

# METAPHYSICS OF MIND

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## I. Introduction

The enduring metaphysical question about minds and mental phenomena concerns their nature. At least since Descartes this question—the mind-body problem—has been understood in terms of the viability or necessity of mind-body dualism, the thesis that minds and bodies are essentially distinct kinds of substance. Assuming that the non-mental (‘body’) portions of the world are constituted of physical stuff, the remaining question is: Are minds or mental phenomena essentially distinct non-physical substances, or phenomena that essentially involve such distinct kinds of substances?

By the middle of the Twentieth Century there was broad philosophical and scientific consensus that the answer to this classical question about minds is negative: Minds and mental phenomena are not essentially distinct substances, nor are they phenomena that essentially involve distinct kinds of substances. There are at least two broad trends and one specific argument that lead to this conclusion. One trend is the decreasing influence of specifically theological arguments and commitments in philosophical argumentation, so that religious belief in immortal souls was no longer given much weight in the ontology of mind. The second trend, perhaps related to the first, is the increased demand that metaphysical theories bear explanatory fruits, so that the postulation of an immaterial and essentially mental substance appears to be a abdication from explanatory duties rather than a useful proposal. The argument, known to Descartes from the very beginning, is that there has never been an adequate account of

how two essentially distinct and incompatible substances could causally interact.<sup>1</sup>

Descartes' solution was inadequate and brute, and his followers struggled with the problem—leading to Leibniz's parallelism and Malebranche's occasionalism, among other views. The problem of mental causation, then, is the central difficulty that underlines substance dualism.<sup>2</sup>

The negative answer on the question of substance dualism, however, only increases the pressure for some monistic account of the nature of minds. In particular, given the assumption that the one kind of substance is physical or material substance, there is a need for an account of minds consonant with physicalist or materialist monism.<sup>3</sup> As Jaegwon Kim puts it, 'the mind-body problem—our mind-body problem—has been that of finding a place for the mind in a world that is fundamentally physical' (1998).

Today the most widely disputed metaphysical theories in philosophy of mind are proposals for how to locate the mind in a fundamentally physical world, or else proposals to weaken the commitments of physicalist monism in order to locate the mind in a nevertheless mostly physical world. Likewise, the challenges faced by the various proposals are mainly questions about their adequacy to the task of locating the mind in a fundamentally or mostly physical world.

Before moving on to the examination of these theories, it is worth noting the range of phenomena that are covered by metaphysical theories of mind. It is common to distinguish between theories of contentful mental states and theories of conscious mental states. Theories of contentful mental states cover beliefs, desires, wishes, hopes, and other intentional mental states (Dennett 1971, 1987) or propositional attitudes (Fodor 1978, 1985, 1987, 1990). Theories of conscious mental states cover phenomena such as

sensations, feelings, and perhaps moods or emotions—though it is controversial where to locate moods and emotions in this crude dichotomy (Montague 2009). Some theorists hold that either conscious states (e.g., Searle 1992) or intentional states (e.g., Dennett 1991, Lycan 1987, Dretske 1995) are more fundamental, and that the complement can be explained in terms of the more fundamental kind. Other theorists (e.g., Block 1996) appear to hold that the two general kinds of mental states are equally fundamental but given distinct explanations. And there is a growing group of philosophers who think that neither is more fundamental than the other and that both must be explained together (e.g., Siewert 1998; Loar 2003; Pitt 2004, 2009; Horgan and Tienson 2002, Horgan and Kriegel 2008; Pautz 2008.) In what follows, except where explicitly noted I will mainly ignore the distinctions among these approaches and the range of phenomena that they intend to cover. Despite this, you can often tell from the examples given and the objections raised whether it is, say, beliefs or sensations that are at stake. There is no question that certain views are more plausibly applied to come phenomena. But in focusing on specifically metaphysical issues about the mind, I am taking the liberty of ignoring some of the other variations that are no less relevant to the total assessment of the theories.

## **II. Preliminary Census**

It will be useful to have a brief census of the main views on the table in contemporary philosophy of mind: behaviorism, identity theory, eliminativism, functionalism, anomalous monism, and emergentist and fundamentalist property dualisms. All of these

views are varieties of substance monism in that they assert that there is only one kind of substance in the world, or at least that the ontology of minds does not require adding more kinds of substances to our ontology. And the most prominent versions are all versions of physicalist monism; they hold that the one kind of substance in the world is physical substance.<sup>4</sup> While there is an ongoing dispute about how exactly to characterize physicalism and the physical, it will be enough for present purposes to think of the physical substance as that of which at least the majority of the non-mental world is constituted and that is canonically studied by physics, perhaps with the additional (or redundant) qualification that physical substance is not fundamentally mental.<sup>5</sup> Finally, with the exception of metaphysical behaviorism, the views are all minimally realist (or at least conditionally realist) about mental phenomena: they all presume that mental phenomena are mind- and language-independent internal states of thinking or feeling creatures, or would have to be in order to be counted in our ontology.<sup>6</sup> Beyond these basic commonalities, the views are quite diverse and have met with quite different fates.

Behaviorism, the king of the hill in early- to mid-20th Century psychology and philosophy, has largely fallen out of favor. The explanatory and methodological rigor that scientific behaviorism brought to psychology remains highly influential; but adherence to any metaphysical view about the nature of minds is not essential to rigor. The metaphysical behaviorist, if ever there were any, holds that there are no internal mental states, events, or properties but only a whole organism's syndromes of behavior and dispositions to behave.<sup>7</sup> Reasons for holding such a view were always sparse, and usually involved prior commitment to either scientific behaviorism or to so-called logical behaviorism (Putnam 1963). Scientific behaviorism faltered due to its inability to explain

complex flexible behaviors such as language use, and because of its inability to state individuation conditions for stimuli and responses that were independent of the phenomena being studied (e.g., Chomsky 1959). Logical behaviorism is the special application of the verification criteria of meaning to psychological vocabulary, so that the meanings of mentalistic terms are held to be exhausted by the syndromes of behavior and behavioral disposition that they pick out. But these views are antiquated. Metaphysical behaviorism has not had any serious defenders since the downfall of scientific behaviorism in psychology and the abandonment of verification criteria of meaning in philosophy.

Identity theories, by which I mean physical type identity theories, hold that mental state types can be identified with physical state types, canonically brain state types, broadly construed. These kinds of theories enjoyed brief popularity in the 1950s and 60s, especially in the United States and Australia. The theory has experienced a small renaissance around the turn of the 21st Century.<sup>8</sup> The chief virtues of the identity theory are its simplicity and that it arguably provides the only workable account of mental causation. But it also suffers from some difficulties. Early objections that it is logically incoherent were adequately rebuffed by U. T. Place, Herbert Feigl, J. J. C. Smart, and David Lewis (1956; 1958; 1959; 1966, 1972, respectively). But there are lingering concerns about whether the theory is empirically adequate, and in particular whether it can be reconciled with the full diversity of actual and possible psychological creatures. This concern is most clearly articulated in Hilary Putnam's 'multiple realization' objection to such theories (1967). And the identity theory is at least minimally reductionist in that it does not recognize mental states as independent existents in their

own right. That has lead many philosophers to worry that the identity theory might entail reductionist in some stronger or more problematic sense, if not downright eliminativist (Fodor 1974, 1997).

Eliminativists hold that there are no internal mental or psychological objects, states, events or properties. The motivation for holding an eliminativist theory has two parts. The first part is the belief that the reality of mental states would require their reduction to physical states in more or less the way imagined by identity theorists. The second part is acceptance of critiques of the identity theory, to the effect that no such reduction of mental states is possible. Consequently, the eliminativist concludes that there are no mental states. The most well known eliminativist arguments were due to Richard Rorty and Paul Feyerabend in the 1960s (1965, 1970; 1963, respectively), and to Patricia and Paul Churchland in the 1980s (1981, 1982, 1983). Eliminativism has almost always been a fall-back position, one arrived at only reluctantly. The obvious reason is that our lived experience gives us strong, if fallible, reason to think that we have beliefs, desires, pains, pleasures, emotions, and other mental states. So it seems that it will almost always be an option to reject some philosophical premise of any argument for eliminativism—e.g., that real kinds must be reducible to physical kinds—rather than deny our *prima facie* rich experienced mental life. This is not to say that one could never be convinced by a philosophical or scientific argument to give up a belief that seems obvious, only that the bar is set quite high.

And indeed, for just those sorts of reasons recent philosophy of mind has been dominated by advocates of so-called non-reductive physicalist theories, that reject the reductionist requirement. These theories aim to stay true to physicalist substance monism

without falling into the excesses of either behaviorism or the identity theories, and without arriving at the eliminativists deflationary conclusion. The two most familiar forms of non-reductive physicalism are functionalism and Donald Davidson's anomalous monism. Davidson's theory, though widely discussed, was never widely held. Components of the theory—that there are no physical-to-mental bridge laws, and that the brain-mind relation might be a supervenience relation—have been extremely influential. But the core package of claims is not often jointly held: that there are no strict psychological laws, that causation requires strict laws, that mental events are causes only because they fall under strict physical laws, that mental events are 'token identical' to physical events. And it has become fairly clear that the central 'token identity without type identity' thesis amounts to a kind of property dualism. So, as with behaviorism, the bits and pieces of anomalous monism have been absorbed into other theories, in particular into functionalism and self-avowed property dualism.

Functionalism is the theory of the nature of mind first articulated by Hilary Putnam in terms of computing devices (1960, 1967, 1972). It is the theory that mental states are abstract states of abstract systems that are 'realized' by but not identical to brain states in human beings. Initially the abstract systems that Putnam had in mind were a variety of finite state automata. But over the 1970s and 1980s this literal conception of mind as computing device was elaborated so that the Turing-style computing program was replaced by an empirical or analytic psychological theory. In the elaboration, the causal laws of psychology replace the machine state instructions. These laws may be probabilistic and local, and otherwise fall short of strict laws. And in the most recent versions, laws and the entities they govern are thought of as selected by natural selection,

so that a kind of biological teleology is brought into the nature of mental states (Dretske 1981, 1988, 1995; Lycan 1987). This teleological functionalism is in some ways the cutting edge version of functionalism, and when that teleology is understood in terms of a selected-effect account of teleological functions, the result is etiological variations on functionalism.

Functionalism promises to deliver all the benefits of identity theories but without the ‘chauvinistic’ (Block 1978) restriction that all psychological beings have brains similar to our own, and thus to allow for a more general theory of the metaphysics of minds. But functionalism stands in a tension that has long been recognized: the stronger the realization relation, the more secure the physicalist credentials and causal claims of the functionalist; but so too, the more the view turns out to be a version of reductionist identity theory. The looser the strength of the realization relation, the more distinct from the identity theory; but, in that case, functionalism faces increasing difficulties in accounting for mental causation, and threatens to turn into a version of emergentism or property dualism.

In the 1980s and 1990s functionalists (and non-reductive physicalists generally) attempted to resolve this tension by formulating the mind-body relation in terms of supervenience relations, hoping that Davidson’s speculation would pan out and deliver a relation strong enough to ground a physicalist theory of minds without entailing a reductive or identity theory. By the 1990s it was widely accepted that supervenience is the wrong tool for the job—at least on its own (Kim 1993, 1998; Horgan 1993; Wilson 2005). Consequently, in the early part of the 21st Century there has been new attention to understanding the key realization relation for functionalism (e.g., Kim 1998; Shoemaker



2001, 2007; Gillett 2002, 2003, 2007; Wilson and Craver 2007; Polger 2004, 2007; Polger and Shapiro 2008; Keaton forthcoming-a, forthcoming-b), and also reexamination of the merits and costs of identity theory and property dualism (e.g., Polger 2004 and Chalmers 1996, respectively). Just how bad would it be if functionalism turns out to be a version of one of those, after all?

Some philosophers have concluded that the costs of property dualism are worth paying, and have adopted either emergentist (Humphreys 1997, Clayton and Davies 2006) or fundamentalist (Chalmers 1996) versions of the view that although there is only one kind of substance in the world (physical substance), nevertheless there are two *sui generis* kinds of properties: physical properties and mental properties. Self-avowed property dualists usually argue that distinctive mental properties are necessary to explain the subjective aspects of conscious mental life— 'what it's like' to have experiences, in Thomas Nagel's well known phrase (1974). Other theorists who do not adopt property dualism have been accused of falling into the position in virtue of espousing non-reductive theories of various sorts. Some philosophers even include property dualism (or distinctness) as a key tenet of non-reductive physicalism, e.g., Jaegwon Kim (1998, 2005; Bennett 2003; 2008).

### **III. The Live Options**

The initial survey in section II allowed us to get a sense of which views are the main candidates on the contemporary field, and find some hints about the kinds of desiderata and critiques in play. We can safely set aside behaviorism, which proved to be both

philosophically and scientifically suspect. Anomalous monism can also be neglected, as its main insights were absorbed into functionalism and property dualism. And eliminativism requires little further explanation; it can remain in the wings, an option of last resort. This leaves three main contenders: identity theory, functionalism, and property dualism in its fundamentalist and emergentist forms. Almost all theorists consider at least one of these three options to be obviously wrong, but explaining why will require us to know more about the theories. In the remainder of this section we will consider each in turn.

### **III.1. Identity Theory, and Four Desiderata**

Let us begin with the type identity theory, the theory—as J. J. C. Smart famously puts it—‘Sensations are brain processes’ (1959).<sup>9</sup> The distinctive claim of the identity theorist is that mental state kinds (psychological kinds) are strictly identical to brain state kinds. These identities are frequently represented by the toy example of the identification of pain sensations with the firings of neural c-fibers; but this example is a placeholder, known to be empirically inadequate. More important than the specific example is the general idea that the purported mind-brain identities should be understood on the model of such scientific identifications as that water is identical to H<sub>2</sub>O, that gold is identical to the substance kind with atomic number 79, and that temperature (in a gas) is identical to mean molecular kinetic energy. The original identity theorists held that these identities are contingent because they are empirically discovered. But since the groundbreaking work of Saul Kripke (1971, 1972/1980), identity theorists recognize these scientific

identities as examples of a posteriori necessities, and they hold that the mind-brain identities are also necessary a posteriori.

The identity theory was the first contemporary physicalist theory of the metaphysics of the mind that is also realist about internal mental states, *contra* behaviorism. But now most contemporary philosophers believe that the identity theory, whatever its philosophical merits, is empirically mistaken. Indeed, the development of our other contenders—functionalism and property dualism—is largely a process of responding to perceived defects in the identity theory. To understand the rise and fall of the identity theory, and its current modest renaissance, it will be useful to be explicit about some desiderata on a metaphysical theory of minds, which were only alluded to in our initial census.

Identity theories are *realist* theories. As we saw above, in the brief discussion of eliminativism, realism is a widely shared desideratum on metaphysical theories of mind. Any theory that denies that mental states, properties, or events are real must provide overwhelming reason to abandon this requirement. The identity theory is a realist theory. It says that mental states can be identified with brain states, and *ipso facto* have the same realist status as brain states and biological states in general. That said, the requirement for realism is not cut and dry. Any theory might deny the reality of some of our familiar mental state kinds. To use an archaic example: We do not expect a theory of the nature of minds to be realist about the Victorian mental state *melancholy*. And we might well accept even significant revisions to our folk psychological categories as not violating the realist demand. For example, we would well expect the generic kind *memory* to be vindicated not as a singular kind but as a family of kinds, per the current sciences of

memory. Perhaps we will be realist about some or all of short term memory, long term memory, episodic memory, semantic memory, spatial memory, and so on. As with most philosophical issues, there is little reason to think that we could set in advance a specific standard for how much realism is to be expected, and how much revision is to be tolerated. That does mean that there is room for disagreement about which theories are realist, and on whom the burden of proof falls; but such is the nature of the beast. In general philosophers have been able to agree, for example, that behaviorism is not sufficiently realist; and that the identity theory and property dualism are indeed sufficiently realist. Disagreement arises over, for example, Daniel Dennett's quasi-realist 'intentional stance' account of beliefs and desires; and Dennett's 'multiple drafts' model of consciousness is sometimes accused of being flatly eliminativist (1971, 1987, 1991).

That we cannot say ahead of time just how much realism is required of a theory of mind does not mean that we are entirely adrift. There are other desiderata that are closely related to one another and to the requirement for realism. Indeed, it may be that they are the reason that realism is required, or vice versa. Three of these desiderata are *physicalism*, the *causal efficacy* of the mental and the *explanatory autonomy* of psychology.

An important desiderata for most if not all theorists is *physicalism*: mental states, properties, and events are physical states or properties or events in the broad sense. That is, they are either fundamental physical states, or else they are fully dependent on and constituted by basically physical states, properties, and events.<sup>10</sup> Physicalism is, in the first case, the denial of dualism, be it traditional substance dualism or contemporary property dualism. The identity theorist is a physicalist who holds that mental state kinds

are identical to brain state kinds, and who supposes that brain state kinds are physical in virtue of depending on and being constituted by fundamentally physical entities, states, processes, etc. The functionalist, as we shall see, aims to satisfy the requirements of physicalism without identifying mental state kinds with brain state kinds.

To say that physicalism is a desiderata on metaphysical theories of mind is already to bias the scale against dualist theories, even those that are only dualist about properties. But just as most eliminativists adopt their position only reluctantly, so too most property dualists adopt that view only reluctantly. The requirement for a physicalist theory of the mind is not absolute, but it is not unfair to say that it is a desideratum. All of the well known arguments for property dualist theories are arguments about the limits of physicalism, and its inability to account for some phenomenon—usually sensations and consciousness (Kripke 1972, Nagel 1974, Jackson 1982, Chalmers 1996.)

The third desideratum is the causal efficacy of the mental. The identity theory holds that mental states are identical to brain states, and (as with realism, above) that they *ipso facto* have the same causal powers as brain states. Indeed, as we shall see, one of the biggest selling points for the identity theory is that it appears to have a strongest claim to satisfy the demand that mental states be causally efficacious. There are two motivations behind that demand, one that is quite general and the other that is specific to the metaphysics of minds. The general reason is connected to the requirement for realism via the thesis that Jaegwon Kim calls *Alexander's Dictum*, 'To be real is to have causal powers' (1998: 10).<sup>11</sup> Such a principle makes causal power a condition on real existence, at least for contingent particular entities. (One might invoke some other criteria for *abstracta*, such as numbers or sets.) This reason usually operates as a negative constraint

in philosophy of mind: if Alexander's Dictum is right, then epiphenomenalist theories—those that fail to establish the causal efficacy of the mental—accrue the double debt of turning into versions of eliminativism. We'll discuss this difficulty further when we examine functionalism and property dualism.

The mind-specific reasons for requiring causally potent mental states are more theoretically constructive. These reasons for the desideratum stem from the central role that mental states play in theories of knowledge, action, and responsibility. Consider, for example, the role that mental states play in the acquisition of knowledge and production of behavior. If an organism is to be responsive to events in its environment, then it must be that the environment can cause changes in the organism and that the organism can cause changes in the environment, such as changes in its location within in the environment. Of course this interaction could be entirely reflexive. But in human beings and likely some other animals these responses involve mental states of perception, belief, desire, emotion, and so on. And if an organism is going to count as having beliefs or knowledge about the environment, that is, mental states whose content is about the environment, then it seems that those mental states must be causally connected to the environment. And if those mental states are to guide the organism's behavior, then it seems that the connection must be a two-way connection: mental states must be both caused by and causes of events in the environment. This little sketch is not without its problems. But the basic idea is clear enough: it is highly plausible that accounts of knowledge and of action presuppose that there is mental causation. The stakes are only further raised when we consider questions of moral or political responsibility. Most theories of responsibility hold us morally responsible for those effects for which we are

also causes; and many accounts of responsibility excuse us from responsibility for events for which we are not causes. These kinds of connections between mental causation and other philosophical issues lead Jerry Fodor to proclaim,

if it isn't literally true that my wanting is causally responsible for my reaching, and my itching is causally responsible for my scratching, and my believing is causally responsible for my saying... if none of that is literally true, then practically everything I believe about anything is false and it's the end of the world. (Fodor 1990: 156).

Like the requirement for realism about the mental, the requirement for causal efficacy is deeply ingrained. It can be rejected, but it is clear what sort of argumentative burden would be taken on by a denier of causal efficacy.

The final desideratum is the *explanatory autonomy of psychology*. This requirement consists of a pair of demands that are usually held together but can be separated. The first is that psychological explanations are legitimate, and the second is that psychological explanations are in some sense 'autonomous' of other kinds of explanations. Jerry Fodor, quoted above with respect to the causal efficacy of the mental, has been a forceful advocate of the combination. The first part is the affirmation that psychological explanations are genuine explanations, that psychology is a genuine science. On the lingering post-positivist conception of explanation that is prevalent in metaphysics and philosophy of mind, explanations are genuine when they invoke laws of nature and those laws are causal laws. Thus the desideratum that psychological explanation be genuine turns out to be tied closely to the causal efficacy desideratum. Moreover, on the prevailing 'ontic' conception of explanation, what exists is what our

best explanations tell us exists. So the desideratum for psychological explanation is also bound up with the desideratum for realism about the mental.

The identity theory says that mental states are real, broadly physical, and causally efficacious because they are identified with brain states, which are presumed to be uncontroversial real, broadly physical, and causally efficacious. Psychology, on this view, is a science that explains the interactions of brain states even though it does not pick them out in terms of their explicitly neuroscientific properties or characteristics. So the identity theorist holds that psychology is an explanatory science. However critics worry that although the identity theory can validate psychological explanations, it cannot validate them *qua* psychological explanations but only *qua* neuroscientific explanations. For it seems that any putative psychological explanation could be ‘reduced to’ (in the sense of ‘replaced by’) a neuroscientific explanation. Indeed, the identity theory is the canonical reductionist view of the metaphysics of mind. Both the identity theory and functionalism explain mental phenomena in terms of non-mental phenomena. As Fodor says with respect to intentional mental states, ‘If aboutness is real, it must be really something else’ (Fodor 1987: 97).

The above line of criticism tacitly invokes a strong reading of the second part of the explanatory desideratum, that psychology turn out to be an autonomous science. In its strong form, this requirement comes to the demand psychological explanation be not only permissible but also mandatory—that psychological explanations cannot be reduced to or replaced by any others. Louise Antony and Joseph Levine write, ‘a property is real (or autonomous) just in case it is *essentially* invoked in the characterization of a regularity’ (Antony and Levine 1997: 91). And Fodor puts it thus: ‘I will say that a law



or theory that figures in bona fide empirical explanations, but that is not reducible to a law or theory of physics, is ipso facto *autonomous*; and that the states whose behavior such laws or theories specify are *functional* states' (1997: 149).<sup>12</sup> If one has these kinds of concerns, then one will argue that the identity theory fails to vindicate the explanatory import of psychology because it fails to deliver psychological kinds that are explanatorily autonomous on the strong reading of that requirement. A weaker reading of the autonomy requirement might be that the explanatory authority of psychology is independent of the explanatory resources of other sciences. Why, one might ask, should it be a defect of psychological explanations that there are also other explanations in the offing?

The question we're now considering, regarding autonomy and scientific explanation, has consequences for how we evaluate the candidate metaphysical theories of minds. But its answer will have to do with very general questions about explanation that are not themselves dependent on, and will not be decided solely by consideration of, the metaphysics of mind. We need not resolve them herein. The present goal has been to introduce one theory and its purported merits, thereby introducing a general framework for evaluating candidate accounts of the metaphysics of minds. So far we've seen that identity theories measure up fairly well: they are realist and physicalist, they vindicate the causal powers of mental states, and they can ground the legitimacy of psychological explanation so long as the autonomy requirement is not as strong as Antony, Levine, and Fodor require. But we began by noting that most contemporary philosophers regard the identity theory as false, indeed as a non-starter. And now it is time to see why.

According to the identity theory, mental state kinds are identical to brain state kinds, just as water is identical to H<sub>2</sub>O. Identity, we noted, is a necessary relation. And it is also a one-to-one relation: identity is the relation that everything has to itself and to nothing else. The trouble, say critics, is that it is not in fact true that mental states stand in a one-to-one relation to brain states. Rather, the same mental state kind, such as pain or hunger, can be had by creatures with a wide variety of kinds of brains, and thus a wide variety of kinds of brain states. As Hilary Putnam famously puts it, the identity theory requires ‘that the physical-chemical state in question must be a possible state of a mammalian brain, a reptilian brain, a mollusc’s brain (octopuses are mollusca, and certainly feel pain), etc.’ (Putnam 1967/1975: 436). But Putnam thinks that we know this is not true. So the identity theory, whatever its philosophical merits, is empirically falsified. This line of reasoning is the so-called *multiple realization* objection to the identity theory. And this objection has convinced the vast majority of philosophers that the identity theory is known to be false.

Putnam’s inference from the diversity of pain- or hunger-experiencing creatures to the diversity of brain states mediating pain or hunger is rather dubious.<sup>13</sup> But in subsequent years the multiple realization argument was strengthened in two ways. First, it was argued that the phenomenon of neural plasticity shows that within species and even within individuals over short periods of time, the same kinds of mental states are associated with diverse brain state kinds, for example in the work of Ned Block and Jerry Fodor, 1972). Second, beginning with Block and Fodor and codified in Fodor’s classic ‘Special Sciences’ paper (1974), it was argued that even if it turned out that all known mental state kinds can be identified with brain state kinds, still it is possible that there are

terrestrial or extraterrestrial creatures that are counterexamples to the hypothesis, and indeed we should expect that to be the case because psychological kinds are functional kinds. Putnam subsequently adopted this view, as well (1972/1975). So there was a shift from the claim that mental states are in fact multiply realized to the argument that they are in principle multiply realizable. Because it was recognized that mind-brain identities would have to be necessary, the mere possibility of their failure is enough to undermine the identity hypothesis.

A consequence of the widespread belief that the identity theory is false has been the immediate need for alternatives. In particular, both Putnam and Fodor used the multiply realization and realizability objections to the identity theory to motivate Putnam's functionalist theory of the metaphysics of mental states. That theory quickly became the most widely held physicalist theory of the nature of minds. Before we examine it directly, we should say a few things about the current status of the identity theory.

First, there were always a small minority who doubted that the multiple realization and realizability arguments had the devastating consequences that were claimed for them. The main lines of resistance were to argue that the truth of multiple realization does not preclude that all mental states have some physical property or properties in common (Kim 1972, Adams 1979). Additionally, it was argued that to the extent that there is genuine diversity it can be accommodate by making appropriately fined-grained distinctions among mental states (e.g., pain-in-humans, pain-in-dogs, etc.) and relativizing the identity claims to those kinds (e.g., Lewis 1969, Kim 1972).<sup>14</sup>

Second, it has become plain that the empirical evidence for actual multiple realization is less clear than Putnam supposed. William Bechtel and Jennifer Mundale's (1999) controversial but widely cited critique of multiple realization argues that the appearance of multiple realization can often be explained away as a failure to correctly match the 'grain' of psychological and neurological kinds. It is no surprise that very many fine-grained brain states can be associated with a coarse-grained mental state like pain, just as it is unsurprising that very many kinds of things fall under the coarse grained category *vehicle*. Moreover, given the actual practices of neuroscience and psychology, particular in their comparative (cross-species) forms, we should generally expect to find mind-brain identities. One of the goals of this research is precisely to identify anatomically and functionally isomorphic areas in the brains of different individuals and species. And the methodological practice of averaging across trials for and between individual subjects seems to presuppose that such registration is possible. In fact, Bechtel and Robert McCauley (1999) argue that such identities are widely used heuristics of the brain and cognitive sciences. As such, it would be surprising if the resulting sciences produce taxonomies that cannot be brought into identification with one another; and thus surprising if there was a great deal of evidence for multiple realization. Still, the prospects for this line of argument are hotly disputed.

Finally, it is evident that the philosophical arguments for multiple realizability (in the absence of evidence of actual multiple realization) are not decisive. This is because the generally functionalist view that supports the multiple realizability arguments has some notable problems to go along with its significant attributes. To get a sense for those, we must first understand the functionalist approach.

### **III.2. Functionalism**

The identity theory, recall, meets many of the desiderata for a good metaphysical theory of mind: it is realist, it is physicalist, it secures the causal efficacy of the mental, and it vindicates psychological explanation so long as strong autonomy is not required. The troubles for the identity theory are that it might be empirically false if there is not a one-to-one correlation between mental state kinds and brain state kinds, and that strong autonomy might be required. The key to both of these problems is multiple realization. If there is multiple realization, then there is not a one-to-one relationship between sensations and brain processes, and the identity theory is falsified. However, if there is multiple realization then that could justify the need for a distinct and autonomous science of the mental, one that ranges across kinds that cannot be reduced to or identified with the kinds of other sciences. Both Putnam and Fodor argued that mental states can be multiply realized and autonomous if they are functional kinds.

*Functionalism* is the view that mental states are functional states. Although functionalism does not entail physicalism, its most familiar versions are physicalist. The physicalist functionalist holds that mental states are functional states that are not identical to particular physical states (there is no one-to-one correlation) but can be realized by various physical states (i.e., multiply realized.) The core idea of functionalism is the distinction between functional roles and realizers.<sup>15</sup> Putnam (1967/1975) introduced this distinction and the theory of functionalism with the example of computing machines. A computer program describes the operation of a machine in terms of the system's inputs

and outputs, and the relations among various states or variables that mediate between the inputs and outputs.

A simple example, discussed by Ned Block (1978), is an old-fashioned coin operated vending machine. The input to the machine are coins of various denominations, the output is for example a can of soda, and the internal states of the machine include a register that tallies the value of the coins. The program describes the behavior of the machine in terms of the inputs, outputs, and internal states; and the instructions can all be stated by relations that are independent of the particular construction of the machine. For example, an instruction might say that when the tally of inputs is equal to a certain value, then an output should be produced. This instruction need not say anything about what the machine is made of: steel, plastic, or—or, as Putnam said—'copper, cheese, or soul (1972/1975: 292). And the same machine instructions can as easily dispense juice as cola, or take inputs in Euros or Pounds. Consequently there is no single physical description that applies to all machines operating the same program—programs are multiply realized and multiply realizable. Think of the familiar example of a piece of software such as a web browser that runs on a Macintosh, on a PC, and on a phone.<sup>16</sup> This is possible because the program is characterized in terms of 'functional roles' or relations that characterize its inputs, outputs, internal computational ('functional') states, and the functional relations amongst them. The physical device that operates by these principles is said to *implement* the program, to *play* or to *occupy* the role, or to *realize* the computing device. Some metal parts inside the vending machine realize the vending program. Various silicon chips and bits of metal and plastic realize the word processing software on which I am typing this chapter.

The idea of functional roles and realizers generalizes beyond computing machines. For example, the functional role of a mousetrap can be realized by various physical devices that are characterized (roughly) by the program: input live mouse, output dead mouse. Indeed, most versions of functionalism today are characterized by causal relations rather than computational relations, and they regard these causal relations as the empirical laws of psychology. Some theorists, as was briefly mentioned earlier, hold that the psychological states also have biological functions that are the result of their history of natural selection. This so-called teleological functionalism combines elements of causal role functionalism with a theory of biological function, such as those developed by Ruth Millikan (1983, 1989) or Karen Neander (1991).

The most prominent current versions of functionalism are representational theories, according to which mental states have the causal and or teleological function of representing objects or properties in the world. The representational view is the most widely accepted account of contentful mental states, due in no small part to its advocacy by Jerry Fodor (1978, 1985, 1987, 1990). But it has also been extended to sensory and other conscious mental states as well, for example by Michael Tye (1995, 2000), William Lycan (1987), and Fred Dretske (1995). There is quite a bit of dispute about the suitability of the representationalist version of functionalism, particularly when it is applied to explain not just the content of mental states but also the conscious character or feel of sensory states. That said, it is plainly a comprehensive and formidable theory.

At this point we can see the attraction of functionalism. It is a realist theory of mental states, because it holds that mental states are functional states of a total system. While it does not entail physicalism, it has physicalist versions: if the realizers of the

functional states are themselves physical states, then the resulting system will be a wholly physical system. But because there is not a one-to-one relation between functional states and physical states, the functional states can be the objects of an explanatory schema, viz., psychology, that is autonomous from and not reducible to physical explanation. Finally, because the functions are at least partially characterized by their causal relations, it seems plausible that causal-functional states have causal powers; so mental states could be causally efficacious if they are causal-role functional states. So functionalism looks like it matches or beats the identity theory.

For most of the history of functionalism its main challenge has been to figure out exactly what the constitutive functional roles are for various mental states, and to figure out how to characterize them to correctly encompass all of the systems that are thought to have mental states (i.e., to accommodate multiple realizability) without also including things that should not count as having mental states (e.g., thermostats) or including everything at all (about which see Putnam 1988.) This is what Block called the problem of inputs and outputs. If the problem can be solved, the functionalism looks very attractive. But if it cannot be solved, the multiple realization turns out to be just as much a challenge for functionalism as for identity theory.

Another classic problem for functionalism has been its inability to handle cases in which intrinsically different systems have the same functional profiles. Functionalism is most plausible as an account of propositional attitudes, and less so for sensory states. This problem is a hangover from functionalism's behaviorist ancestors (cf. Putnam 1967). The trouble is that relational theorist like functionalism and behaviorism hold that the non-relational facts or properties are irrelevant, but in some cases that seems to yield



the wrong answers. It seems to make a difference whether the functional roles of vision are realized in the normal way, or in a way in which red and green sensations are systematically inverted; or whether the role of memory is realized by neurons, or the entire population of China talking on radios, or tiny people in microscopic spacecraft (Block 1978). Indeed, some philosophers hold that this problem with functionalism generalizes to all forms of physicalism, so that physicalist theories cannot rule out the possibility of a philosophical ‘zombie’ who has no sensations at all but functions exactly like normal human. They take this possibility to show that there are properties of sensations for which physicalism has no adequate explanation, and therefore that physicalism is false (Chalmers 1996).<sup>17</sup> We’ll return to consider this kind of ‘functional duplicates’ problem below, when we discuss property dualism.

Recently, however, attention has been focused on a different problem for functionalism, namely its adequacy on the desideratum for mental causation. There are two problems, in fact: the problem of wide content, and the problem of causal exclusion. Hilary Putnam (1975) and Tyler Burge (1979) convincingly argued that some words and beliefs have contents that depend constitutively on the subject’s relation to the world. It is not merely that my beliefs about water are caused by stuff in the world, viz., water. Rather, the fact that the beliefs that I have using the concept or word ‘water’ are in fact about water depends on the fact that water is the stuff of my acquaintance. Someone else who is exactly like me behaviorally, functionally or even microphysically could use the token ‘water’ to think about a different substance that is not in fact water, if they lived in a place whether the familiar water-like substance was not in fact H<sub>2</sub>O. The content of such beliefs or thoughts is said to be ‘wide’ because it constitutively depends on what is

in the world around the subject, in contrast to the traditional ‘narrow’ conception of the content of beliefs being fully determined by local facts about what is literally or metaphorically in the speaker’s head. The trouble is that causal powers are almost universally agreed to be local, in this case to be dependent on properties and events that are in the head or at least the body of the subject. So it seems that if some mental states are wide but all causal states are narrow, then some mental states will not be causally efficacious: the fact that my belief is about water rather than some other substance is causally irrelevant to my behavior, for the same behavior would have been caused by a non-water belief or even a physically similar state that has no content and therefore isn’t a belief at all. The consequence is that at least some mental states turn out to be epiphenomenal.

The most common replies to the problem for mental causation raised by wide content is to attempt to establish that wide content states can be causally or explanatorily relevant even if they are not strictly speaking locally causally efficacious (Dretske 1988; Jackson and Petit 1990; Yablo 1992, 1997). But these responses have always seemed somewhat inadequate. After all, the requirement was for genuine causal efficacy of the mental, not a close substitute. Some authors have instead argued that enough mental states have causally efficacious narrow content to satisfy the causation desideratum (Fodor 1987, 1991).

Importantly, this sort of problem does not yield any advantage back to the identity theorist, for most identity theorists apply their theory only to sensations, not to beliefs and other wide content cognitive states. So the identity theorist does not as such have any better account of wide content states to offer, and may well be open to functionalist

treatments of those states (e.g., Block 1996.) The second problem of mental causation that faces the functionalist does have a tendency to favor the identity theory, or so argues Jaegwon Kim (1989, 1992, 1993, 1998, 2005).

The causal exclusion problem arises for narrow or local mental states, and it exploits the central features of physicalist functionalism.<sup>18</sup> First, because the functional state is realized by a physical state, the causal powers of the functional state will simply be the causal powers of the physical state or a subset of them. Second, the functionalist holds that the functional state is not identical to the physical state. And third, as a physicalist the functionalist is committed to the causal closure of the physical—that anything that has a cause has a sufficient physical cause. But these commitments create a puzzle. If my mental state causes a behavior, it does so in virtue of the causal powers of its physical realizer. But if the causal powers of the physical realizer are sufficient for causing the behavior, then what work is left for the mental state left to do? Mental causation seems to be excluded by physical causation. Put another way, the mental state may be said to cause the behavior only *qua* physically realized, not *qua* mental state (Robb 1997). The distinctive and autonomous realized functional properties appear to be epiphenomenal. And, if we follow Alexander’s Dictum, that will also undermine the functionalist’s claim to realism about mental states.

The most widespread response to the causal exclusion worries is to argue that they must be defective because the problem generalizes to undermine the causal power of any high-level properties, such as the solidity of tables, and so on (e.g., Bontly 2002). Kim tries to mitigate this complaint by distinguishing between realized properties and micro-based properties, and arguing that the exclusion problem does not apply to the

latter; thus the extent of the generalization is limited (1998). The extent to which the exclusion argument generalizes remains a matter of dispute, as does the question of how damaging generalization would be. Even if the generalization concerns were taken to show that something is wrong with the exclusion argument, it would not yet tell us exactly what is the problematic step.

One concrete response to the causal exclusion problem is to permit systematic causal overdetermination: the mental and physical properties are both causally efficacious. Although this is not an initially attractive position, it has gained a certain amount of popularity (e.g., Sider 2003). Another response is to argue that the two causes do not compete, perhaps because they stand in some logical relation to one another and are therefore not distinct causes at all (Yablo 1992); this seems much more promising, though it has been shown that the specific accounts of that relationship on offer are not correct (Funkhouser 2006, Haug forthcoming). And it's hard to see how that kind of response can be leveled with the desiderata for strong autonomy. Kim's favored response is to give up strong autonomy and the claim that the mental states are distinct from their physical realizers (1998, 2005). We can then solve the problem by opting for a reductive account like the identity theory.

The upshot of these lingering concerns about functionalism is that its success is not beyond question. While it remains the most popular general approach to the metaphysics of mind, many details remain to be worked out and there is reason to expect that compromises will have to be made. That means that functionalism has not yet earned the decisive victory over the identity theory that many have assumed it achieved before 1970. Particularly given new doubts about the empirical evidence against identity

theories, it seems more fair to say that the identity theory's problems with the strong autonomy desiderata are no more damaging to it than functionalism's problems with mental causation, and maybe less so. But the lingering dispute also tends to lend credibility, or at least sympathy, to those who think that no progress can be made if we limit ourselves to physicalist theories. Thus in the last fifteen years a surprising contender has appeared on the scene, challenging any empirically driven physicalist theory of the metaphysics of mind.

### **III.3. Property Dualism: Fundamentalism and Emergentism**

From the introduction of behaviorism and identity theory in the 1950s until the 1990s, physicalism was assumed by almost all philosophers of mind. A few iconoclasts worried that physicalist theories are not fully explanatory (Nagel 1974, Levine 1983) or are simply false (Jackson 1982). But physicalist theories, especially versions of functionalism, carried the day. And in many circles non-physicalist theories were simply not taken seriously.

More than anyone, David Chalmers (1996) gets the credit or blame for reviving an unapologetic form of dualism as a serious option in the mid-1990s. The stage was set for Chalmers' neo-dualism by the return, in the early 1990s, of philosophical and scientific interest in theories of consciousness. Consciousness had always been a recalcitrant if not downright mysterious phenomenon for theorists, and it was an especially thorny problem for functionalists. Chalmers direct argument against physicalist theories of consciousness was of the functional duplicates sort, involving the

possibility of zombies who are physically identical to human being but who lack conscious experiences altogether. Left at that, physicalists would have no special concern. But Chalmers managed to ground his argument with a very clever development of Max Black's objection to J. J. C. Smart's identity theory. Black's was the famous Objection 5, to which Smart (1959) was least confident that he had successfully replied.<sup>19</sup> The concern is that even if the identity theorist can show that mental states are identical to brain states, it does not follow that mental properties are identical to brain properties. In fact, given that we have different 'mentalistic' and 'physicalistic' terms by which we refer to mental events and brain events, even if they are identical events there must be some distinct properties by which we recognize them as mental and physical, respectively. Otherwise we would know *a priori* that they are identical; but we do not. Smart's response was to argue that mentalistic terms do not refer to essentially mental items, but that they are 'topic neutral' terms that are uncommitted as to the essential nature of the things to which they refer. According to Smart 'I am experiencing a yellowish after image' should be understood as saying, 'there is something going on in me which is like what occurs when I view a yellow lemon,' or similar.

The full details of Chalmers' argument go beyond the scope of this brief survey.<sup>20</sup> The key premise is that if physicalism is true then from the fundamental facts of micro-physics, a conceptually competent ideal reasoner could derive *a priori* all of the other facts about the world, such as the locations of chairs and people, and the occurrence of conscious experiences. Chalmers and Frank Jackson say that the physical facts 'entail' all the facts only if the other facts are *a priori* determinable in this special way, and they say that physicalism requires that the strictly physical facts entail all the facts (Chalmers

and Jackson 2001).<sup>21</sup> The possibility of philosophical zombies purportedly demonstrates that some facts are not *a priori* entailed, in particular facts about conscious experience.<sup>22</sup> And Smart's response is no help, because he concedes that the connection between the physical and the mental is not known *a priori*, but rather empirically discovered.<sup>23</sup>

So it can seem that Chalmers has successfully amplified concerns about the explanatory power of physicalism into a metaphysical argument. We're in no position to fully assess Chalmers' argument. Suffice it to say that it invokes several high contested epistemic, semantic, and metaphysical premises. Its wide influence may owe in part to the way the abbreviated presentation of the reasoning resembles the familiar and much more simplistic functional duplicates arguments, while also apparently deriving a much more radical conclusion. Additionally, growing dissatisfaction with the leading physicalist functionalism, and continued skepticism about the empirical viability of identity theories, contributed to a general hunger for new alternatives. If behaviorism and substance dualism are non-starters, if identity theory is false, and if functionalism has unresolved issues... then maybe a not-too-spooky substance dualism is worth considering? After all, the strong autonomy thesis endorsed by functionalists already asserts the non-identity of the mental and the physical, which is already tantamount to property dualism.<sup>24</sup>

Chalmers' version of property dualism is fundamentalist in that it posits novel mentalistic properties as part of the fundamental ontology of the universe. Some philosophers have thought that a better approach for property dualism is emergentist, according to which the new mental properties arise at higher levels of nature, for example when certain kinds of complex systems are assembled.<sup>25</sup> The simple model for

emergentism are the apparently novel properties of forests, which are not properties of any individual tree. Or the apparently novel properties of fluids, which are not properties of individual molecules and are even surprising from the molecular perspective. Whether there are any prima facie examples of emergence is controversial.<sup>26</sup> And, if so, whether any of those are cases of ‘strong emergence’ where the novelty is in some sense metaphysical and not just epistemically surprising or unpredictable, is very much up in the air. If there are any cases, they will be cases of emergentist property dualism. As such, they will have all of the defects of property dualism, plus an additional problem. The additional problem is that they violate the rule of thumb that brute or fundamental properties and entities normally occur at the most basic or fundamental scales of nature, and not at higher levels. We would have to have very good reasons to admit this kind of emergence; so in the short term it seems clear that the fundamentalist property dualist has a slight edge on this count.

Whether in its fundamentalist or emergentist versions, property dualism is certainly not a physicalist theory. It is realist, and it delivers the strong autonomy of psychology. However, unless the property dualist is prepared to implausibly deny the causal closure of the physical, property dualism must be a self-consciously epiphenomenalist position. This is a serious defect in the theory, and one that has not been sufficiently appreciated. The basic lesson is that any controversial premise in the argument for property dualism will have to be more certain than the facts of mental causation. Otherwise we are free to regard the argument for property dualism as a *reductio ad absurdum* of the controversial premise.



At the present time, property dualism is nevertheless surprisingly popular. It is particularly fashionable among those who are primarily interested in metaphysics or basic ontology, who perhaps have fewer qualms about rejecting the traditional desiderata of philosophers of mind and psychology. Among philosophers interested in perception, action, psychological explanation, or philosophy of science, property dualism is not a serious candidate for the reasons surveyed above. This divergence of views perhaps reveals something of a strange and unfortunate disconnect between those theorists who work on basic ontology and those who work on what has been called the metaphysics of science.

#### **IV. Score Keeping**

At this point it is worth pausing for a bit of explicit score keeping. The four key desiderata on a metaphysical theory of mind are that it is (1) realist, (2) physicalist, (3) underwrites the causal efficacy of the mental, and (4) justifies the explanatory autonomy of psychology.

The identity theory is realist and physicalist, and it has an almost uncontroversial account of the causal efficacy of mental states. It can deliver on a modest kind of explanatory autonomy for psychology, though not the strong sort. However, if the multiple realization argument is correct, then the identity theory is false. But if the multiple realization argument is flawed (perhaps because multiple realization is much more rare than usually supposed) or can be met, the identity theory has a claim to be a

serious contender. Modulo multiple realization, we have to give the identity theory at least 3 points, and maybe 3 1/2.

Functionalism is also realist and physicalist, so long as the realizers are physical. And it has the potential to deliver a strongly autonomous science of psychology. But functionalism has significant problems with securing mental causation, so it can only earn 3 points. And it still faces the traditional problems of inputs and outputs, and of functional duplicates, that seem to show that purely relational accounts of the mind are inadequate.

Property dualism purports to be an advance, but in fact its attractiveness is limited. It is prima facie realist and delivers an autonomous science of psychology. But it purchases the latter by giving up physicalism, and thereby giving up on causal efficacy. So it can earn no more than 2 points. And if we follow Alexander's Dictum that to be is to be a cause, then property dualism's prima facie realism is only an illusion, and it is an eliminativist theory; that would earn it only 1 point for autonomy, and a dubious point at that.

Advocates of property dualism will argue that this measure under-values the theory: if identity theory and functionalism are false, then property dualism is the only contender left standing. In that case we would be justified in overriding our initial desiderata. This Sherlock Holmes argument for property dualism—'when you have excluded the impossible, whatever remains, however improbable, must be the truth'—is not very constructive. In philosophy, especially, one should be quite cautious of arguments that rely on the premise that all other views are false. In the present case, it is evident that the arguments for property dualism are not straight-forward arguments

concerning first order questions about the metaphysical nature of minds. They also include a significant metametaphysical component that is hotly debated.<sup>27</sup> So the claim that all other theories fail is extremely contentious, as is the claim that property dualism is internally consistent and viable.

## **V. The State of Play**

In this chapter I have organized the discussion around the three most prominent metaphysical theories about minds, and about some desiderata on such accounts. One could just as well organize the discussion around the questions or ‘puzzles’ that arise in philosophy of mind, and then sort the views according to how they solve those puzzles. The questions would correspond to the desiderata: the problem of other minds and our own, the mind-body problem, the problem of mental causation, the puzzle of psychological explanation. We could then run through the pros and cons of proposals to answer each question, and try to assemble a theory that dodges all bullets. This story can be extracted from the present review, I think.

Where does that leave us? Despite the anomaly of the popularity of property dualism, the main live candidates for metaphysical theories of minds are still the identity theory and functionalism. The remaining candidates—behaviorism, eliminativism, anomalous monism, and property dualism itself—operate as foils, much as skepticism operates mainly as a foil in epistemology. There are few who directly endorse those views; more often they are raised only in order to press particular explanatory or ontological challenges. Functionalism remains the leading view, despite its widely

recognized faults. And the identity theory is widely disregarded, despite growing concern that it is not supported by the available evidence. It remains to be seen where we will be in the coming years.

## VI. Notes

<sup>1</sup> That the problem of mental causation arises for physicalist theories as well is what Jaegwon Kim calls ‘Descartes’ Revenge’ (1998).

<sup>2</sup> Relatedly, as David Papineau has emphasized, the scientific evidence for physicalism via the causal closure of the physical became increasingly well confirmed (2001).

<sup>3</sup> Recently some writers have thought to distinguish between physicalism and materialism, reserving the latter for a particular and perhaps archaic form of physicalism tied to an outdated notion of matter. See the chapter on PHYSICALISM in this volume.

<sup>4</sup> There are still a few advocates of neutral monism, according to which mental properties and physical properties both inhere in a substance that is not itself essentially physical or mental (e.g., Stubenberg 1998.)

<sup>5</sup> Here and throughout I use ‘constitution’ generically to cover a variety of ontological dependence or ‘making up’ relations, including identity, realization, and composition. For more on the so-called *via negativa* characterization of the physical, see Montero and Papineau (2005).

<sup>6</sup> Thus construed, the eliminativist is a conditional realist who denies the existence of mental states precisely because they fall short of the realist standard.

<sup>7</sup> The usual examples of metaphysical behaviorists, Wittgenstein and Ryle, each denied that they were behaviorists at all (Armstrong 1968).

<sup>8</sup> For example Hill 1991 (who now has reservations), Bickle 1998 (who no longer endorses the view), Kim 1993, 1998; Polger 2004; McLaughlin 2005.

<sup>9</sup> In what follows I will usually characterize the theory in terms of mental states, by which I mean kinds of mental states; but it is just as often stated in terms of events, processes, entities, and properties. Following David Lewis (1966), I will use the notion of mental states generically to cover all of those options. Moreover, I follow the standard practice of speaking in terms of brain states, where that is placeholder for neuroscientific states that almost certainly involve neurological facts not limited to the brain and may involve bodily facts that are not limited to neurons. Brain states, then, are whatever the various explanatory units of the neurosciences turn out to be.

<sup>10</sup> I am unaware of any philosophers who hold that mental states are basic physical states in their own right; the dependence view is the standard version.

<sup>11</sup> Others call this the *Eleatic Principle*, e.g., Colyvan 1998.

<sup>12</sup> Fodor continues, parenthetically: ‘In fact, I don’t know whether autonomous states are ipso facto functional. For present purposes all that matters is whether functional states are ipso facto autonomous’(1997: 149).

<sup>13</sup> There has been quite a bit of scrutiny of the multiple realization claim in recent years. In addition to the sources cited in the text, see Bickle 1998; Heil 1999; Sober 1999; Clapp 2001; Craver 2001; Shapiro 2000, 2004, 2009; Polger 2002, 2009a, 2009b; Endicott 2005; Aizawa and Gillett 2009.

<sup>14</sup> This line of reasoning was a precursor to Kim's 'disjunction argument' against multiple realization (1992, 1993, 1998).

<sup>15</sup> For a more detailed discussion, see my 2004.

<sup>16</sup> For many kinds of software, it is misleading to say that the same program is running on each machine; more likely, different programs that were compiled from a single source are running on the different machines, which is another kind of multiple realization. But in some cases—especially, for example, Java applets—it is more accurate to say that the same program runs on each machine.

<sup>17</sup> We will return to this last line of thought when we examine property dualism, below.

<sup>18</sup> For a more elaborate and detailed reconstruction, see Bennett 2003, 2008.

<sup>19</sup> He had. See my forthcoming.

<sup>20</sup> See the PHYSICALISM chapter in this volume.

<sup>21</sup> See Chalmers and Jackson 2001 for a few other qualifications on what has to be derivable from what.

<sup>22</sup> And about causation, as well, but Chalmers downplays the significance of the fact that even by his own standards consciousness is not unique in its failure of entailment (e.g., Chalmers 1996: 86).

<sup>23</sup> A former dualist, Frank Jackson now believes that all the facts including facts about consciousness are indeed a priori entailed in just this way. David Lewis might have held this view, as well (1994); but 'analytic' or 'a priori' physicalism is not a widely held view about the mind or anything else.

<sup>24</sup> Indeed, some writers simply call that a form of dualism, e.g., Kim 1998 and Bennett 2003, 2008.

<sup>25</sup> The now classic introduction to emergence is McLaughlin 1992

<sup>26</sup> See Boogerd, et. al. (2005), for example.

<sup>27</sup> About which see Block and Stalnaker 2001; Byrne 1999; Hill and McLaughlin 1999; Jackson 1998; Lycan 2003; McLaughlin 2005; Polger 2008; Wright 2007; Yablo 1999, 2000.

## **VII. Annotated Bibliography**

Block, N. 1978. Troubles with functionalism. This is Block's classic summary and assessment of functionalist theories of mind, circa 1980. It contains a reasonable explication of the history and motivation for functionalism, along with some of the technical apparatus used to develop the theory. Perhaps more importantly, it contains a series of very clearly stated objections to functionalism, include the problem of inputs and outputs, the problems of inverted and absent qualia, and the nation of China example.

Chalmers, D. 1996. *The Conscious Mind: In Search of a Fundamental Theory*. David Chalmers' first book contains his most extensive and detailed arguments for recognizing phenomenal properties (i.e., qualia) as fundamental constituents in our ontology—a version of property dualism. The book contains, in its middle portion, his well-known developments of the zombie and absent qualia arguments. The opening part of the book sets out the semantic and meta-philosophical framework against which the direct

arguments are developed, and which should not be skipped despite the author's suggestions to the contrary. The final portion of the book contains a speculative and epiphenomenalist account of qualia in terms of information, which has been much less influential than the first two parts of the book.

Fodor, J. 1974. *Special Sciences, or the Disunity of Science as a Working Hypothesis*. Fodor's 'Special Sciences' paper is the canonical position paper for the anti-reductive approach. Fodor argues that the laws of the special sciences (those other than physics) are not reducible to those of physics if they related kinds that are functionally individuated, and therefore multiply realizable. The reason is that multiple realization is supposed to be incompatible with the biconditional bridge laws that are required for classical Nagelian reduction. Then Fodor tries to convince us that psychology is in just such a position, through a combination of argument, urging, and example.

Kim, J. 1998. *Mind in a Physical World: An Essay on the Mind-Body Problem and Mental Causation*. *Mind in a Physical World* summarizes Kim's position in late the late 1990s, and does so by laying out simply and concisely almost all of the main metaphysical issues about minds that dominated the literature. (Kim doesn't take property dualism seriously in this book, but does in subsequent work.) In particular, Kim explains the problems with supervenience and the central importance of mental causation, and he deploys versions of his influential disjunction and exclusion arguments.



Kripke, S. 1971. Identity and Necessity. 'Identity and Necessity' contains a brief version of Kripke's arguments for the necessity of identity and against physicalism about the mind. The versions of the arguments offered here contain the central elements that he developed in *Naming and Necessity*, in an article length form.

Lewis, D. 1972. Psychophysical and Theoretical Identifications. This paper contains Lewis' second direct argument for the mind-brain identity theory. In his earlier work, the main argument involved the transitivity of identity. In this article, Lewis appeals to his well-known model for defining theoretical terms, and a semantic thesis about the meanings of mentalistic terms. There is no straight forward answer to whether the argument in this paper supports the identity theory or functionalism; as Lewis himself later recognized.

McLaughlin, B. 1992. The Rise and Fall of British Emergentism,. McLaughlin's scholarly summary of historical emergentist views is the standard resource on that version of property dualism, even though it is not an advocacy piece. Moreover, in explicating emergentism, McLaughlin essentially lays out the requirements for any non-emergentist theory that is not reductive, as functionalism purports to be.

Putnam, H. 1967/1975. The Nature of Mental States. Originally titled, 'Psychological Predicates,' and subsequently reprinted with its current and more metaphysical title, this paper is the definitive statement of Putnam's early functionalism. Here Putnam explains the idea of a probabilistic automaton in terms of Turing machines, first deploys the

multiple realization argument (although he does not call it that), and puts forward functionalism as an empirical hypothesis. Putnam also anticipates some objections to the view, including some whose popularity he underestimated: such as the kind-splitting and disjunctive-kind replies.

Smart J. J. C. 1959. Sensations and Brain Processes. Smart's article is the canonical statement and defense of the mind-brain identity theory, containing all the elements of its contemporary version except for the necessity of identity. The central portion of the article is a detailed series of objections and replies, in which Smart successfully defuses an array of semantic and epistemic reasons on account of which the identity theory was purported to be inconsistent. Among these is the famous Objection 5, which he attributes to Max Black. In response to it, Smart introduces the notion of 'topic neutral' expressions, which was subsequently influential in metaphysics of mind and science.

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