

NONREDUCTIVE NATURALISM[†]

Stuart SILVERS*

Manuscript submitted: 1996.5.7.

Final version: 1996.11.7.

* Clemson University, Department of Philosophy & Religion, College of Architecture, Arts & Humanities, 101 Hardin Hall, Box 341508, Clemson, SC 29634-1508. E-mail: sstuart@clemson.edu

BIBLID [ISSN 0495-4548 (1997) Vol. 12: No 28; p. 163-184]

ABSTRACT: Nonreductive naturalism holds that we can preserve the (scientifically valued) metaphysical truth of physicalism while averting the methodological mistakes of reductionism. Acceptable scientific explanation need not (in some cases cannot and in many cases, should not) be formulated in the language of physical science. Persuasive arguments about the properties of phenomenal consciousness purport to show that physicalism is false, namely that phenomenal experience is a nonphysical fact. I examine two recent, comprehensive efforts to naturalize phenomenal consciousness and argue that nonreductive naturalism yields a dilemma of reductionism or panpsychism.

Keywords: consciousness, dualism, explanation, metaphysical and linguistic physicalism, naturalism, panpsychism, phenomenal experience, reductionism.

Introduction

"Naturalism" has become a term of art for philosophers of science, and philosophers of mind, in particular. By a term of art I mean that "naturalism" has taken on the function of designating an attitude or approach to the project of scientific explanation. Naturalism is thus an approach to issues in epistemology and metaphysics. The common attitude underlying the many versions of naturalism is the rejection of two basic assumptions of Fregean analytic philosophy; that epistemology, the project of explaining knowledge, should be apsychologistic and that the analysis of knowledge is logical and *a priori*. Like all such terms of art, "naturalism" names an elastic concept: it can be stretched to allow things to fall under it. In the sense that I shall be concerned with here namely, naturalistic theories of phenomenal consciousness, an explanation falls under the concept "natural" when both the explanandum and the explanans are expressed either in terms of physical science or in terms that are compatible with physical science. In the following paragraph I offer a selective survey of recent conceptions of naturalizing mind.

Flanagan's (1991) naturalism is a view of the world in terms of the properties and relations of physical entities. His (1992) naturalism regarding the mind asserts that "Mental processes are just brain process." (p.xi) Dretske's (1995) version of naturalism defines phenomenal experience physically but not functionally. (p. 72) As Tye (1995) conceives of naturalism it has both tokens and types of higher-level phenomena as "either ultimately constituted or ultimately realized by

microphysical phenomena." (p. 42) Fodor's (1987) naturalism about mind demands a theory that explains the representational capacity in nonsemantic and nonintentional terms. Chalmers's naturalism deserves a full direct quotation.

To capture the spirit of the view I advocate, I call it *naturalistic dualism*. It is naturalistic because it posits that everything is a consequence of a network of basic properties and laws, and because it is compatible with all the results of contemporary science. And as with naturalistic theories in other domains, this view allows that we can *explain* consciousness in terms of laws. (Chalmers, 1996, p. 113 ms)

It's clear that Chalmers's naturalism is coextensive with lawfulness. What makes Chalmers's naturalism *dualistic* is the ontological commitment implicated in his rejection of materialism; there are, in his view *extra* (Chalmers's stress) non-physical facts about our world. "The character of our world is not exhausted by the character supplied by the physical facts; there is an extra character due the presence of consciousness." (p. 109 ms) I discuss his thesis below.

Since naturalism is, traditionally, an ontologically monist doctrine denying substance dualism it is frequently (mis)identified with other monist theses such as physicalism and materialism. The latter two are also often taken incorrectly to be same. Materialism, however, is distinctly narrower than physicalism, particularly since it's not at all clear what sorts of things and properties are comprehended by physicalism. This elasticity of physicalism has tended to seduce quick and easy solutions to difficult problems by trivially identifying any property as physical if it's a property of a physical object. In this way naturalism, which is ontologically neutral, benefits by inheriting its elasticity from physicalism. I shall argue that this benefit is of little value to the cause of naturalism. The naturalistic attitude then is that the world is exhausted by natural phenomena, phenomena that exhibit lawful relations, typically causal relations. This is the kind that the physical or natural sciences make it their business to discover and explain; such explanations involve nothing more than recognition of the lawful connections among the phenomena. It is important to recognize that loosening the constraints on naturalism in this way allows for considerable metaphysical promiscuity. It is one of the burdens of my argument that genuinely nonreductive theories of consciousness exploit the indeterminacy of naturalism to promote a drastically revised scientific worldview. I shall argue that on both methodological grounds and on grounds of metaphysical plausibility the reasons proffered for the revision fail to support the proposal.

Phenomenal consciousness poses a particularly debilitating threat to the project of naturalism. In the next two sections I discuss the basic issues in some recent responses to the challenge of physically explaining phenomenal experience. I then turn to two very different naturalistic theories of consciousness to illustrate what I take to be the dilemma faced by the nonreductive approach to explaining phenomenal experience.

Reductive and nonreductive explanation

To successfully explain phenomenal consciousness reductively involves showing that phenomenal properties (the experience of seeing red, tasting honey, smelling jasmine, hearing Pavarotti's voice, etc) are related to physical properties (of brain states) in the same way that temperature is related to the mean kinetic energy of an ideal gas. The explanation proceeds by showing that the properties of the macro-level event, the experience, are just the lawful interrelations of micro-level events, that is, by establishing that experiential properties *are* microphysical states of the brain. Thus, Paul Churchland (1995) explains the difference in the taste of peaches and apricots reductively:

Subjective taste just *is* the activation across the four types of tongue receptors, as represented downstream in one's taste cortex, and the peach pattern differs from the apricot pattern by only a few percentage points in each of the four dimensions. (p. 23, PMC's emphasis)

We need to distinguish between what it is for a mental property type to reduce to a physical property type and for a (mental) property to *supervene* on physical properties. Supervenience is a weaker relation than identity; supervening properties are not type-identical with the properties in the supervenience base. The supervenience thesis aims to preserve a physicalist (and hence naturalistic) metaphysics while licensing explanation without reduction to physical science. Considerable methodological mischief has also been engendered by conflating supervenience and the idea of *multiple realization*. So we do well here to get things straight. Multiple realizability is the view that high-level (abstract) properties such as having a particular shape or believing that p can be instantiated in countless lower-level (concrete) properties. Some (Hannan, 1994) have argued that multiple realization presupposes property identity, albeit that the properties may be complex disjunctive ones. On this view, the multiple realizability thesis facilitates reduction; the higher-level properties are explained in terms of such complex disjunctive properties, regardless of the nature of the substrate in which the higher-level properties occur. So, if mental properties are multiply realizable in a variety of radically different substances they are still reductively explained in virtue of property identity between the high-level occurrences and their lower-level instantiations. The problem with this analysis is that if we identify the higher-level property with the disjunctions of lower-level ones we have no way of explaining how the disjunction of realizations generates the high-level property. Disjunctive properties are powerless to figure in causal explanations because disjunctions are causally inert.

In contrast, supervenience is a dependence relation between two sets of properties where one determines or anchors the other. Thus if F and G are two sets of properties, G supervenes on F when there are no possible circumstances where F properties differ from G properties. Biological properties, therefore, supervene but are not reducible to physical properties because,

even though biological properties are not physical properties, there can be no two states involving the same physical properties that differ in their biological properties. This is merely to say that there are no two distinct situations where the facts of biology differ but the facts of physics do not. The point at issue is whether even the weaker concept of supervenience is adequate to the nonreductionists' program of naturalizing mental states, and experiential states in particular. To that end I'll briefly review cases said to undermine the reductive explanation of consciousness. Then I turn to how the idea of supervenience in the cause of nonreductive explanation fares in avoiding the force of the objections.

Since my concern here is with nonreductive explanation my discussion of reductive explanation will be brief and presuppose familiarity with the standard objections and their supporting arguments. They are now part of the common-good of philosophy. In one way or another they all have to do with *qualia*, the generic name for a variety of experiences called *raw feels*. These include the sensory experience noted above but also the qualitative nature of our subjective states, moods and emotional tones, certain of our intentional states, and perhaps that which binds the great and elusive diversity of experience into a sense of self. The possibility of an inverted spectrum is supposed to establish that qualia are undetectable; that there are discriminable mental states for which there is no empirical evidence. An inverted spectrum is a condition in which one phenomenally experiences (primary) colors red, green, blue *abnormally*. Such a person sees typically red things as a *normal* percipient sees green things, and so on for the other colors. The inverted spectrum argument is designed to show that specifically color qualia cannot be explained on the property identity relation thesis.¹

The conceivability of absent qualia scenarios (e.g., Block's 1978 case) and (philosophical) zombies are generally taken to show the failure of physicalist explanations of phenomenal consciousness. It is argued (Jackson, 1982, 1986) that the subjectivity of experience and the corresponding epistemic asymmetry entail that our first person knowledge of consciousness does not fall within the scope of physical explanation. If consciousness is a higher-level property identical to some configuration of lower-level properties of the physical structure we could explain consciousness reductively by explaining how the micro-properties of the physical structure instantiate phenomenal experience. Levine (1983, 1993, 1995) has argued that physical explanations of consciousness invariably leave something out. There is an *explanatory gap* in all physical explanations of experience: what's left out is the *experience*.

The conceivability argument for the irreducibility of experience is applied with equal (equally telling?) force against both property identity reduction and supervenience. If it succeeds against supervenience then it does so *a fortiori* against reductionism. The argument is that you can conceive of your physical duplicate (twin-you in every physical, functional, and behavioral respect)

without phenomenal experience, without qualia. That is, you can deny the identity of phenomenal properties and physical properties without contraction. The claimed identity of phenomenal and physical properties is patently different from cases such as the identity of H₂O and water. In the latter case you can deny that water is H₂O on the grounds that something with the macro properties of water might have a different microstructure. In contrast, it's maintained that you cannot coherently deny that H₂O is water. This argument when applied to the weaker thesis that experience supervenes on brain and bodily states concludes *mutatis mutandis* that you can, without contradiction, imagine that your molecular, functional, behavioral twin veridically perceives a ripe tomato but has no phenomenal experience of what it's like to see red. You can, that is, deny with logical coherence that twin-you is phenomenally conscious. If the conceivability argument is cogent it contravenes the definition "supervenience." *Ex hypothesi* you and twin-you are physically identical, yet we can conceive of a distinguishable circumstance in which facts about you differ from facts about twin-you.

Some opponents of the explanatory gap thesis argue that the conceivability argument is logically flawed.² Others deny the existence of the gap by appealing to the idea of different modes of presentation (Flanagan, 1992,) or "different ways of conceiving certain physical states, different concepts that we apply." (Tye, 1995, p. 180) I examine Flanagan's version below. For Dretske (1995) there is no gap because phenomenal experience, on his view, is definable in physical terms.

The quarrel turns on what we might call the grounds of conceivability, or do and can we really conceive of what we claim to conceive. Thus it's replied to Levine's claims that he can conceive of water that's not H₂O that he's simply mistaken to think that something with the superficial properties of water but a different microstructure is water. He's conceiving of something that resembles water but isn't water. The source of the mistake is failing to realize that water has the microstructure it has as determined by chemistry here on Earth and on every possible world having Earth's microstructural laws. If it's true that water is H₂O it is *metaphysically necessary* that water is H₂O. Thus while it's logically or conceptually possible to imagine that water is XYZ it's metaphysically impossible to do. The so-called intuitions about constraints on conceivability thus depend upon such considerations as one's attitudes on the deliverances of current science and on the coherence of the idea of rigid designation. The former concerns one's conviction that contemporary science has discovered the true essence of water. However, it seems considerably closer to the spirit of naturalism to infer from its past successes and failures, that future science will revise and improve our current conceptual scheme.³ The latter involves the question of descriptionless, direct indexical reference. This raises the serious question of how we are to

understand the relationship between mechanisms of reference and the concepts in which they are couched.

To spell this out consider that the absence of an answer to this question suggests that the argument for constraining conceivability in terms of metaphysical possibility is seriously inconclusive. It treads upon the familiar (Fregean) dichotomy between the two kinds of meaning associated with a term; a term's intension is identified with the phenomenological properties of the thing it describes, a term's reference (or truth conditions) is the set of properties a thing has essentially, its actual constituent properties, the ones the thing has in all possible worlds in which it is referred to. Whatever appeal the argument has derives from its flourishing in the interstices between these two types of meaning. Specifically, the argument for metaphysical necessity rests on two tendentious assumptions. One is that descriptionless, direct reference is the relevant concept of meaning in scientific explanation. The other is that (cognitive neuro)science offers evidence of the essential properties of experience. For purposes of *explanation*, however, it seems clear that it's a term's descriptive meaning that fulfills the important role, since we bring explanation to fruition by displaying conceptual relations among natural kind terms. Moreover, while chemistry may give us credible grounds for the conviction that we know water's essential properties it cannot be said that the cognitive neuroscience does the same for phenomenal experience. This assumption begs the question at issue. Finally, there is something curious in the idea of a metaphysical (that is, nonlogical) constraint on rational conceivability. This is particularly so where the constraint is conditional, as it is with "If it's true that water is H₂O then it's necessarily true in all worlds having water." The denial of the *a posteriori* necessity that water is H₂O is not contradictory on the familiar Humean doctrine that the denial of an empirical claim is always coherent. Thus, proponents of metaphysical necessity need to show in a non-question begging way how this kind of conceivability constraint rationally impacts on the project of explaining experience. Until then their argument remains inconclusive.

Homogeneous and Heterogeneous Reduction and Nonreduction

I want now to distinguish two kinds of nonreductive explanations: those that are transparently compatible with naturalism and those that are opaquely compatible with naturalism. The former I call ambivalent (or ambiguous) nonreductionism; the latter is resolutely unambiguous nonreductionism. Remember that for naturalism to be a serious doctrine worthy of critical philosophic reflection it must be a delimiting thesis. That is, there must be some principled way of determining what fails to fall under the concept, what's not in the extension of the term. So for an explanation to be both nonreductive and naturalistic it's essential that the nonreduced phenomena don't violate the principled limits of the naturalist's doctrine.

To illustrate, consider that the nonreductive explanations characteristic of what Fodor calls the "special sciences" in no way appeal to instances of phenomena that conflict with or contravene the operation of basic laws of physics. Thus "classical" nonreductive explanations in geology and biology are *homogeneous* in the way that reductive explanations, as in the case of the reduction of celestial and terrestrial mechanics to Newton's principles of motion, are homogeneous. This is indeed the sense in which biological and geological and the like are supervenient on physical properties. Biological and physical properties differ but there can be no change in biological or geological conditions without a change in physical conditions.⁴

We readily acknowledge that the basic explanatory levels in the sundry special sciences capture projectably generalizable regularities among nonphysical phenomena and that such lawfully connected natural kinds fall within the scope of the causal concepts that physical science respects. Homogeneous nonreductive explanations have brought the sciences of cognition, and cognitive psychology in particular, into the fold of natural science. In cognitive science we make essential reference to characteristically mental phenomena such as discrimination, categorization, and reaction to environmental stimuli, cognitive integration of information, internal monitoring, and attention. In familiar mental vocabulary these kinds of phenomena figure in descriptions of the various propositional attitudes where such attitudes are viewed naturalistically as dispositions and propensities.

In contrast there is *heterogeneous* reduction as in the explanation of thermodynamics by the basic postulates of statistical mechanics. In cases of heterogeneous reduction the concepts involved in the description of the explanandum event differ in meaning from the concepts used in the explanans. Reduction is blocked when the key concepts in the explanation remain disjoint. We require bridge laws to connect the concepts of the reducing and reduced sciences. They are typically statements of theoretical or contingent identity, as in "temperature is average mean kinetic energy (of an ideal gas)" and "water is H₂O." Bridge laws are designed to express the empirically discovered, contingent identity of kinds referred to by expressions with different (non-interchangeable) meanings.

By parity of reasoning heterogeneous nonreductionism assumes that certain physical phenomena are not explainable by the basic laws of physical science. In the case of heterogeneous reduction bridge laws state contingent identities allowing the reduction to proceed. We should expect that corresponding nonreductionist bridge laws also span the conceptual divide between higher-level and lower-level banks of the explanatory gap. In heterogeneous reduction it is the idea of constituency that enables the bridge laws to do the explanatory work. The idea is that higher-level phenomena are *constituted* by but are not identical with lower-level events. (Cf. Tye, 1995 and Wright, in press) This analysis claims extensive generality across the myriad scientific

disciplines including much of cognitive psychology. This then seems to offer positive prospects for conscious psychological states.

The heterogeneous nonreductionist proposal, however, must be and is very different since the constituency is clearly reductive and thus not an option. The issue here, therefore, is about the nature of the connection between explananda and explanans. I call this opaque nonreductive explanation because the link between the purported physical occurrence and its nonphysical explanation remains obscure. The explanatory burden is to lawfully connect the physically interpreted event that is *seeing red*, with extra-physical principles in a way that precludes conferring an extra-physical property on the *seeing red*-event. The issues here are direct descendants of those in the reductionist controversy; that's clear from my use of "homogeneous" and "heterogeneous." These are terms from E. Nagel's (1961) classic discussion. The stage settings have shifted from reduction to nonreduction. However, in the application of this distinction there is a significant difference; a difference important enough to undermine the nonreductionist program of naturalizing consciousness. That program is currently in its ascendancy and thus it's all the more important to understand the difference. The sense of naturalism to which reductionism adheres is clearly physicalist. Commitment to physicalism motivates physicalist reduction since the target of the reductive effort was an exclusively physical world description. Contemporary naturalists incline this way but most shy away from rigorous reduction.⁵

The distinction between homogeneous and heterogeneous reduction reveals an important feature of the theory of scientific explanation. The idea is that one could retain one's ontological commitment to physicalism while acknowledging explanations that subsume explananda under explanans involving nonphysicalist but still lawful (projectable) generalizations. This insight paved the way for nonreductive physicalism, the view combining a physicalist metaphysics with a methodology of scientific explanation that respects lawfulness among nonphysical phenomena. Where the goal of scientific explanation is conceptual unification the appeal to lawful regularities among tokens of nonphysical properties facilitates explanatory coherence. Alternatively, where the explanatory goal is the disclosure of causal dependency and structure, there is a rigorous constraint on the connection between orthodox physicalist explanation and explanations via laws that are irreducible to the physicalist concepts. It is at this juncture that the homogeneous-heterogeneous dichotomy becomes instructive.

Within the scope of physicalism the distinction between homogeneous and heterogeneous reduction is metaphysically benign. Heterogeneous reductive explanations succeed because the properties of the explanandum event are constituted by the properties of the phenomena described in the explanans. Still, this is not a relation of strict type identity, it is multiple realizability which presupposes a token property identity relation. Since there are possible worlds in which

higher-level properties are realized in lower-level properties of different substrates by different sets of lower-level properties (that is there are modal differences among realizations) there are no entailments that are characteristic of strict identity. (Cf. Tye, 1995) While not reductionism "plain and simple" heterogeneous reduction is nevertheless a metaphysically modest thesis about scientific concepts.

The Ambivalent Nonreductionist

Ambivalent nonreductionism acknowledges the neurobiological basis of consciousness and presupposes the compatibility of biological and final physics explanations. It also acknowledges that phenomenally conscious mental events are on the other side of Levine's explanatory gap but that the gap can be bridged successfully. Ambivalent nonreductionism is a very popular position, probably anyone who considers him or herself a functionalist is an ambivalent reductionist by my criterion. Among naturalized theories of phenomenal consciousness I think that the most interesting and fecund version is Owen Flanagan's (1992) Constructive Naturalism.

I call the unambiguous form of nonreductionism resolute because it denies not only the reduction of conscious experience to properties of some physical substrate, but also denies the supervenience of consciousness upon anything else. This thesis has long been championed by those who for a variety of reasons despair of physicalism as a worldview. It is now becoming popular among proponents of science as well. The most comprehensive version is David Chalmers' (1996) theory of phenomenal consciousness. (As demonstrative evidence of the popularity of Chalmers' view I refer you to an article in a very recent issue of *Time Magazine*.) I shall sketch some of the central themes in Flanagan's ambivalent Constructive Naturalism and Chalmers's flamboyant naturalistic dualism to illustrate my argument that nonreductive theories of consciousness lead either back to physicalist reductionism or to a brave but not so new world of panpsychism.

Flanagan's natural method is the study of mind, and phenomenally conscious mental states in particular, that consists in combining the neurosciences, cognitive science, and phenomenology. The neurosciences contribute to the explanation of consciousness by disclosing the empirical facts about the brain structures and processes that comprise the neural correlates of mental states. Neurobiology thus provides empirical constraints upon the limits of mental state realization or instantiation in brains.

This idea has increased in credibility as the picture of the mind as a sophisticated information processor has become more widely accepted and as neuroscience has shown that the brain possesses both the complexity and the power to do the information processing human minds in fact do. (Flanagan, 1992, p. xi)

The cognitive sciences "provide illuminating models of mental activity." (1992, p. 12) The various functional mechanisms posited by psychological explanations need to be constrained by knowledge about the brain.

Neuroscience constrains such positing, but the study of the brain alone will yield absolutely no knowledge about the mind unless certain phenomena described at the psychological or phenomenological level are on the table to be explained. (p. 12)

Phenomenology is the source from which we obtain the reports of subjective experience. First-person phenomenological reports provide the surface access to the cognitive and neural levels on which phenomenal experience depends. In a very recent version of his view Flanagan (1996) has expanded the triangulation method. He now adds anthropology, history, linguistics, indeed all the social sciences for these disciplines explain the myriad content of phenomenological description and, he claims, are thus part of the explanation of consciousness. The descriptive content of the reports reflects the wide variety of and vast differences between things people say they experience. The various social sciences are essential to explaining conscious experience. Flanagan's natural method is a multidimensional enterprise and that testifies perhaps to the scope of conscious phenomena. There is the question of just how the various components fit together to yield a circumscribed concept of explanation.

One immediate problem concerns the account of conscious experience in creatures which obviously do have it but for whom there is no appropriate level for phenomenology. First-person reports other than grunts, exclamations, and other such vocal signals, presuppose concepts. The social science disciplines are in the business of explaining concepts in so far as we individuate behavior as falling under this or that concept. This part of the natural method approach to consciousness does not, therefore, apply to creatures, including human infants, with phenomenal experience but no or only rudimentary concepts that inform phenomenological reports. But if all three components are necessary to explain experience then the absence of concepts to inform phenomenological reports means that we either deny that creatures have phenomenal experience or that the natural method doesn't need phenomenology. The former is repugnant. So it may be that some adjustments in the natural method are required, such as subdividing conscious phenomena and limiting the method to conceptually dependent experience.

There are, however, other pressing questions concerning the natural method as a nonreductive explanation of phenomenal experience. The basic idea in nonreductive explanation has two parts. The first is to account for some set of phenomena by establishing token occurrences as instances of lawful relations, where the laws in question are not physical laws but are compatible with physical laws. This ontological part keeps the world of phenomena simple in the sense that the explanation does not require the postulation of substances that are

metaphysically distinct from basic physicalist furniture. The second part is epistemological or explanatory and typically involves the claim that our understanding of the phenomena and thus the adequacy of the explanation properly depends upon principles that are themselves not part of physicalist furniture.

Metaphysical and Linguistic Physicalism

Jackson's (1982, 1986) disarming "knowledge argument" has been the recurrent target of non-reductivist counterargument acumen. There are two variants, both ask us to consider Mary who lives in a black and white world. In the original argument Mary, through diligent study of cognitive neuroscience, acquires knowledge of everything there is to know about the physical transactions in a normal human brain when the person whose brain it is experiences red. Mary does not know what it's like to experience red. When Mary enters the world of colors and sees ripe tomatoes she comes to know what she didn't before, namely, what it's like to experience red.

In the later variant while in her black and white world Mary knows everything *physical* there is to know about other people. But in that world she does not know *everything* there is to know about other people. She learns some truths about other people and herself upon her release. Therefore, there are truths about other people and Mary herself that are not captured by physicalist theory.

Most naturalists argue that the first premise is false. What Mary learns upon entering the world of colors is something new and thus her knowledge is not complete but it *is* physical. The idea, familiar from functionalism, is that while what Mary comes to know is physical (because everything is) it's not expressible in physicalist language. Flanagan's proposal is that we alleviate the potential mystery of such physical but not physically explainable phenomena by making the proper distinctions between *explanans* and *explananda*. Accordingly, Flanagan distinguishes between *metaphysical* physicalism and *linguistic* physicalism and argues that to demand the latter is to misunderstand the former. Not everything physical is susceptible to physicalistic explanation. There is no scarcity of examples: proprietary descriptions of geometric properties, as well as chemical, geological, biological, and neurophysiological phenomena, reduce to disjunctively realized physical descriptions.

These are cases of multiply realizable properties that are homogeneous with physicalism in virtue of the transparency of their relation to physical properties. But what Mary comes to know is something *subjective* to her experiential space; a space that by definition no one else occupies. The difference between the two kinds of cases is indeed a difference in kind.⁶ This class of examples has nothing at all to do with the nonreductive explanation of either subjectivity or phenomenal experience, in so far as these latter two can be distinguished. All such cases are, I

claim, instances of homogeneous compatibility. This move assimilates heterogeneous to homogeneous naturalism. The attempt fails, however, since there is nothing in the homogeneous cases that contravenes or escapes the scope of basic physical laws. But phenomenal experience of the kind that Mary has when in the normal world she sees a ripe tomato is precisely and admittedly to bend the scope of the explanatory laws of physics. For the genuinely nonreductive heterogeneous solution we require a bridge law strategy but with laws very different from the standard one that identifies the physical constituents that ultimately realize Mary's conscious experience. Were we to have such bridge laws we would not have explanations that parallel cases like temperature and mean kinetic energy, and then Mary's experience would fall within the scope of physical law. The conclusion seems to be that the locus of the problem lies elsewhere, not in the neurophysical constituency of Mary's red experience.

The second argument based on the metaphysical and linguistic physicalism distinction is about the methodology of explanation. It looks like Jackson's case demands that the explanation of Mary's new knowledge somehow reproduces or clones the event to be explained. This would, however, conflate the explanation with the event to be explained; that is such a demand conflates the theory with what that theory is about.⁷ Flanagan is right to distinguish sharply between the explanandum event and the explanans.⁸ But this is not the same as the distinction of *explanatory level*. The nonreductionist view is that the *explanatory level* at which we explain such phenomena need not be physicalist as long as the entities and processes at that level are not incompatible with physicalism. A theory explains its explananda by disclosing its nature, for example, by detailing the causal processes that produce the events in question. Very roughly, we explain the macro properties of water by showing how H₂O (contingently) exhibits these properties. This, of course, is reductionism and thus not available to Flanagan. The idea is to explain qualitative experience without reducing it to the properties of the neural substrate. The question of how the autonomous psychological and neurological explanatory levels relate remains.

The answer is the argument from epistemic asymmetry. Recall the first premise: Mary knows all the physical facts, everything a completed physics, chemistry, and neurophysiology has to tell, as well as "all there is to know about the causal and relational facts consequent upon this, including of course functional roles." (Jackson, 1986, p. 392) Flanagan's strategy is to exploit the distinction between metaphysical and linguistic physicalism and to do a bit of arm-chair psychological analysis of Mary's inferential practices. Let's assume the distinction between metaphysical and linguistic physicalism as Flanagan suggests. Mary enters the world of colors and learns something new, what it's like to experience red. What Mary learns is *physical* but her experience is not physically explainable because,

there is no reason to think that there will be some expression in the basic sciences (all of which Mary knows - SS) that will capture or express what it is like to experience red, or that will provide Mary with the phenomenal concept of red or the phenomenal component of the concept of red. Knowledge of the phenomenological component of red requires first-person relations of a certain sort between a stimulus of a certain type and a suitably hooked-up organism. It requires seeing something red. (Flanagan, p. 99)

Although Mary knows all that physical science has to say there is, that is not all there is. But what else there is, is also physical; what Mary learns upon seeing red is something physical but she learns it in a new way, under a different mode of presentation. It's just not expressible (explainable) in the language of the basic sciences.⁹ According to Flanagan, Mary will learn "what it is like to experience red."¹⁰ What Mary learns upon having her "red channel" turned on by a ripe tomato, is both new *and* physical, despite not being explainable by basic physical science. As Flanagan states, albeit paradoxically, "Mary knows what she doesn't know (...)" (p. 100) He argues that Jackson

can't have Mary both so smart she knows all that she says she knows, and so stupid that she will be so surprised upon seeing that first tomato. Mary will have an utterly novel experience (...) She expected the novelty. Her theory told her to. (p. 100)

The psychological analysis of Mary's inference about the novelty of her red experience is no good. The theory may tell Mary to expect novelty but Jackson's point is that the theory can't tell because it doesn't explain why the novelty (expected red sensation) has the qualitative character it does. And since Flanagan's reply to Jackson's anti-physicalism depends on the adequacy of the explanatory level it's crucial that the explanation at that level explains the explanandum. The point is Levine's explanatory gap: no amount of theoretical knowledge grounds the experience in the required way. All possible theoretical-descriptive knowledge of an electric shock may prepare a subject for the experience but there is a significant difference between the "theoretical" anticipation of the shock and the event itself. The explanans of the explanandum is supposed to explain why the event occurs as it does with the properties it has.

If Flanagan's naturalism explains why systems like us have the qualitative experiences we do *because* systems like us are so physically constituted that when, say, our red channels are on, we have qualitative red experiences that can be experienced only in the first-person, then I think it's fair to say we know that. The question, however, is *why* systems like us have subjective experiences at all and why they feel the way they do.¹¹ The point remains, however, that in learning something new and physical but such that the resultant knowledge (or information) is not explainable by basic physical science, there is a fact that Flanagan's naturalistic theory fails to explain, namely, that Mary learns what it's like to have a red experience. His theory does explain the novelty of Mary's new knowledge and why it's subjective, and that's to its credit. But it fails to

explain why the knowledge has the qualitative features it does. In this respect, Flanagan's natural method analysis explains Mary's *ability* to discriminate red experientially as some other physicalists, Nemirov (1980) and Lewis (1983), have. Others (Loar, 1990 and Tye, 1995) sympathetic to physicalism argue that it's disingenuous to deny that Mary learns a novel fact in her first experience red. We explain Mary's heightened ability to discriminate red experientially by her theoretical knowledge but the fact of her experience is not entailed by what she knows.

What I have been calling ambivalent or *ambiguous* nonreductionism can be seen clearly here. Behavioral studies, translation via color-effect codes, and brain properties provide indirect evidence for the way things seem. The inference to best explanation strategy counsels that the evidence for the phenomena of the way things seem can be accounted for compatibly with physicalism. But the force of the explanatory gap view of Mary's knowledge is that even indirect evidence fails to explain the phenomenal properties of qualia. To appeal to the explanatory force of indirect evidence is to succumb to physicalist reductionism.¹²

Furthermore, the nonreductive physicalist confronts a problem as daunting to its credibility as the problem of qualia is to the reductionist. Since physical phenomena are usually individuated by their descriptions and roles in physical theory, the nonreductionist needs a convincing argument to establish that the purported physical phenomena that basic physics can't express or explain are physical. To say that there are physical transactions (facts) that are only subjectively accessible in virtue of one's epistemic situation is to confer a new property on such physical events. What reason is there to think that this new property is physical? There is reason to think it's not.

The first-person epistemic asymmetry strategy fails to invalidate Jackson's argument. With the acknowledgement of a *different* way of knowing or *different mode of presentation* there is, unavoidably, a fact of the matter established that is not entailed by all the truths of basic science. The fact in question is one constituted by that way of knowing, *and that is a novel fact*. It's a fact about Mary after she leaves her black and white world, that she comes to know what seeing red is like, through a mode of presentation not available to her before she left that environment. So Mary does, as Jackson's second premise states, acquire new factual knowledge. And, as his first premise states, this truth about Mary (and other people) is not included in her complete knowledge of neural color processing.

It is, for example not true *a priori* that Donostia is San Sebastián, so, if I know that Donostia is in Gipuzkoa but don't know that San Sebastián is, I also don't know the *a posteriori* fact that connects the two ways of knowing things about the city. But when I come to know the fact that San Sebastián is in Gipuzkoa, it's new knowledge of something I knew differently. The point is that *my knowing by way of a different mode of presentation* is a novel fact, a truth not captured by basic neuroscience. This is where Flanagan's arm-chair psychology breaks down. He thinks that

by making Mary such a neuroscience genius Jackson also makes her smart enough "to know what she doesn't know." But how can she be so smart as to know the new truth associated with her red experience before she has it? Mary can exhibit flawless inferential capacity from everything that she knows but what she knows doesn't entail the truth that she comes to know via a different mode of presentation.¹³

Each of the three attempts to invalidate Jackson's knowledge argument depends upon the viability of the distinction between metaphysical and linguistic (or perhaps better called *conceptual*) physicalism. In each case it was the indistinctness of the distinction that blocked the effort to render the premises untrue. The distinction is important to Constructive Naturalism because it bears the weight of the nonreductive explanation of consciousness. In so far as the distinction fails to bear that weight Flanagan's ambivalent nonreductive theory threatens to collapse into reductivism which is precisely one part of the ambivalence.

A clearly unintended consequence of Constructive Naturalism as a purported nonreductive theory of consciousness is its collapse into reductionism. The question is whether this is the fate of all ambiguously nonreductive explanations of phenomenal consciousness. Perhaps it afflicts only theories that turn on distinctions such as between linguistic and metaphysical physicalism. If it turns out that such moves are simply methodological *legerdemain* then reductionist theories, for all their warts and carbuncles, will have to be reassessed in light of the failure of the nonreductive competition.

Naturalistic Dualism

Chalmers' resolute or unambiguous nonreductionism is a comprehensive theory that proposes an explanation of phenomenal consciousness that bridges the gap between the experiential and the physical. Naturalistic Dualism is the view that phenomenal consciousness of the kind that Mary enjoys upon escaping from her black and white world cannot be explained within the ontological conceptual limits of physicalism. Conscious experience is one of the very few things in the world that does not supervene logically on the (micro)physical. Thus functional organization is not, as Dennett argues, constitutive of experience. Consciousness is not a functional property. Nor are ambivalent nonreductionist theories of consciousness like Flanagan's adequate because they conceive consciousness to be a functional property. Flanagan argues for a neo-Darwinian functional explanation of consciousness. But any theory that identifies conscious experience with neural structure fails to address what Chalmers calls "the hard problem." The *easy* problems are typically the problems of cognitive psychology (discrimination, information integration, attention, internal access, etc). Mary's knowledge illustrates the hard problem; since Mary is a physical entity who has phenomenal experiences that are not reducible to neural organization, how do Mary's physical

processes bring about her "what it's like to see red" consciousness? "Why should physical processes give rise to a rich inner life at all?" (Cf. Seager, 1995 on what he calls "the generation problem.") "To explain experience, we need a new approach." (Chalmers, 1995, p. 204)

Explanatory proposals such as chaos and nonlinear dynamics, nonalgorithmic processing, and quantum mechanics share the property of failing to explain how consciousness emerges from purely physical processes. "The moral of all this is that *you can't explain conscious experience on the cheap*." (Chalmers, 1995, p. 208) Chalmers' unambiguous nonreductionism dispenses with all such efforts and strikes out in another direction. I want to address both the claimed novelty and the expense of the new approach. My concern is that in striking out in another explanatory direction, Chalmers seriously risks striking out.

Since all the known theories that subsume conscious experience under physical laws fail to explain it, the proposal is "(...) that a theory of consciousness should take experience as fundamental." (p. 210)¹⁴ The idea is two-fold: first, individuate or categorize experience as a fundamental property in terms of fundamental laws. These laws explain experiential phenomena in terms of more basic experiential phenomena. They must exhibit relations of dependence among such phenomena much in the way that physical laws disclose causal dependencies between higher- and lower-level events. This establishes unambiguous nonreductionism. To fundamental physical properties as mass and electromagnetism Chalmers adds experience. Second, since (some?) physical things have experience the theory "(...) will specify basic principles to telling us how experience depends upon the physical features of the world." (Chalmers, 1995, p. 210) These are *psychophysical* bridging principles, they bear the burden of connecting the heterogeneous domains. The explanatory gap into which all physicalist theories fall is bridged by psychophysical principles.

Chalmers calls his theory an "innocent version of dualism, completely compatible with the scientific worldview." (p. 210) And it "(...) is entirely naturalistic, allowing that ultimately the universe comes down to a network of basic entities obeying simple laws (...)" (p. 210) This distinguishes Chalmers' (dualistic) naturalism from the others on the list above. The difference is in ontology but while it preserves the basic idea of a lawful universe it does so at a considerable cost as I discuss below.

To support his hypothesis Chalmers offers evidence for two important but non-basic psychophysical principles. The principle of structural coherence refers to a correspondence between the structural complexity of phenomenal experience and the structural complexity of information-processing. Our color sensations exhibit a three dimensional-geometry corresponding to a three-dimensional geometrical structure in the color processing system. The principle of organizational invariance specifies "(...) that any two systems with the same fine-grained

functional organization will have qualitatively identical experiences." (p. 214) We are returned to the philosophical zombie scenarios of "twin me" lacking consciousness that undermined the reductionist project. Chalmers defends the principle with a thought experiment (that I omit here) about piecemeal part replacement and the claim that while absent and inverted qualia are logically possible hypotheses, they "(...) are empirically and nomologically impossible." (p. 214)

The basic principle has an abstract double aspect notion of information as fundamental in the universe; information has a physical and a phenomenal aspect. "Experience arises by virtue of its status as one aspect of information, when the other aspect is found embodied in physical processing." (p. 216) One consequence of this view that Chalmers defends is that experience is ubiquitous. The duality of information suggests that every realization of an information state is experiential, that is, has an intrinsic phenomenal nature. In short, there isn't anything without phenomenal experience, no matter how feeble. Indeed, if double-aspect information is a fundamental feature of the world, then we should expect, like other fundamental features, to find it everywhere. "Where there is simple information processing, there is simple experience (...) perhaps a thermostat, a maximally simple information processing structure, might have maximally simple experience." (p. 217)

I cannot here do justice to the scope of Chalmers' theory. I have highlighted some key features to suggest the costs of not explaining consciousness on the cheap. The theory explains the existence of consciousness by making it pervasive and it substitutes empirical (natural) supervenience for logical. Thus this might be a case of Russell's remark about the virtues of theft over honest toil. But Chalmers has toiled, bringing a variety of arguments to bear on his bold project. The price for this nonreductive explanation of consciousness is high despite Chalmers' disclaimer that it's merely an addition to ontology. The expansion is as I see it quite obviously the proposal of a radically different panpsychist worldview. (Cf. McGinn, 1995) Given the objections to panpsychism (you'll be pleased that I'll not rehearse them here) that does strike me as expensive. This is not an unintended consequence for Chalmers but it's not clear that the consensus of nonreductionists would find this a welcome result. (See Velmans, 1995) After all, permeating the world with experiential states does or should cause you to think carefully about your very next move, at least if experience is something you care about.

Having acknowledged the essentially intuitive character of the proposals for double-edged information and panpsychism we can still adduce collateral and indirect and circumstantial evidence that impact cognitively on the question of why we should take the proposal seriously. From an albeit conservative methodological perspective the postulation of a fundamental non-physical force to explain what physical laws don't (or perhaps can't) is unabashedly *ad hoc*. The hypothesis explains the first-person subjective evidence of experience but little else. The evidence available in

nature in no way suggests that causal processes are accompanied invariably, or ever, by experience. It's reasonable to suppose that if physical processes were also experiential we would find evidence of it. Physics seems quite complete in the capacity of its explanations to account for the behavior of matter. It's quite proper to wonder about causal processes how the absence of the hypothesized experience would affect their behavior.

Perhaps there are ways to modify this view, for example, distinguishing between experience and detection¹⁵ to deflate Chalmers' rampant panpsychism. Panpsychism is not new but newly clothed in terms of information. Spinoza and Leibniz seem to have favored some form of it. Anaxagoras gets credit for inventing panpsychism and from what I can tell his concept of *nous* seems very similar to Chalmers' idea of dual-aspect information. Chalmers overstates the case when he claims to be forging a new path to explain consciousness; it has been trodden before.

What about the claimed novelty of naturalistic dualism? Here too there is a precedent. The eighteenth century philosopher Christian Wolff resolved the scope issue of naturalism in a way similar to Chalmers.

(...) Wolff maintained a dualistic conception of mind and matter but considered the natural world to include all creation, including the soul. When 'natural' is equated with 'created,' thought counts as a natural power, even if the thinking substance and its operations are not subject to the laws of physics. (Hatfield, 1990, pp. 23-24)

Wolff, like so many of his dualist contemporaries, was concerned primarily with the rational faculties of the soul, which were argued to be irreducible to physical principles. What Wolff did vis-a-vis the mind's rational capacity Chalmers has now tried to do for the mind's experiential capacity. There is, moreover, a very contemporary flavor to Wolff's naturalism. "For Wolff, it made sense to think that empirical data could reveal logical rules because of the special status of the particular object of empirical investigation, the human soul." (Hatfield, 1990, p. 74) These days it's not hard to find similar views where the empirical data is from experimental cognitive neuroscience and "the special status of the particular object of empirical investigation" are the cognitive architectures instantiated in the nervous system.¹⁶

Finally, there is a dilemma for nonreductive naturalism. As noted, to avoid the reductionist fallacy of explaining consciousness in terms of nonconscious processes, nonreductionism postulates ubiquitous experience. Any appeal to *structural complexity* commits the reductionist fallacy and the corresponding question: Why does experience emerge from this but not that degree of structural complexity? There is no "natural" divide between things that have experiences and things that don't. Consciousness can only be explained in terms of simpler conscious processes but there is no last element in the chain of experience. Chalmers remarks parenthetically, "I would not quite say that a rock *has experience* or that a rock *is conscious*, in the

way that I might loosely say that a thermostat has experience or is conscious." (ms, p. 279)¹⁷ On the other hand, differentiating between experience and nonexperience deprives nonreductive theories of the fundamental concept of consciousness required to solve the hard problem. For if the slide from ambivalent nonreduction to outright reduction can't be blocked then we are back to square one: physicalism versus (pan)psychism.

Having stressed the dilemma for nonreductive theories of consciousness I want to conclude with some relativizing remarks on the robust version that seems to lead inexorably to some kind of panpsychism. Resolute nonreductionism seems just the kind of theoretical structure to express what have been disparagingly characterized as mystical doctrines. The concept of information in Chalmers' view also seems compatible with so-called "primitive" religious notions of a superficially material world infused with animistic spirits. This offends "enlightened" minds schooled in the traditions of 18th Century theories of empirical science and rational thought with its notion of an antagonist relation between mind and nature. Well, I think it's fair to say the evidence from environmental studies suggests that this view hasn't done nature much good. Perhaps in a much larger picture of ourselves in the universe the more unified view offered by unambiguous nonreductionism might offer a way that captures and rationalizes some of the wisdom that we have ridiculed as myth.

Notes

- † This paper was prepared during the 1995-96 academic year I spent as J. William Fulbright Senior Scholar and Visiting Professor in the Department of Logic and Philosophy of Science at the University of the Basque Country, San Sebastián, Spain.
- 1 It might be argued that the inverted spectrum is a problem for behaviorists and functionalists but not for property identity theorists. The latter holds that two persons with inverted spectra must differ in their neurophysiological properties. The question that divides the opposing camps, however, concerns the *detectability* of such physical differences, what Dennett (1991, p. 373) calls "internal discriminative states." Functionalists argue that such purported states are undetectable (and hence merely "purported.") Property identity theorists, e.g., Flanagan, (1992) argue that there is scientifically respectable indirect evidence for different internal states and conclude that such states are indirectly detectable.
 - 2 Dennett (1991) has inveighed vociferously against what he considers to be logically libertarian excesses in the application of conceivability arguments. He (1995) "drive(s) home" a point he's made before:

when philosophers claim that zombies are conceivable, they invariably underestimate the task of conception (or imagination), and end up imagining something that violates their own definition. This conceals from them the fact that the philosophical concept of a zombie is sillier than they have noticed. Or to put the same point positively, the fact that they take zombies seriously can be used to show just how easy it is to underestimate the power of the 'behaviourism' they oppose. (p. 322)
 - 3 See Philip Kitcher's (1993) detailed, systematic articulation of a cognitively naturalized history and philosophy of science that resists both relativism and constructivism.
 - 4 This is Quinean physicalism, precisely; Quine's way of putting is "No change without physical change."
 - 5 T. Nagel (1968) expressed his reason for rejecting physicalism; he said he found it repulsive.
 - 6 To support his argument Flanagan illustrates the limits on physical explanation with Heisenberg's Uncertainty Principle. Flanagan is right that our inability to predict the simultaneous position and

momentum of an electron does nothing to threaten physicalism. Indeterminism is a *brute fact* of the physical universe. The unpredictability of physical phenomena is, however, not at all like the qualitative aspect of experience nor its inherent subjectivity in so far as it's important to distinguish between these two. Indeed, it's not the case that unpredictability in physics threatens physicalism. Unless the argument is that physicalism is incoherent, how could unpredictability be incompatible with it? To the contrary, the argument assumes both the coherence and metaphysical completeness of physicalism. The compatibility of the unpredictability case with naturalism (as physicalism) is transparent in exactly the same way that biology and geology are transparently compatible with naturalism.

- 7 There has always seemed to me something incredulous about this defense since it's hard to believe that anyone would really expect an explanation of an event to recreate or simulate it. Explanations are designed to make sense of things, not to rehearse them. After all, no one in his right mind would expect that the explanation of what it's like to experience two thousand volts of electricity results in the electrocution of the explainer. The emphasis in Flanagan's argument is on the ludicrous demand that an explanation of first-person experience somehow transfers that experience, with its qualitative character, to the explanation. (Something of this sort seems to lie behind the original *StarTrek* idea of Mr. Spock's mind-meld. It also served as truly *deus ex machina* in the film *Brainstorms*, where by hooking oneself up to the apparatus, among other things, one could experience another's orgasms.)
- 8 I have noted that there is, or seems to be, something of a straw-man here toward which this point is directed. The exception is perhaps an "act" theory of explanation but even here the explanatory act is not intended to simulate or duplicate the thing explained. In either case the explanation must satisfy some normative criteria (obviously, since not everything is an explanation) that are different from the descriptive criteria that individuate the event to be explained. I think this holds even in a Churchland-like (1995) future scenario where some sorts of activation patterns in a designated explanatory vector space replace the sentential or propositional model of explanation.
- 9 Churchland's (1989) reductionist mistake, according to Flanagan, was to think that what Mary learns is *exactly* the same as what she knows from her scientific competence; she just knows it in a different non-linguistic way.
- 10 Flanagan's and Churchland's accounts differ in that Mary learns something new in virtue of having her "red channel turned on for the first time. She knew all about the red channel before but her own red channel had never been turned on." (p. 99) As Churchland (1995) notes Mary wouldn't have the red experience since her activation space had not been partitioned chromatically in her colorless environment.
- 11 In the end, one part of Flanagan's otherwise well-conceived argument seems to sustain Churchland's objection that Jackson's argument equivocates on the concept of knowledge by ascribing to Mary knowledge by description and acquaintance. "The phenomenal features are conveyed only in the first-person. Mary knows all the third-person, theoretical sentences that describe color sensations. But she herself has never (yet) instantiated the states the sentences describe." (p. 101) Flanagan accuses McGinn (1991) of equivocating on two different senses of "grasp" in his much maligned *unknowability* theory of mind. The knowledge by acquaintance that Mary enjoys upon instantiating "the states that the sentences describe" is nevertheless physical but available only to Mary and each of us individually, i.e., subjectively, insofar as Mary is perspicuous in being "causally connected to the realization in the right sort of way." (p. 94) What Flanagan calls "the biological integrity of the human body" directly explains why Mary and each one of us uniquely have our *own* experiences.
- 12 We can diagnose why Flanagan thinks that his argument succeeds: his concept of qualia is weaker than what we might call the *full-blooded* qualia. Indeed, Flanagan explicates the idea of qualia in terms of "how things seem" but rejects Dennett's characterization of qualia arguing that Dennett tilts at qualia-windmills. It's a concept of qualia that perverts the "ways things seem to us" property of conscious states into a deviant conception that, Flanagan claims, no one but Dennett acknowledges. On Dennett's conception qualia are "intrinsic, atomic, unanalyzable, nonrelational, ineffable, essentially private, and immediately and incorrigibly apprehensible." (1992, p. 72) Indeed, it's Flanagan's view that "There are no qualia with the(se) properties" (p. 65) of being atomic, nonrelational, ineffable, incomparable, and incorrigibly accessible from the first-person point of view. Thus, while Dennett's

- concept of qualia is exhausted by these properties, Flanagan's concept doesn't have them at all. Thus when Mary experiences red for the first time there is a way that it seems to her, for the first time. Since on Flanagan's thesis we (can) have indirect evidence for the objective properties of the way things seem we can explain the way things seem to Mary indirectly, in terms of those properties.
- 13 My formulation of this objection is independent of Chalmers' (1996) version that I encountered subsequently.
- 14 E. Nagel (1961) inveighed against such fundamental extensions of naturalism.
We have come to think (...) that there are a great many things which are already known or remain to be discovered, but that there is no one 'big thing' which, if known would make everything else coherent, and unlock the mystery of creation. (p. 5)
- Rosenberg (1996) notes that contemporary naturalists are more liberal than Nagel in appealing to Darwinism as the key to the naturalist's pursuit of explanatory coherence. My argument is that there is a difference in kind between Chalmers' ontological extension of naturalism and its methodological extension envisioned by Darwinism.
- 15 See Dretske (1995) for efforts in this direction.
- 16 For instance, Philip Kitcher (1993) has argued the case for a cognitivist reconstruction of scientific methodology as an epistemologically meliorative project designed to improve cognitive performance.
- 17 According to my suggested distinction the rock detects the causal forces that impinge upon it without experience.

BIBLIOGRAPHY

- Block, N.: 1980, 'Troubles with functionalism', in Block: *Readings in the Philosophy of Psychology*, 2 vols., Cambridge, MA, Harvard University Press.
- Chalmers, D.: 1995, 'Facing up to the problem of consciousness', *Journal of Consciousness Studies* Vol. 2, No. 3, 200-219
- Chalmers, D.: 1996, *The Conscious Mind*, Oxford University Press.
- Churchland, P.M.: 1995, *The Engine of Reason, the Seat of the Soul*, Cambridge, MA, MIT Press.
- Churchland, P.M.: 1989, *The Neurocomputational Perspective*, Cambridge, MA, MIT Press.
- Dennett, D.: 1991, *Consciousness Explained*, Boston, Little, Brown.
- Dennett, D.: 1995, 'The unimagined preposterousness of Zombies', *Journal of Consciousness Studies* Vol. 2, No. 4. 322-326.
- Dretske, F.: 1995, *Naturalizing the Mind*, Cambridge, MA, MIT Press.
- Flanagan, O.: 1991, *The Science of the Mind*, Cambridge, MA, MIT Press.
- Flanagan, O.: 1992, *Consciousness Reconsidered*, Cambridge, MA, MIT Press.
- Flanagan, O.: 1996, *Self-Expressions*, Oxford, Oxford University Press.
- Fodor, J.A.: 1994, *The Elm and the Expert*, Cambridge, MA, MIT Press.
- Fodor, J.A.: 1987, *Psychosemantics*, Cambridge, MA, MIT Press.
- Fodor, J.A.: 1981, 'Special sciences', in his *Representations*, Cambridge, MA, MIT Press.
- Hannan, B.: 1994, *Subjectivity & Reduction*, Boulder, CO, Westview Press.
- Hatfield, G.: 1990, *The Natural and the Normative*, Cambridge, MA, MIT Press.

- Jackson, F.: 1982, 'Epiphenomenal qualia', *Philosophical Quarterly* 32, 127-136.
- Jackson, F.: 1986, 'What Mary didn't know', *Journal of Philosophy* 83, No. 5, 291-295.
- Kitcher, Ph.: 1993, *The Advancement of Science*, Oxford, Oxford University Press.
- Levine, J.: 1983, 'Materialism and qualia: the explanatory gap', *Pacific Philosophical Quarterly* 64, 354-361.
- Levine, J.: 1993, 'On leaving out what it's like', in Davies & Humphries (eds.): *Consciousness*, Oxford, Basil Blackwell.
- Levine, J.: 1995, 'Qualia: intrinsic, relational or what?', in Metzinger, T. (ed.): *Conscious Experience*, Schöningh/Academic Imprint, Paderborn.
- Lewis, D.: 1983, 'New work for a theory of universals', *Australasian Journal of Philosophy* 61, 343-377.
- Loar, B.: 1990, 'Phenomenal states', in Tomberlin, J. (ed.): *Philosophical Perspectives*, Vol. 4, Northridge, CA, Ridgeview.
- McGinn, C.: 1991, *The problem of Consciousness*, Oxford, Basil Blackwell.
- McGinn, C.: 1995, *The Journal of Consciousness Studies*, Vol. 2, No. 3, 220-230.
- Nagel, E.: 1961, *The Structure of Science*, New York, Harcourt, Brace & World.
- Nagel, T.: 1974, *What's it like to be a bat? In his Mortal Questions*, Cambridge University Press.
- Nemirow, L.: 1980, 'Review of T. Nagel's *Mortal Questions*', *Philosophical Review* 89, 473-477.
- Rosenberg, A.: 1996, 'A field guide to recent species of naturalism', *British Journal for the Philosophy of Science* 47, 1-29.
- Seager, W.: 1995, 'Consciousness, Information, and panpsychism', *Journal of Consciousness Studies* Vol. 2, No. 3, 272-288.
- Tye, M.: 1995, *Ten Problems of Consciousness*, Cambridge, MA, MIT Press.
- Velmans, M.: 1995, 'The relation of consciousness to the material world', *Journal of Consciousness Studies* Vol. 2, No. 3, 255-265.
- Wright, R.: In Press, *Realism and Explanatory Priority*.

Stuart Silvers (Ph.D., University of Pittsburgh, USA) is Professor of Philosophy and Chair of the Department of Philosophy and Religion at Clemson University, Clemson, South Carolina, USA. His research interests are in the philosophy of cognitive science, philosophy of science, and epistemology. He has published articles in these areas in *Philosophical Psychology*, *Philosophy of Science*, *The British Journal for the Philosophy of Science*, *Metaphilosophy*, and edited *Representations* (Kluwer, Philosophical Studies Series), 1989. In 1995-96 he was a J. William Fulbright Senior Scholar and Visiting Professor of Philosophy at Universidad del País Vasco, San Sebastian, Spain.