



A Place for Dogs and Trees?

Thomas W. Polger
Department of Philosophy
University of Cincinnati
Cincinnati, OH 45209
USA

© Thomas W. Polger
thomas.polger@uc.edu
homepages.uc.edu/~polgertw

PSYCHE 12 (5), December 2006

KEYWORDS: Rosenberg; entailment; entry-by-entailment; a priori physicalism; analytic physicalism

COMMENTARY ON: Gregg Rosenberg (2004) *A Place for Consciousness: Probing the Deep Structure of the Natural World*. Oxford: Oxford University Press. xviii + 325pp. ISBN: 0-19-516814-3.

Abstract: Rosenberg does not provide arguments for some crucial premises in his argument against physicalism. In particular, he gives no independent argument to show that physicalists must accept the entry-by-entailment thesis. The arguments provided establish weaker premises than those that are needed. As a consequence, Rosenberg's general anti-physicalist argument is found wanting.

1. The Death of Physicalism

By the late Twentieth Century, English-speaking “Analytic” philosophers became accustomed to finding themselves in the intellectual obituaries. If it was not “philosophy” altogether that was pronounced dead, then at least it was “metaphysics” or “truth” or some other major philosophical organ that had failed. Now it is the death of physicalism, or at any rate something called “physicalism” that is being hailed, and indeed celebrated. Gregg Rosenberg's ambitious book, *A Place for Consciousness*, is the latest eulogy for physicalism. Not accidentally following David Chalmers in *The Conscious Mind*, Rosenberg aims to console us for our loss by proclaiming that the passing of physicalism is accompanied by the establishment of a safe place for our very essence: consciousness itself. Indeed, twas beauty killed the beast. This last twist elevates the biography of physicalism a genuine tragedy, for on this telling it was inevitable that physicalism fail in order that consciousness may flourish.

Despite the dramatic flair, I suspect that the purported death of physicalism is a case of mistaken identity—just as the deaths of philosophy, metaphysics, and truth turned out to be. All, I am happy to say, are alive and well.

2. What is Physicalism?

Let's begin by avoiding an obvious mistake. I hasten to add that I am not accusing Rosenberg of this mistake. Rather, by agreeing with Rosenberg that this is a mistake we can begin to establish some common ground. Here is the mistake: As a descriptive or interpretive matter, it would be wrong to claim that most physicalists believe that the only things that exist are the things that are recognized by fundamental physics.¹ The view that all that exists are strictly physical things—the entities, properties, relations, etc. of fundamental physics—is a radical one, and it is usually called “eliminative materialism” or “eliminative physicalism.”² So as an objection to physicalism, it is no use to point to familiar objects such as books, trees, and dogs, and observe that they are not entities recognized by fundamental physics, QED. Physicalists who do not intend to assert eliminative physicalism will rightly think that such an argument misrepresents their view rather than refuting it.

Thus, when critics of physicalism set out to formulate the view precisely, as Rosenberg does, it is important that physicalism-as-formulated not turn out to be obviously false. Or, if physicalism is obviously false then critics should just say so and skip the pretense of carefully dissecting an obviously false view. Rosenberg, however, does not argue that physicalism is obviously false. So I take it that he means the view to be substantive and interesting, and he means his formulation of it to reflect that. Simply put, we can demand that he provide a charitable characterization of physicalism. This puts Rosenberg, happily by his own measure, in the same boat as David Chalmers (1996), who also argues against physicalism but does not take it to be obviously false. And Rosenberg aims to go one better than Chalmers by formulating an argument against physicalism that does not rely on a conceivability argument.³

Rosenberg offers that “*Physicalism* is the thesis that all other kinds of things wholly derive their existence from the existence of the physical” (7, italics original).⁴ Rosenberg continues, “Among the *other kinds of things* are hurricanes, speed limits, moral values, numbers, and, most important for this book, conscious minds” (7, italics original). Before looking at the characterization of physicalism directly, let us notice how Rosenberg is situating his challenge to physicalism. We know that Rosenberg will argue that conscious minds (or the phenomenal experiences had by conscious minds) are to be offered as counterexamples to physicalism. Let's allow that, if correct, this would count as a non-trivial objection and would thereby satisfy the expectation for charity. I take it then that the other kinds of things mentioned in the passage—“hurricanes, speed limits, moral values, numbers”—are supposed to be accommodated by Rosenberg's charitable interpretation of physicalism, except insofar as they depend on conscious experiences. And I assume that my earlier list is physically “kosher” as well: books, trees, and dogs.⁵ Now for my part, I am not sure what numbers or moral values are. Certainly one could argue that numbers are abstract entities or that moral values presuppose essentially normative properties, and that either of these is therefore a counterexample to physicalism. But this is not Rosenberg's argument. So let us set these concerns aside.

More worrisome is Rosenberg's characterization of physicalism in terms of those things that "wholly derive" their existence (and, presumably, their properties) from the strictly physical, i.e., physics. The trouble is that this formulation is ambiguous between ontological and epistemic claims. Many physicalists would assent to the claim that what happens in the world is wholly dependent on, and determined by, what happens with our physical processes (adapted from Kim 2005: 14). This characterization is squarely ontological, invoking relations of dependence and determination. But Rosenberg's formulation permits an epistemic reading, according to which the existence of the other kinds of stuff can be "derived" from the existence of the strictly physical. Indeed, it is clear that this is precisely what he has in mind, for the official conclusion of his argument against physicalism is that "facts about a pure physical world do not entail facts about phenomenal consciousness" (18) where entailment is "is understood as an a priori implication (*A* a priori entails *B* if one can rule out a priori that *A* is true and *B* is false)" (14). Since a prioricity is an epistemic notion, entailment (as it is used by Rosenberg) is an epistemic relation. As a descriptive and interpretive matter, it would be wrong to suppose that physicalists generally formulate their thesis as the claim that the only things that exist are the entities of physics and those whose existence is a priori implied by physics. This variety of analytic physicalism had its heyday in the Positivist era, and largely went out with Positivism. It has some supporters (notably Lewis 1994 and Jackson 1998), and Chalmers (1996) supposes that physicalism (were it true) would have to take this form. But I take it that Rosenberg means his argument to apply also to those who are not self-avowed analytic physicalists.

Rosenberg therefore owes us three things. First, he will have to provide an argument establishing that physicalists who endorse the determination formulation must also endorse the entailment formulation—that the ontological thesis requires the epistemic thesis, that physicalists have to be analytic physicalists.⁶ Second, Rosenberg will have to argue that everything (or pretty much everything) except consciousness is "a priori implied" by the physical. For we have just agreed that if books, dogs, hurricanes, and so forth are counterexamples, then we have mischaracterized physicalism.⁷ Rosenberg attempts to do it by means of an analogy with the formal system known as *Life*, that has been widely discussed by philosophers. Finally, Rosenberg will have to argue that, in contrast to books, trees, dogs, and hurricanes, consciousness or phenomenal experience is not "entailed" or "a priori implied" by the physical. Rosenberg here again appeals to the *Life* system.⁸

Now there are some physicalists who would respond to an argument like Rosenberg's by defending the "entailment" of consciousness by the strictly physical. Jackson (1998) clearly holds this view, and Horgan (1984, forthcoming) at least admires the program that he calls "cosmic hermeneutics." Like most physicalists, however, I accept that [facts about] consciousness is [are] not entailed by the strictly physical [facts]. For a small sample of others who share my view and are explicit on the matter, consider: Byrne (1999), Lycan (forthcoming), Block and Stalnaker (1999), Yablo (1999), Hill and McLaughlin (1999), and McLaughlin (2005). For these philosophers, the failure of "a priori implication" or "entailment" for consciousness is no mark against physicalism. One defense of this position, sometimes called "a posteriori physicalism," involves a *reductio ad absurdum* argument: If "entailment" of *x* by the strictly physical is necessary for the truth of physicalism about *x*, then books, trees, dogs, and hurricanes are not

physicalistically acceptable because they [those facts] are not entailed by the strictly physical [facts]; therefore “entailment” of x by the strictly physical is not necessary for the truth of physicalism about x . To take on the task for giving a charitable formulation of physicalism is to admit that any formulation that had the consequence of denying the physical acceptability of books, trees, dogs, and hurricanes could be treated as a *reductio*.

One who finds this *reductio* compelling will happily concede that facts about consciousness are not a priori entailed by strictly physical facts. And I do. By conceding this, I agree that the work of defending Rosenberg’s antiphysicalist argument thus rests on his arguments for the first two claims, above: that the physicalists’ ontological determination commitment requires the epistemic “a priori” derivation commitment (i.e., entailment), and that [facts about] books, dogs, trees, and hurricanes are so entailed. For Rosenberg’s argument to fully succeed, both must be established. And because they are supposed to support one another, the two claims must be established by independent arguments. To show this would be to escape the *reductio* argument.

Following Jackson (1998), Rosenberg calls the thesis that all non-physics facts must be a priori entailed by the physics facts, *entry-by-entailment*.⁹ And like Jackson, Rosenberg provides an argument to show that physicalists are committed to entry-by-entailment. But, as indicated above, the defense of entry-by-entailment obviously depends also on showing that everything (or most everything) that is unquestionably physically acceptable satisfies the entry-by-entailment thesis. This is because *ex hypothesi* books, dogs, trees, and hurricanes are not counterexamples to physicalism.¹⁰ So if facts about books, dog, and trees are not entailed by the physical, then it cannot be that physicalism requires only entry-by-entailment.

The key point is that we have to examine separately the arguments that ordinary facts satisfy entry-by-entailment, and that physicalism requires entry-by-entailment. (In particular, the argument that book, tree, dog, and hurricane facts are physically entailed cannot rest on the premises that they are physically acceptable and that all physically acceptable facts are entailed by the facts of physics. We can all agree that that would be questing-begging.) Rosenberg’s arguments for these theses occupy the second and third chapters of his book. The rest of the book quite reasonably takes for granted the success of the early chapters and endeavors to present an overall worldview in which the antiphysicalist conclusion is palatable. This includes an extensive discussion of causation that might have been a separate book. But none of that can be used in the positive argument for entry-by-entailment.

Because I am going to argue that Rosenberg does not discharge his dialectical obligations, it is important that my demands are reasonable and are those that he accepts. Although I am glossing over some of the nuances of Rosenberg’s presentation, nothing in the substance of what I have said so far should be objectionable to him. He accepts the dialectic as I have described it, and he offers the arguments that I say he owes us—to which we turn in the following sections. Indeed he is admirably precise about the structure of the arguments. We might complain that Rosenberg’s precision does not always amount to clarity, due to his heavy reliance on philosophical apparatus—new distinctions and bits of technical jargon. But so far I have set out the debate with only a few devices, such as entailment and entry-by-entailment. These are recognized as technical notions by Rosenberg. And he is also well aware of the tactic that I am

suggesting, that of accepting that facts about consciousness violate entry-by-entailment and focusing instead on the entailment requirement itself. He knows that it is common to accept that there are determination relations stronger than natural laws but that are not a priori knowable, and thus that do not meet entailment's epistemic standard. And he accepts that it is his task to provide an argument against such relations if he wishes to insist that the only physicalistically acceptable ontology-introducing relation is entailment.¹¹ As such, Rosenberg will agree that at least thus far I am not open to the charge of question-begging.

3. Entry-by-Entailment and *Life*

I have registered agreement with Rosenberg on two counts: first, that ordinary objects (books, trees, dogs, and hurricanes) are compatible with physicalism; and second, that consciousness does not satisfy entry-by-entailment. We can now turn to Rosenberg's arguments for the entry-by-entailment thesis, and for the claim that most ordinary facts satisfy entry-by-entailment. I am going to pay particularly close attention to the structure of the argument and the order of the defense of its premises. Some will find my focus on sequence to be little more than harping. But in the debate over physicalism a good deal hinges on the issue of which side owes arguments at which stages in the dispute, and I want to draw out where Rosenberg meets his obligations and where he does not. Let us first consider Rosenberg's argument that ordinary facts satisfy entry-by-entailment. Then we can examine his independent argument for entry-by-entailment itself.¹²

Unless we are convinced that ordinary facts are entailed, we cannot be expected to worry about the failure of entailment in the case of consciousness. For in that case we would have just as good reason to doubt that physicalism requires entailment. So Rosenberg owes us an argument that ordinary facts are entailed by the facts of physics. Moreover this argument is intended to support the entry-by-entailment commitment. So it cannot be the question-begging argument that ordinary facts must be entailed because they are physically acceptable and physical acceptability requires entailment.

It is useful to pay attention to the structure of Rosenberg's arguments and the organization of the book's chapters. Rosenberg states an argument against physicalism at the start of Chapter 2. He then makes defenses of the stated premises of the argument in the balance of Chapter 2. At that point, he regards the core argument against physicalism as complete. In particular, since the argument against physicalism makes essential use of a suppressed premise about entailment, we should expect that he will provide a positive argument for the entailment requirement. Likewise, we are expecting a positive argument for the claim that ordinary facts are entailed by the facts of physics.¹³ Let's see how it goes.

Rosenberg frames his argument against physicalism in terms of the system *Life*, developed by John Conway and popularized by Martin Gardner (1970). *Life* is familiar to philosophers, for example through the work of Daniel Dennett (e.g., 1991). *Life* worlds are typically two-dimensional fields divided into pixels, which contain entities (pixels that are "on" or colored) that change over time in accordance with the "laws" of the world. One interesting class of *Life* objects, for example, is the gliders. Gliders are sets of adjacent pixels that maintain their arrangement while "moving" across the *Life* world. Gliders are interesting because there is no specific *Life* rule that forms them or maintains

their behavior. Many scientists and philosophers find this kind of “spontaneous” or “emergent” phenomenon to be methodologically useful and philosophically provocative.

In Rosenberg’s reasoning the *Life* system serves as a model for actual-world physics. He can then argue as follows, and this is his main argument (18):

Facts about a pure *Life* world do not entail [all] facts about phenomenal consciousness (either a priori or a posteriori).

If facts about a pure *Life* world do not entail [all] facts about phenomenal consciousness, then facts about a pure physical world do not entail [all] facts about phenomenal consciousness.

Therefore, facts about a pure physical world do not entail [all] facts about phenomenal consciousness.

Of course this argument is only an argument against physicalism—as Rosenberg claims it to be (16)—with the added premise:

C. If physicalism is true then facts about a pure physical world entail all facts about phenomenal consciousness.

And (C) is not supposed to be a requirement peculiar to consciousness. It in turn depends on the more general entry-by-entailment principle:

E. If physicalism is true then facts about a pure physical world entail all facts that are not purely physical facts.

To defend the conditional (E) is to defend a particular formulation of physicalism, one that is captured by the entry-by-entailment thesis. The argument for (E) is one of the two we are looking to find. But Rosenberg does not directly argue for (E) in Chapter 2. Instead he mounts a general defense of entailment for ordinary objects and facts, in order to show that consciousness is the lone exception, or one of the few. The idea is to make the case that consciousness is special in this way—i.e., in not being entailed by physics. Later Rosenberg may back-fill the case for entailment by arguing that physicalists cannot accept an ontology-introducing relation other than entailment.

Now the plausibility of this tactic, as noted above, depends in part on defense of instances of the consequent of conditional (E), such as:

D. Facts about a pure physical world entail all facts about dogs

It is the defense of such ordinary claims that we set out to examine. And given Rosenberg’s commitments, the truth of (D) will depend on the truth of (D*):

D*. Facts about a pure *Life* world entail all facts about dogs.

Of course (E) could be true even if (D) and (D*) are false. Rather, we all agree that (E) is most plausible if (D) is true. And Rosenberg defends claims like (D) using the argument that *Life* worlds satisfy claims like (D*) therefore physical worlds satisfy claims like (D).

So what can be said for (D*)? Of course facts about any old *Life* world do not entail facts about my dog; the dogs we’re talking about here are the dogs that exist in the *Life* world. So for the argument to get off the ground we have to accept that the *Life* world contains dogs (and books, and trees, and hurricanes, and etc.) and that the pure *Life*

facts entail all the facts about the non-fundamental *Life* entities. I myself find this quite outrageous, so I expect a thorough defense of the premise and its ancillary commitments. As far as I can tell, Rosenberg's argument for claims like (D*) is as follows, and I quote it in its entirety:

Life itself can exhibit phenomena of indefinite complexity. For instance, because we already know that *Life* may contain self-replicating phenomena, we cannot rule out that it could exhibit some kind of genuine life. Because *Life* supports the existence of objects that dynamically evolve, it is at least an epistemic possibility that these entities might eventually lead to the existence of animate objects. We also have to hold it epistemically possible that these objects might metabolize elements of their environment, act in a goal-directed manner, adapt to be increasingly complex, and generally possess a suite of functional properties sufficient for regarding them as alive.

Given that life might exist, ecologies might exist. Given that ecologies might exist, even economies might arise in a *Life* universe. We can analyze economies into kinds of functional relations between objects within an ecological system, and functional relations are a combination of evolutionary and interactive properties. So, overall, requiring entailments from lower levels in a *Life* world does not give us grounds to rule out many kinds of phenomena in it. Nevertheless, the skeptic [e.g., Rosenberg] holds that no pure *Life* world can entail the existence of consciousness or the specific character of its qualities. (21-22)

Now if this is the argument that *Life* worlds entail facts about dogs, books, trees, and hurricanes, then I have to say that I find it entirely unsatisfactory. This argument fails on its own terms, as well as failing to satisfy reasonable dialectical demands.

First, on its own terms the conclusion is weaker than Rosenberg needs. What he has concluded, at best, is that a *Life* world might contain dogs (i.e., it is "epistemically possible" that it contains dogs) and facts about dogs—that dogs are not ruled out. By "epistemically possible" here, Rosenberg must mean something like that the pure *Life* facts do not a priori imply (i.e., entail) that the *Life* world contains no dogs. Since I don't think very much is entailed by pure *Life* worlds, I can agree that the pure *Life* facts do not entail that there are no dogs in any *Life* world. But this is far short of what Rosenberg needs, which is that the pure *Life* facts determine dog facts, not merely that they do not rule out dog facts. What we've got is that as far the pure *Life* facts go, there might be dogs in a *Life* world. What is needed is that the pure *Life* facts determine facts about dogs by entailing all facts about dogs in *Life* worlds. So this argument does not deliver D* or anything like it.

Despite its failure to secure D*, one might think that Rosenberg's *Life* argument succeeds in showing that there is *some* difference between facts about consciousness and other facts. Take the weak conclusion that facts about dogs are not ruled out by *Life* facts, that *Life*-dogs are epistemically possible. If *Life* facts do rule out the presence of consciousness but not of dogs—if consciousness is not epistemically possible in the *Life* world—then perhaps this difference can be parlayed into an argument against physicalism.¹⁴ The first thing to note is that whatever such an argument might look like, it would not fill-in the missing premise in Rosenberg's central argument, for it would not

help to secure entry-by-entailment. Second, Rosenberg does not assert that *Life* facts entail that there is no consciousness in *Life* worlds. He concludes merely that they do not entail that there is consciousness in *Life* worlds: “no pure *Life* world can entail the existence of consciousness or the specific character of its qualities” (21-22).¹⁵ Like the weak conclusion about the existence of dogs, the weak conclusion about the non-existence of consciousness will not do the trick. Finally, this tactic still runs up against my second problem with the *Life* argument.

The trouble is that the contention that *Life* worlds contain objects at all, and that it is possible that they contain “genuine” life, is at least as controversial as the entailment claim that the model is supposed to support. So when Rosenberg asserts as much he comes close to begging the question. Think of it this way: If pure *Life* worlds contain objects then entry-by-entailment is an ontology-introducing principle. And if the argument against physicalism is sound, then entry-by-entailment is the only ontology-introducing principle in either *Life* worlds or physical worlds. But if I don’t already think that entry-by-entailment is the one and only ontology-introducing principle, then why would I accept supposition that *Life* worlds model the physical world in the ways relevant to this argument? If I think that the actual world contains determination relations other than entailment—composition, realization, or constitution, for example—then I will deny that *Life* is a model of the physical world. What Rosenberg needs at this point is an independent argument that entailment is the only ontology-introducing relation that physicalists can accept.

Of course an important question is whether a physicalist can subscribe to determination relations that are not logical or conceptual. That is a question about whether the physicalist must accept the entry-by-entailment assumption. We’ll be examining Rosenberg’s argument for that position momentarily. The present question, however, is whether there is an argument for the entailment of ordinary facts that does not presuppose the truth of the entry-by-entailment thesis. Consider, for example, the following passage from Rosenberg’s introduction of the *Life* system:

As it turns out the *Life* physics can produce gliders. One can prove this by taking a pure *Life* world, producing one of the configurations in the life cycle of a glider, and checking that it evolves correctly over time. It does, so we see that *Life* worlds can entail the existence of gliders.

In this example, entailment acts as a determination relation: The basic facts in *Life* are the facts about the distribution of the “on” and “off” properties and how they redistribute over time. Also, the basic *Life* facts necessitate the facts about gliders without our having to introduce any new fundamental ontology. Instead, the necessity is grounded in conceptual truths about what it means to be a glider combined with empirical truths about the configurations of the basic properties in the *Life* world and the evolution of those configurations. Given a situation in the *Life* world, these interpretive truths are enough to determine the truth of facts about gliders. (16)

Now if entailment is the only “ontology”-introducing relation in *Life* worlds, that is fine. But that is stipulated by the construction of the system, not discovered by observing or analyzing the system. And from the fact that entailment “acts as a determination relation”

in *Life* worlds, it does not follow that entailment is in fact a determination relation, much less that it is a determination relation in physical worlds (not just *Life* worlds), much less that it is the only determination relation in physical worlds.

Notice that I have been careful not to assert that *Life* does or does not contain dogs, or that entailment is not a determination relation. Rather, the force of my objection falls on whether I must accept claims about *Life* ontology without already accepting that entailment is the only ontology-introducing relation. This is a question about what arguments Rosenberg has provided. Has Rosenberg given an independent reason to think that ordinary facts satisfy the entailment requirement? If not, and it seems not, then defense of entry-by-entailment will have to be independent of the *Life* model, and the *Life* model cannot be used even to support the claim that ordinary facts such as facts about dogs are entailed by the purely physical facts—for it provides no independent basis.

4. Physicalism and Entry-by-Entailment

As we don't have an argument to show that ordinary facts are entailed by the purely physical facts without presupposing entailment is the only ontology-introducing relation, we don't have any reason to suppose that consciousness is somehow special in failing to be entailed by the purely physical facts. There is no argument for a special place for consciousness. But that still leaves open the question of whether physicalism requires entry-by-entailment. If physicalism requires that entailment is the one and only ontology-introducing relation then, perhaps we can use that principle to argue that facts about dogs, trees, and hurricanes are entailed after all. On the other hand, if physicalism does not require (E), then Rosenberg's antiphysicalist argument fails altogether.

What we are looking for is a general argument that physicalists must hold that entailment is the one and only ontology-introducing relation. The form that any such argument must take is clear enough: Physicalism is the view that there is (in some sense) nothing over and above the physical. Physicalism can be true if there exist only physical entities and those entities that come "for free" with the physical entities. An entity that is not purely physical comes "for free" with the physical if and only if it is entailed by the purely physical. Any other kinds of determination or necessitation is not "for free." (For any entity *x* if it or facts about it are not physical or "for free" then *x* is a counterexample to physicalism.) Therefore, if physicalism is true all entities are either physical or entailed by the physical.

The above line of reasoning aims to establish that it would be self-defeating for a physicalist to appeal to a determination relation that is not broadly logical. The question is how to justify the premises, particularly the premises specifying what it is for an entity to come "for free" uniquely in terms of entailment.

Against this background, Rosenberg's justification of entry-by-entailment is puzzling. The argument is purported to appear in Section 3.2 of the book, in which Rosenberg is answering "Physicalist Responses" to his argument against physicalism, given previously in Chapter 2. This is odd because entry-by-entailment is a key element in the anti-physicalist argument, so we can reasonably expect that its support is part of the argument itself rather than part of the defensive procedure. Rosenberg goes so far as to suggest that readers could skip Chapter 3 if we "feel comfortable" (ch.3., fn1., 301) with

the argument presented in Chapter 2, implying that he himself regards the argument in Chapter 2 as self-sufficient. But I do not feel comfortable about it. This may seem peevish, but it is relevant to seeing where the burden of proof lies in the dialectic between the physicalist and antiphysicalist. Because no previous defense of entry-by-entailment has been given by Rosenberg, he cannot deflect concerns about the thesis by demanding that the physicalist show that it is false. Rather, the burden remains on him—as it did from the start—to show that entry-by-entailment is the one and only ontology-introducing relation that physicalists can accept.

So Rosenberg is claiming high ground that doesn't belong to him when he writes, "Many find it difficult to deny the arguments against entailment [of consciousness by the physical], so responses often question the importance of entailment in the first place. These kinds of responses mainly fall into three categories... In this chapter I examine each of these strategies for responding to the antiphysicalist arguments and outline my reasons for believing that they are inadequate responses" (31-32). Here Rosenberg assumes that if he can find fault in the "responses" then he has defended the general entry-by-entailment thesis. But that is incorrect. Rosenberg owes us a positive argument for entry-by-entailment, and it has to be one that does not depend on the other premises or the conclusion of his antiphysicalist argument.

Before continuing our search for a positive argument for entry-by-entailment, it's worthwhile to see how Rosenberg's individual rebuttals to the physicalist "responses" proceed. Unfortunately, Rosenberg's defenses are not compact and self-contained. But to give the flavor, consider what he has to say about the prospects for physicalists who appeal to empirically discovered necessities. Rosenberg says that all a posteriori necessity must have a "basis" that is "an intelligible constraint on the space of epistemic possibilities that excludes epistemically possible worlds from the resulting set of metaphysically possible worlds in a principled way" (51). By intelligible basis, as we shall see, Rosenberg seems to have in mind either entailment or something that does the epistemic work of entailment, i.e., that makes the necessity a logical or conceptual truth rather than a plain empirical discovery. Necessities that do not have this feature are, for Rosenberg, "primitive" (55).

One supposed class of primitive a posteriori necessities is that of the scientific or empirical identities. Rosenberg offers several concerns about primitive identities. One is that the "higher-level" identity claims should supervene on descriptive (plus indexical) facts about "lower-level" entities (60). But this, of course, is a contentious claim that requires defense. One way, though perhaps not the only one, of defending it would be to establish entry-by-entailment. Lacking an argument independent of entry-by-entailment, this "worry" is obviously not available as a ground-clearing argument to make way for entry-by-entailment.

But I think we can get a better handle on what motivates Rosenberg's distaste for primitive identities. He writes:

primitive identities give incomplete or inaccurate theories an "out" for explanatory failure. A primitive identity would allow us to maintain, for example, that a theory of H₂O is complete and adequate even if it failed to entail the transparency of liquid batches of H₂O molecules. Allowing that kind of failure could undermine the

credibility of science, yet it is exactly analogous to the proposed use of empirical identity to explain consciousness. (58)

So the trouble is that primitive identities cannot be used in scientific explanations because such accounts would be indiscriminable from false theories. The idea seems to be that the empirically minded philosophers, such as myself, who object to Rosenberg's semantic and metaphysical arguments will end-up undermining all of science if we allow ourselves to appeal to primitive metaphysical necessities.

Rosenberg deploys this argument earlier in the chapter against Ned Block and Robert Stalnaker, who resist the entailment demand:

If Block and Stalnaker are correct, we would have to leave it open that we have no explanation of life, not because our explanations are empirically inadequate but because what they explain may fail to establish the presence of life. Worse, we could apply the same sort of argument to ourselves... we cannot even determine conclusively that *we* are alive! ...Just as with a worm, a completed biology will have to make an inductive guess that human beings are, in fact, alive. If other facts cannot entail the facts about life, life itself eludes our grasp. It becomes a mere will-o'-the-wisp that science chases by making inductive guesses about its presence after (or worse, *before*) learning other facts about things. A position that makes room for inductive uncertainty about whether we are alive, even after we learn all the other facts about ourselves, does not do justice either to linguistic intuitions or facts about practice. (46)¹⁶

This little *reductio* argument assumes that empirical science demands certainty of its explanations, and buttresses that demand by offering a false dichotomy between entailment and "guesses." Either we are "certain" that we are alive (i.e., the fact of our being alive is logically and conceptual entailed by the facts of physics) or else scientists are merely "guessing" that we're alive. Lurking in the background is the assumption, still not properly established, that entailment is the only grounds for an explanatory connection between "lower-level" and "higher-level" entities. Yet the lack of entailments is only an explanatory "failure" if one already thinks that entailment is required. I can understand why someone might take such a view. It would be attractive, for example, if one thought that all contingent facts about the world are logical constructions out of the observation sentences of physical science. But Rosenberg has not shown that a physicalist must take that view, and I do not. As an advocate of a posteriori necessities, I do not think that entailment is required (2004). So pointing out that a posteriori necessities do not achieve the deductive "certainty" of entailment is pointless.

Rosenberg is wrong to portray the physicalists' choices as between entailment and guessing. We may have very good empirical evidence that collections of H₂O molecules are transparent and that we ourselves are living things. I'm inclined to think that we have excellent evidence for both. But as far as I can tell, that evidence is quite independent of whether those facts are entailed by the descriptive facts of physics, or of a *Life* model of our world. I also think that whether all paradigm cases of animals—including worms, dogs, and ourselves—are members of a single natural kind (to wit, *animals*) is an empirical question whose answer we do not know (or need to know) with deductive certainty. And again, I doubt that whether we have a scientific understanding of animals

depends on whether the answer is entailed by physics. The bottom line is that a physicalist has plenty of ways to pierce Rosenberg's defenses.

I've given the flavor of what I find problematic in Rosenberg's chapter 3 replies to the physicalist "responses" to his argument from chapter 2. But even if each of his arguments could be sustained, he could only establish entry-by-entailment in this manner if he demonstrated that the alternatives he considers are exhaustive, which he does not. So we're going to have to find a positive argument. And happily Rosenberg sets out to give just such an argument. Unfortunately the details of that argument are more than a little bit obscure.

5. Rosenberg's Argument for Entry-by-Entailment

Rosenberg's official defense of entry-by-entailment ("In what follows I begin an extended defense of [the] entry by entailment thesis" (35)) proceeds by setting forth an argument against physicalism based on claims about consciousness (36). As best I can tell, the argument is supposed to work as a *reductio ad absurdum*, demonstrating that if entailment fails then physicalism is false. If so it would have been better if Rosenberg had run this *reductio* with a case other than consciousness, the very case contested in the argument at stake in Chapter 2. The defense of entry-by-entailment should not hinge on the allegedly special case of consciousness, for we need to be convinced that entry-by-entailment is a generally acceptable requirement on the truth of physicalism.

Moreover, a serious concern about the argument is that it includes a premise concerning what Rosenberg dubs "ontological" supervenience, which is stipulated to satisfy the physicalist requirement that it is a "for free" relation (34). But one way of seeing the present point in the dialectic is that we're supposed to be finding out what the "for free" relations are—so premises about "for free" relations will be tendentious at this stage. In Rosenberg's view, the "ontological" supervenience stipulation is intended to be neutral. But its explanation engages Rosenberg's distinction between narrow and wide facts, which is supposed to do the work that the two-dimensional semantics did for Chalmers (1996) and Jackson (1998), without being explicitly modal. Yet this framework is potentially objectionable to physicalists, as well. At least no physicalist can take it at face value, as I'll explain. So Rosenberg's argument is apt to seem unnecessarily tendentious.

What we are looking for, in Rosenberg's discussion, is a defense of the premise that any entity that is not purely physical comes "for free" with the physical if and only if it is entailed by the purely physical, and any other kinds of determination or necessitation is not "for free." This, combined with the physicalists' assumed dedication to "for free" ontology would establish (E).¹⁷ (E) is central to the antiphysicalist argument that Rosenberg endorses, as we saw earlier. So its defense should not depend on the conclusion of that argument or any special considerations about consciousness.¹⁸ And if it is to be convincing, its premises must be more acceptable to physicalists than the denial of physicalism. Otherwise, the physicalist will deny the premises and maintain physicalism. One person's *modus ponens* is another person's *modus tollens*, as they say.

It is easy to see that Rosenberg fails to meet the last requirement—the dialectical requirement. For example, noting that the interpretation of metaphysical modalities is a

point of contention between physicalists and antiphysicalists, Rosenberg stipulates that “ontological” necessity and “ontological” supervenience will be the sort that satisfy the physicalists’ requirement that non-physics entities come “for free” with the physical (34). One might think that this is a confusing but otherwise harmless and “baggage-free” bit of jargon. Not so. For in the paragraph before this stipulation, Rosenberg writes, “The right modality for physicalism might come to the same thing as metaphysical necessity and possibility, depending on what the a posteriori portion of the metaphysical variety really amounts to” (34). That is, “ontological necessity” might come to the same thing as metaphysical necessity “depending on what the a posteriori portion of the metaphysical variety really amounts to.” But the physicalist who has doubts about entry-by-entailment should be wary of the suggestion that metaphysical necessity has an a posteriori portion—for that implies that every metaphysical necessity has a portion that is not a posteriori, which would be a priori. And that we reject. We physicalists can see how the antiphysicalist argument proceeds once we allow that metaphysical necessity has an epistemic component. So what we deny is precisely that the ontological dependence asserted by physicalism carries the epistemological burden demanded by the entry-by-entailment thesis. We are not neutral and ecumenical about whether every physically acceptable “ontological” determination relation has an a priori component. We deny that physicalism requires only a kind of dependence that has an epistemic component, thereby requiring entailment as the only dependence relation. What Rosenberg owes is an argument that we cannot be right; and this requires more than impugning some of the arguments in favor of the view, even if we were to concede such critiques.

It seems to me that Rosenberg’s terminological stipulation serves to camouflage his reliance on a picture of modality that appeals to anti-physicalists and analytic physicalists. It may be a fine view of modality, but he has not shown that it is one that every physicalist must accept. Yet he owes us an argument according to which we physicalists run into trouble by *our own lights* if we assert ontological dependence without entailment. This can’t be done by “pointing out” that non-entailment relations are not epistemically free lunches. We know that. The question, rather, is whether the only kind of “for free” relation that physicalists can accept is entailment—whether physicalism requires all its non-basic entities to be not only metaphysically dependent but also epistemically *gratis*. That it does is the substance of the entry-by-entailment thesis, for which we are in need of an argument.

6. Entry-by-Entailment, Again

Now I’m not sure how much weight to give the qualms raised in the previous section, because I am not certainly exactly what role the various claims play in Rosenberg’s argument. This is because I am still not sure just what the argument is. To understand why I am puzzled, let’s revisit the structure of the overall argument and the structure of Chapter 3.

In Chapter 2, Rosenberg gives an argument against physicalism that is based on the game of *Life*. This argument appears to assume that entry-by-entailment is the only ontology-introducing relation that physicalists can accept. Rosenberg then imagines that objections can be raised against this anti-physicalist argument by those who think that facts about consciousness are entailed by the physical facts, or by those who deny that

entailment is required to vindicate physicalism. The latter case is the one of interest to me, and it is the one that Rosenberg intends to handle in Chapter 3. He supposes in section 3.1 that those who deny that entailment is required will take three strategies: “1. Appeals to a posteriori necessity... 2. Appeals to holism... 3. Warnings about a greater absurdity” (31). Rosenberg continues,

In this chapter [chapter 3] I examine each of these strategies for responding to the antiphysicalist arguments and outline my reasons for believing that they are inadequate responses. The upshot is that the antiphysicalist argument in chapter 2 presents a legitimate challenge to how we view nature and provides motivation for later chapters, in which I embrace Liberal Naturalism as an alternative to physicalist naturalism. (31-32)

The trouble is, as I have emphasized, what is required from Rosenberg is a positive argument, not merely a refutation (even if successful) of some arguments from opponents. So the three responses to his own argument that he takes up, in sections 3.3, 3.4, and 3.5 respectively, are of no use in the present context.¹⁹

To be clear, Rosenberg knows that he owes a positive argument, because he sets out to give what looks like his version of a general defense of entry-by-entailment, in section 3.2. But this is the argument that, try as I may, I find obscure. Perhaps my confusion is partially explained by the fact that Rosenberg himself does not suppose that he has succeeded in giving the kind of defense he sets out to give. Rather he concludes section 3.2 saying,

I have defined the central challenge for the physicalist position: to find a connection between physical ontology and other ontologies that does not carry an ontological cost. I have introduced the term *ontological supervenience* as a placeholder term for whatever the *for free* connection(s) might be. I then defined entailment as a kind of containment relation, observing that it could do the job that ontological supervenience needs to do and that it is a priori. Finally, I noted that the argument in chapter 2 was a direct argument that the physical facts could not a priori entail the facts of consciousness. (50)

But if this is right, then by his own measure Rosenberg has only argued that entailment is one example of an ontological supervenience relation. Yet what he needs to show that it is the only determination relation that is acceptable to the physicalist. I have already mentioned my qualms about agreeing that the demand can be neutrally stated in terms of Rosenberg’s “ontological supervenience.” But waiving that concern for the moment, the complaint remains: Rosenberg would have to give a positive argument to the effect that entailment is the only ontological supervenience relation that physicalists can accept. It will not do to show that it is one, even if accompanied by objections to some arguments for others unless those objections are exhaustive. (And they are not.)

Let me give you the gist of why Rosenberg’s argument perplexes me. We are looking for a positive argument for (E), that physicalism requires entry-by-entailment as the only ontology-introducing relation. But, as noted above, the argument for that premise (“In what follows I begin an extended defense of [the] entry by entailment thesis” (35)) is itself an argument against physicalism. I speculated above that the argument is supposed to be a *reductio*. Clearly this argument, whatever else can be said for it, is not the

straight-forward defense of (E) that we were expecting to find. Indeed, it seems to proceed, as *reductios* are wont to do, by arguing that the alternatives are unacceptable. But we've already noted that such a tactic will not do the job that Rosenberg needs done. This interpretation is reinforced when he tells us that the defense of the first premise of the argument will extend through section 3.3 of the book (36). Section 3.3 is his response to objections based on a posteriori physicalism; but the positive argument we're looking for will have to be quite independent of the success of any such rebuttals.

Moreover, the defense itself invokes a view about facts that physicalists should find problematic, for which Rosenberg's only argument is that it is "natural" to think in such terms (36). And Rosenberg introduces some additional principles that link ontology and epistemology that will strike many physicalists at least as suspicious as the entry-by-entailment thesis. For example:

The underlying principle is that physicalistic individuals and properties should hide no essence distinct from the sum of their aspects. ...Aspects themselves are ontologically expensive: A difference in aspects always involves a difference in the objective properties of a thing. (38)

But one who questions entry-by-entailment will not be at all inclined to permit this claim about aspects. A physicalist who rejects (E), such as myself, often thinks that one property may be known in different ways, and thus that a difference in aspects is not always a difference in objective properties. Recognizing that he will meet this kind of resistance, Rosenberg begins to answer objections, and those answers take-up the balance of section 3.2 (39-50). If I've got the general structure right, then Rosenberg has either abandoned the project of giving a direct and positive argument for entry-by-entailment or else he has fallen back on the strategy of defending it by impugning arguments for its competitors. We know that the latter strategy is insufficient unless (i) it is shown that the defense is exhaustive, for which Rosenberg offers not argument, and (ii) that the positions themselves are undercut, not merely some particular arguments for them, and I do not find that. So I do not think that Rosenberg has given an argument for entry-by-entailment that would be worrisome to any physicalist who is not already committed to (E).

If I am right, at least we can say that Rosenberg is not the only advocate of entailment whose arguments have been questioned. Critics of both Chalmers (1996) and Jackson (1998) have found them relying too heavily on the refutation of alternatives, or on arguing that their theories can handle problem cases, when what is owed is a positive argument (e.g., Hill and McLaughlin 1999, Lycan forthcoming). So Rosenberg finds himself in good company. But by keeping that company he fails to advance his cause, for he has not offered a new argument in favor of entry-by-entailment.

7. Conclusion

I concede, if it is even a concession, that facts about consciousness are not entailed by basic physical facts. This is only a problem for physicalists if most other ordinary facts are so entailed and if physicalism requires that all non-basic facts be entailed by the basic physical facts. I deny both of those claims, and I do not think that Rosenberg has given a successful argument for either. His argument that ordinary facts satisfy the entailment requirement depends on taking the cellular automaton *Life* to be a good model of physics.

I find the analogy unconvincing. But more troublesome, I don't see why anyone who didn't already accept entry-by-entailment would think that the *Life* system is a complete model of determination relations in physical worlds. This means that all the weight must be borne by the positive argument that physicalism requires entry-by-entailment. I cannot find the appropriate argument in Rosenberg's book. His arguments for entailment generally involve attempts to show that the alternatives come up short. I do not find those compelling. But the real problem is that they are dialectically insufficient even if successful. Rosenberg needs a positive argument that physicalists could accept, which concludes that entailment is the only determination relation that physicalists can acknowledge. I do not think Rosenberg has given such an argument; but I confess that I may have failed to locate it among the machinations of chapter 3.

My attention has been restricted to three chapters of a fifteen chapter book. For those who are convinced by the arguments that did not convince me, or by similar ones, Rosenberg has much to say about the general worldview that results. I have not ventured to say anything about Rosenberg's proposal, which he calls Liberal Naturalism. Nor have I said anything about his account of causation, constructed to be with Liberal Naturalism. That, I suppose, must stand or fall in its own right; and its presentation might have been a separate book. I think that Rosenberg will not be surprised that he has failed to convince me. As he says, "Reinventing nature is hard work." *A Place for Consciousness* is no doubt only a first pass at the task.

Acknowledgements

For helpful suggestions on this paper, I am grateful to Torin Alter and an anonymous referee for PSYCHE. I also benefited from discussion with my spring 2006 seminar on physicalism at the University of Cincinnati.

References

- Block, N. and R. Stalnaker. (1999). Conceptual analysis, dualism, and the explanatory gap. *The Philosophical Review*, 108 (1): 1-46.
- Byrne, A. (1999). Cosmic Hermetics. *Philosophical Perspectives* 13: 347-383.
- Chalmers, D. (1996). *The Conscious Mind: In Search of a Fundamental Theory*. New York: Oxford University Press.
- Chalmers, D. and F. Jackson. (2001). Conceptual analysis and reductive explanation. *The Philosophical Review*, 110 (3): 315-361.
- Churchland, P. M. (1981). Eliminative Materialism and the Propositional Attitudes. *Journal of Philosophy* 78: 67-90.
- Churchland, P. M. (1982). Is 'Thinker' a Natural Kind? *Dialogue* 21, 2: 223-238.
- Churchland, P. S. (1983). Consciousness: The transmutation of a concept. *Pacific Philosophical Quarterly*, 64: 80-93.
- Dennett, D. (1991). Real Patterns. *Journal of Philosophy*, LXXXVIII: 27-51.

- Gardner, M. (1970). The fantastic combinations of John Conway's new solitaire game "life." *Scientific American*, 223: 120-123.
- Hill, C. and B. McLaughlin. (1999). There Are Fewer Things in Reality than Are Dreamt of in Chalmers' Philosophy. *Philosophy and Phenomenological Research* 59: 445-54.
- Horgan, T. (1984). Supervenience and Cosmic Hermeneutics. *Southern Journal of Philosophy*. Supp. 22:19-38.
- Horgan, T. (forthcoming). Materialism: Matters of Definition, Defense, and Deconstruction. *Philosophical Studies*.
- Horgan, T. and D. Henderson. (2002). The a priori isn't all that it's cracked up to be, but it is something. *Philosophical Topics* 29: 219-50.
- Jackson, F. (1998). *From Metaphysics to Ethics: A Defense of Conceptual Analysis*. Oxford: Oxford University Press.
- Kim, J. (2005). *Physicalism or Something Near Enough*. Princeton: Princeton University Press.
- Lewis, D. (1994). Lewis, David: Reduction of Mind. In S. Guttenplan (Ed.), *A Companion to the Philosophy of Mind*. Oxford, UK: Blackwell Publishers (1994).
- Lycan, W. (forthcoming). Serious Metaphysics: Frank Jackson's Defense of Conceptual Analysis. In Ian Ravenscroft (ed.), *Minds, Worlds and Conditionals: Essays in Honour of Frank Jackson* (Oxford: Oxford University Press).
- McLaughlin, B. (2005). A Priori Versus A Posteriori Physicalism. Christian Nimtz and Ansgar Beckermann (eds.) (2005). *Philosophy – Science – Scientific Philosophy*. Main Lectures and Colloquia of GAP.5, Fifth International Congress of the Society for Analytical Philosophy, Bielefeld, 22–26 September 2003, Paderborn: mentis.
- Polger, T. (2004). *Natural Minds*. Cambridge, MA: The MIT Press.
- Rosenberg, G. (2004). *A Place for Consciousness*. New York: Oxford University Press.
- Yablo, S. (1999). Concepts and Consciousness. *Philosophy and Phenomenological Research* 59: 455-63.

Notes

1. In saying this, I am for now going along with the pretense that there is a single theory of fundamental physics and that we know what its ontological commitments are.
2. The name 'eliminativist materialism' is used for the narrower doctrine, associated with Paul and Patricia Churchland (P. M. Churchland 1981, 1982; P. S. Churchland 1983), that folk psychology should be eliminated in favor of neuroscience. This doctrine, while radical, is less radical than the elimination of everything not strictly part of physics, which is our present concern.
3. Rosenberg at several spots in the book makes the point that he is not depending on a conceivability argument, by which I think he means that his official argument against physicalism (18) is not itself a conceivability argument. But it should be clear that some

of his supporting arguments depend on conceivability considerations, e.g., regarding what is “epistemically possible” in *Life* worlds. So we should not suppose that Rosenberg means to argue without any appeals to considerations like conceivability. A referee for this journal reminds me that Chalmers (1996) also offers arguments that are not straightforward conceivability arguments, so Rosenberg may not be unique in his position.

4. Call this F1. F1 is not the only formulation of physicalism put forth by Rosenberg. He also offers the following formulations, among others:

F2. “[P]hysicalism... holds that everything is physical *in some sense*.” (6-7, italics original)

F3. “Physicalism says that the fundamental physical facts are the only fundamental facts.” (13)

F4. “Physicalism asserts a closure condition, saying that a true, complete, exceptionless theory of the physical tells us all there is to know about the fundamental nature of our world.” (32)

F5. “[P]hysicalism is [the idea that] given all the microphysical facts about our world, all the other facts are an ontological free lunch.” (33)

I do not know whether Rosenberg takes one or more of these formulations to be basic, nor whether he takes them each to be implied by a proper formulation of physicalism.

5. Rosenberg does not specifically mention dogs, but does mention ecologies and economies so I assume that animals are included. In using the example of dogs, I set aside any special problems that might arise over the consciousness of animals. (Likewise the consciousness of plants or economies, if any.) Mainly I’ll be concerned about the facts of the existence of dogs.

6. For comparison, Chalmers (1996) and Jackson (1998) attempt to make this connection by means of a conceivability argument and a demand for “transparent” relations between the physical and everything else, supported by a descriptivist “two dimensional” semantics.

7. For comparison, Chalmers and Jackson do this by defending a philosophical method that they claim is a kind of conceptual analysis and arguing that most things have appropriate analyses (2001).

8. For comparison, Chalmers (1996) does this by means of a series of carefully formulated conceivability arguments, most prominently those involving so-called zombies.

9. I have introduced the typographical convention of hyphenating the phrase, to remind us that it functions as a technical term in this discussion.

10. By ontology-introducing relations, I refer to those facts or relations (whatever they may be) in virtue of which non-physics entities (if any) exist.

Now suppose we could convince ourselves that physicalism requires entry-by-entailment, and that books, dogs, trees, and hurricanes [or facts about them] fail to be entailed. (I

have suggested that we cannot argue in this way, because the failure of books, dogs, trees, and hurricanes to count as physically acceptable is a *reductio* of the claim that physicalism requires entry-by-entailment. But let's pretend.) Then I suppose we will have convinced ourselves that physicalism is false. This will be so whether or not Rosenberg, Chalmers, or Jackson intend books, dogs, trees, and hurricanes to be counterexamples to physicalism. So much the worse for physicalism. In that case, however, consciousness will not have the special status that Rosenberg and Chalmers suppose it does. For in that case there will be many kinds of irreducible properties.

11. It's worth mentioning again that this argument will have to be a positive argument for the thesis that entry-by-entailment is the only determination relation that physicalists can accept. It will not be sufficient to raise problems for the arguments in favor of other determination relations unless the survey is exhaustive, which is not feasible. This is actually quite important, for we shall see that a significant part of Rosenberg's argument for entry-by-entailment comes in Chapter 3, where he defends his view against objections. But this is patently inadequate. What he owes us is an argument that entry-by-entailment is the only game in town. If there are reasons to doubt, e.g., that Kripke's arguments for a posteriori necessities are conclusive, this will not by itself show that there is an incoherence in the supposition of a posteriori necessities. Rosenberg might respond by demanding to know what reasons, then, we have for believing in such a posteriori necessities. But from the physicalists' point of view we owe no explanation. It is Rosenberg who purports to show that we cannot accept such relations. (Moreover, from the physicalists' point of view, that such determination relations are useful for physicalism may be reason enough—though not a reason that will convince the critic, of course.)

12. Of course any doubts about whether ordinary facts are entailed by the strictly physical facts will raise doubts about the claim that physicalism requires entry-by-entailment. For we've agreed that the physical acceptability of books, dogs, trees, and hurricanes is not in question.

13. Alternatively, Rosenberg could make an exhaustive argument that every alternative except entailment is incompatible with physicalism. It will, in particular, not be enough to impugn one or another particular argument for some alternatives. The final views themselves must be shown to be incompatible with physicalism.

14. I am grateful to an anonymous referee for PSYCHE who pressed me on this point.

15. Jackson (1998) and Chalmers and Jackson (2001) explicitly limit their claims to positive facts. A closure or "that's all" clause must be added to the basic physics facts (or *Life* facts) in order that they entail, e.g., that there are no ghosts.

16. This passage echoes Chalmers and Jackson, who argues that if brute necessities are allowed then "science would have established a far weaker explanatory connection between the microscopic and the macroscopic than it actually has" (2001: 355).

17. Though it is open to the physicalist to question the alleged commitment to "for free" ontology.

18. A referee for this journal asks whether the argument could depend on facts about consciousness if they were neutral between physicalist and anti-physicalist theories. I

suppose it could. But it is hard to think of any claims about consciousness that are entirely neutral.

19. Rosenberg's responses may raise issues that are of independent interest. And it may be that they will help, over time, to shift the burden of proof back onto the physicalist. But even then they will not fill the gap in the argument from chapter 2.