst mostly ignores all the unity that exists in science and would be hard put to explain it given Cognitive Pluralism. More importantly, however, I find the positing of Cognitive Pluralism, just like Mysterianism itself, potentially unhelpful, defeatist and reactionary; this is of course not Horst's intention. Cognitive Pluralism might be true, of course, but it should be a position one is forced to at the limits of scientific and philosophical investigation, not something one champions from such a relatively early stage in the history of science. Cognitive Pluralism is what in the science and religion debate is sometimes called a "premature science stopper" (Ruse, 2008, p. 13). Cognitive Pluralism strikes me as a rearguard maneuver from a naturalistic point of view. To the extent that Cognitive Pluralism is true we should be looking for ways to transcend these limitations.

Horst might reply that Cognitive Pluralism is not a scientific attitude but a philosophical one and is therefore not meant to broach the practice of science. Of course, from my perspective this is exactly the problem: rather than adopt a brand of naturalism continuous with science, Cognitive Pluralism might be just another second-order *philosophical move* in a long game of battling "isms." Why not just *stop* the second-order scholastic theorizing about scientific knowledge such as neo-Kantianism/Pragmatism and just jump in arguing about the first-order scientific theories and what the data does and does not imply? In fairness, of course, Horst

does muster empirical evidence for Cognitive Pluralism; but such *grand unification* inferences are potentially undercut by Cognitive Pluralism itself. He says the following:

I make the case for the thesis that having a mind that interacts with the world through a plurality of special-purpose, idealized models is a plausible “design principle” for human and animal minds. On the one hand, this view is consonant with several themes in the sciences of cognition, such as modularity and domain-specific representation and reasoning. On the other hand, it is both an *adaptive* architecture and one that is plausible on evolutionary grounds. (p. 152)

There is now a great deal of evidence to support the view that many cognitive functions are anatomically *localized*: that is, that significant numbers of mental capacities are rooted in special-purpose mechanisms performed by dedicated bits of neural tissue. (p. 154)

Horst then argues from evolutionary psychology, modularity, localization of brain function, representationalism, etc., to Cognitive Pluralism. Horst essentially argues that, if standard views in cognitive science and neuroscience such as strong modularity are true, then Cognitive Pluralism is likely true and therefore reduction à la CAE is not possible. One is here reminded of Plantinga’s arguments attempting to use naturalism against itself (see, e.g., Plantinga, unpublished manuscript). It probably goes without saying that most defenders of modularity, evolutionary psychology, etc., will not license Horst’s argument to Cognitive Pluralism (James, 2002). Of course, in the naturalistic philosophy of mind I favor these are all important and contentious issues and assumptions that require their own arguments (Chemero & Silberstein, 2008a). That is, modularity, localization, representationalism, etc., are exactly what we should be arguing about. Here Horst makes no new arguments for these positions but merely argues that they favor Cognitive Pluralism. However, one problem is that Cognitive Pluralism, if true, ought to make us skeptical that we can make easy inferences from any one area of cognition and science to all the others. For example, Cognitive Pluralism ought to make us skeptical that there is any simple (reductively explanatory) isomorphism between brain architecture and cognitive architecture. Horst himself makes a similar point against Bickle’s “Ruthless reductionism” (p. 75): the reduction of mental function to cellular and molecular processes. Obviously, ruthless reductionism is ruled out *a priori* by Cognitive Pluralism. But Cognitive Pluralism also rules out the more over reaching claims of evolutionary psychology as well, such as strong modularity. Borrowing the language of Sellars (1962), I might also add that this particular collection of views, the “scientific image” of action and thought in cognitive science, is no friend to the “manifest image,” our commonsense conception of self, agency and cognition; and yet Horst claims to want to defend the manifest image against naturalism. I worry that Cognitive Pluralism is about as much help to the manifest image as moral relativism is to universal tolerance.

To say that Cognitive Pluralism is self-defeating is probably too strong, but it does cast doubt on some of Horst’s inferences. For example, again, given Cognitive Pluralism, why think that brain mappings directly imply a cognitive architecture or vice versa? Granted, at the limits of each there will be restrictions. For example,

it might be hard to “implement” cognitive modularity if full-on connectionist holism is true of the brain. But even if one is not skeptical of such direct mappings, Horst needs hardcore neural modularity or localization to be true. In all fairness, Horst does consider evidence against neural localization (p. 165) in the form of Anderson’s (2007) Massive Redeployment Hypothesis (MRH)—which was then a forthcoming article—which argues based on a meta-analysis of imaging studies that redeployment of existing brain areas in new functional configurations is the norm in cognitive activity. While it is true that MRH does not support full-on holism (it rather suggests that *non-globalism* is the strongest form of localization that is supported by the evidence), it does suggest widespread cognitive sharing of labor (the *same* representational resource doing two quite different jobs) and that points in the opposite direction of Cognitive Pluralism, at least in spirit. (For more recent work along these lines see Anderson, 2010; Anderson & Silberstein, unpublished manuscript.) I still worry, however, that the question of Cognitive Pluralism is mostly orthogonal to the question of neural localization, especially if Cognitive Pluralism is true.

However, empirical considerations aside, even taken as a second-order philosophical position, the book could use a much more in depth discussion of how Cognitive Pluralism compares to and differs from other related rejections of “naïve realism” or “metaphysical realism,” such as Putnam’s Internal Realism and Pragmatism, Van Fraassen’s Constructive Empiricism, various Postmodernist and Strong Program versions of Social Constructivism, etc. (Brown, 2001). What is new or unique about Cognitive Pluralism? For example, other than abandon armchair necessitarian metaphysics, Cognitive Pluralism does not make clear what philosophy of mind ought to be doing. True, Horst thinks that Cognitive Pluralism is a well supported empirical hypothesis that is defeasible; the problem is that if it is true, it greatly diminishes what we can learn from science. For example, we would never be in a position to refute naturalism and its kin on empirical grounds.

Whereas I share Horst’s rejection of philosophy of mind practiced as just a subset of a priori metaphysics, I would argue that we should abandon necessitarian metaphysics and all other a priori metaphysics not because Cognitive Pluralism is true, but because such metaphysics is pure scholasticism and is forever beyond our grasp (Chemero & Silberstein, 2008a; Silberstein, 2001). Questions like whether or not the mental *metaphysically supervenes* on the physical are truly “how many angels on the head of a pin” kinds of questions that can never be resolved and make little real empirical or experiential difference. I can think of no scientifically motivated reason to even take talk of *metaphysical necessity* seriously, or for that matter, talk of “supervenience” or “realization,” as none of this language figures in any first-order scientific enterprise. As Wilson suggests, such metaphysical activity is often little more than pseudoscience:

Psychologists and cognitive neuroscientists do not, for the most part, talk of realization, but of the *neural correlates*, or of the *neural mechanisms* for psychological functions and capacities. Cognitive capacities are located in states of the brain. It is part of philosophical lore that such talk is loose-speak for the

more metaphysically loaded discussions within the philosophy of mind cast in terms of supervenience and realization. This lore is what justifies the sense that philosophical discussions of the metaphysics of mind are continuous with and contribute to the cognitive sciences, even though one does not hear “realization” in the mouths of cognitive scientists themselves. It is part of the self-image of naturalistic philosophy of mind. (Wilson, 2004, p. 100)

Here is the kind of naturalism that ought to replace the metaphysics of mind: philosophy of mind ought to *begin with the best science* and then set about trying to interpret it, trying to determine its mostly likely ontological and epistemological implications. As Chemero and I say in our article, “After the philosophy of mind: Replacing scholasticism with science”:

The philosophy of mind is over. The two main debates in the philosophy of mind over the last few decades about the *essence* of mental states (are they physical, functional, phenomenal, etc.) and over mental content have run their course. Positions have hardened; objections are repeated; theoretical filigrees are attached. These relatively armchair discussions are being replaced by empirically oriented debates in philosophy of the cognitive and neural sciences. We applaud this, and agree with Quine that “philosophy of science is philosophy enough” (1966, p. 149). (Chemero & Silberstein, 2008a, p. 1).

The point is that what should replace armchair metaphysics is *natural philosophy*, philosophy of mind should be practiced as a subset of philosophy of science, that is, as philosophy of psychology, cognitive science, neuroscience, etc. Philosophy of mind should model itself on philosophy of biology and philosophy of physics: *scientific metaphysics* (as in the *foundations* of a scientific discipline) that begins with immersion in the science in question and proceeds to tackle issues internal to it.

Horst actually considers this variety of naturalism and says the following:

At one level, this may be seen as simply an entirely reasonable research strategy However . . . it does not yield results that can be put to use in the service of a particular metaphysical view, such as physicalism. [Bickle’s] “Ruthless reduction” [for example] is thus not a revival of the broad reductionist project, but a repudiation of it. At the level of explanation, it gives up on the project of making type-relations completely epistemically transparent. And it disengages explanation from the metaphysical project entirely. (p. 75)

It is true that scientific metaphysics as defined is a principled rejection of necessitarian and other armchair metaphysics. It is also true that if physicalism or naturalism requires that mental phenomena be “*explained in naturalistic terms*” (i.e., intertheoretically reduced à la Nagel or Carnap) and that mental phenomena demonstrably “*metaphysically supervene upon*” say neuroscientific phenomena, then science in the real and actual world could never confirm these metaphysical doctrines. There will be no a priori and ab initio derivation of mental phenomena starting from neuronal phenomena forthcoming—but so what? Nothing of great interest follows from this. Like it or not, science is the best tool we have for exploring the nature of this-worldly reality and if, for example, Bickle’s

“Ruthless Reductionism” (according to which molecular neuroscience, along with appropriate bridge principles, will be able to account for all the laws and facts of psychology) proved itself in the form of superior predictive and explanatory power, then that would go along way to establishing that *scientific physicalism* of a sort is true in this world; what more can you ask of science and what more could any philosophical analysis provide? This kind of ruthless reductionism in particular, and *mechanistic* reductionism in general, *could* threaten the manifest image of the *Self*, agency and cognition in the actual world; nothing in Horst’s book can rule that possibility out, and being told that “while you are a ‘meat machine’ in this world, at least *naturalism* has not been established” will probably be of little consolation. That is, while Cognitive Pluralism might shield the manifest image from the absurd overreaching of *naturalism* it cannot necessarily protect it from more humble reductive projects. If, for example, molecular neuroscience started having wild, universal and unmatched predictive success with regard to mental phenomena and human behavior, I doubt that hiding behind either pluralism or underdetermination would be much consolation.

There are two immediate lessons here:

- (1) The failure of Positivist accounts of intertheoretic reduction and Horst’s CAE does not entail that intertheoretic reduction is so rare or impossible in science; it shows that normative philosophical accounts such as the deductive-nomological model set the bar too high, impossibly high (Silberstein, 2002).
- (2) Intertheoretic reduction is not the only reductionist game in town and most philosophers of the biological sciences, such as cognitive science and neuroscience, now argue that reduction and explanation in the biological sciences are in the form of *mechanistic* explanation, the decomposition of mental functions and localization in terms of underlying brain mechanisms (Chemero & Silberstein, 2008a).

From this perspective, the best explanation for the failure of *naturalism* and *unificationism* is not Cognitive Pluralism, but the fact that science is not in the business of validating metaphysical supervenience, and not able to validate it given: computational complexity; the idealization of scientific models; diverse explanatory interests; different characteristic properties and accompanying vocabularies at different spatiotemporal scales and energy levels, in different contexts, at different levels of complexity; etc. Horst is right to emphasize these aspects of scientific practice. His description of scientific models is not the problem, as explanatory pluralism is indeed a fact of life in science. *But explanatory pluralism does not entail Cognitive Pluralism*, that we are hardwired in a Kantian fashion for conceptual and theoretical disunity. Giving up on Positivist dreams of the unity of science or even giving up on the idea of axiomatizing scientific theories, does not mean giving up on unification all together in any form. Explanatory pluralism and unity reasonably conceived are not mutually exclusive.

The explanatory pluralism I have championed holds that some cognitive phenomena are perhaps best explained in some reductive fashion, some with an interlevel mechanistic story and some dynamically using differential equations and dynamical systems theory. Indeed, the very same systems can profitably be explained,

for example, dynamically and mechanically. Dynamical and mechanistic explanation of the same complex system get at different but related features of said system described at different levels of abstraction and with different questions in mind (Chemero & Silberstein, 2008a). There is no *a priori* reason to claim that either kind of explanation is more fundamental than the other, nor any reason both explanations might not interlock rather than be incommensurable, even if you cannot replace one vocabulary with the other. This kind of explanatory pluralism, while also pragmatic, does not attempt to rule out the very possibility of unity; it strives for unity but recognizes the limits of scientific unification and the need for diverse modes of attack.

Of course I am not defending *naturalism* of the sort Horst is calling into question. Rather, I'm suggesting scientific metaphysics, a first-order examination and interpretation of scientific theory and evidence pertaining to such issues as localization and decomposition, mechanistic reductionism, compositional reductionism, modularity, representationalism, methodological individualism, embodied, embedded and extended cognition, conscious experience and intentionality, neural correlates of consciousness and cognition, etc. Obviously there is plenty of room for disagreement about what the best interpretation of the theory and data is. Computationalists, neuromolecular reductionists and ecological psychologists are looking at the same data and reaching very different conclusions—e.g., ecological psychology and others reject the kind of representationalism that Horst presupposes in his arguments for Cognitive Pluralism. As another example, based on the evidence at hand, I have argued against sweeping compositional and mechanistic reductionism and in favor of embodied, embedded and extended accounts of cognition grounded traditionally in ecological psychology, enactive cognitive science, dynamical systems theory, Jamesian empiricism, systems biology and neuroscience, etc. (Chemero & Silberstein, 2008b; Silberstein, 2006). If we really hope to resolve these differences in the future then scientific metaphysics is the only game in town.

In a default fashion Cognitive Pluralism may partially shelter the manifest image from the onslaught of natural science, but it is the same kind of cheap “protection” that extreme forms of Postmodernism and Social Constructivism give to non-natural belief structures, the kind of protection where every belief is equally bad off with respect to justification and veridicality. I have argued head on and straight up that the manifest image and the scientific image may not be so divergent after all. It is an empirical question and ought to be resolved that way in the long run if possible, underdetermination and bad luck notwithstanding. In any case, our disagreements should be based on empirical considerations and interpretations thereof. Again, Cognitive Pluralism blocks any straightforward refutation of naturalism. Take the widely held metaphysical assumption of Humean supervenience or mereological supervenience, which would have the consequences of what Horst calls “compositionalism”: (a) all the objects of the special sciences are composed of nothing but the objects of basic physics; and (b) facts about the whole are completely determined by intrinsic properties of the basic parts and the

fundamental physical laws governing them (p. 126). Many of us over the years have argued that quantum mechanics and relativity themselves tell against any such simplistic reductionism (Hawthorne & Silberstein, 1995; Silberstein, 1999, 2002; Stuckey, Silberstein, & Cifone, 2008). Cognitive Pluralism does not even allow one to get such arguments off the ground.

In spite of my differences with Horst over Cognitive Pluralism, I believe that his book is a true gem and a must read for everyone concerned about the fate of philosophy of mind. Again, despite the differences, his vision of what philosophy of mind ought to be is quite close to my own. Let us pray that those younger folk who are the future of philosophy of mind will read this book in droves and thus put an end to scholasticism forever.

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