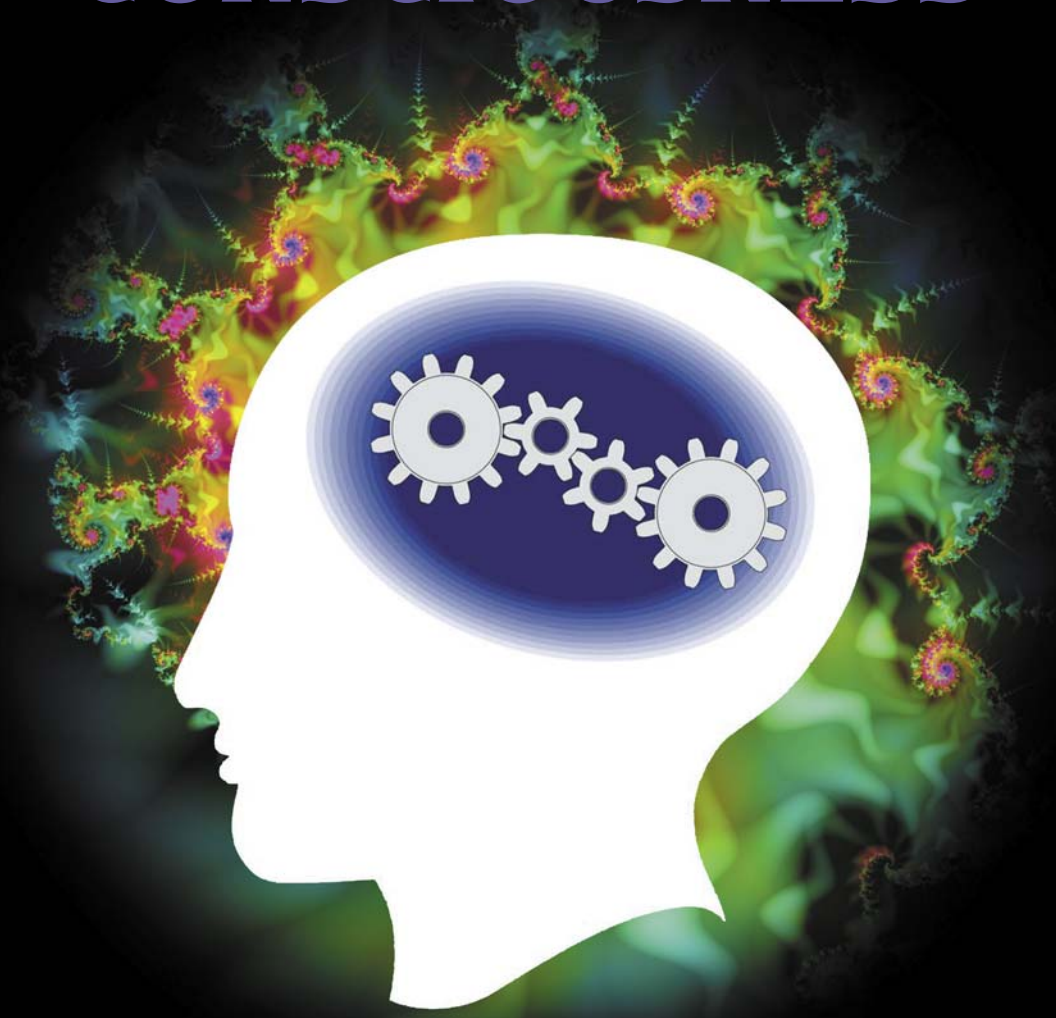
The Nuts and Bolts of CONSCIOUSNESS



A Solution to the Problem of Mind and Matter

GIBRAN SHAH

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Darren Hamilton, Lawyer
Philosopher, Psychologist,
Computer Scientist

The Nuts and Bolts of CONSCIOUSNESS

A Solution to the Problem of Mind and Matter

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To me it is evident for the reasons you allow of, that sensible things cannot exist otherwise than in a mind or spirit. Whence I conclude, not that they have no real existence, but that seeing they depend not on my thought, and have an existence distinct from being perceived by me, there must be some other mind wherein they exist. As sure, therefore, as the sensible world really exists, so sure is there an infinite, omnipresent Spirit who contains and supports it.

George Berkeley (1685-1753)
Three Dialogues Between Hylos and Philonous, 1713

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INTRODUCTION

If you find consciousness as fascinating as I do, you've probably found yourself engaging at one time or another in philosophical discussions on the subject. You've probably also found yourself reading what other people have said about the subject. Perhaps you've even done both at the same time. If you have, you've probably participated in a few online philosophy forums. Since I share your enthusiasm for the philosophy of consciousness, I too have participated in a few online forums. On one forum in particular[1], you will find a discussion that I started and in which I argue that David Chalmers was correct in claiming, much to the consternation of a great many who believe and have argued otherwise, that neither philosophy nor science has fully illuminated the mysteries of consciousness nor shown how it can be explained in terms of the brain sciences.

Now I must digress. "Who is this David Chalmers?" some readers will ask. And why hasn't science or philosophy been able to illuminate the mysteries of consciousness? In order to answer these questions, I must explain the problem—the problem of mind (or consciousness) and matter (or brain). This topic is very popular in philosophical circles. It has been particularly popular since the seventeenth century, when the philosopher René Descartes proposed the idea that mind and matter are two universal, yet incomparable, substances—in fact, *the* substances of which all other things are made. The philosophical conundrum is the puzzle of how each of these substances interacts with, or creates, the other.

Why should a simple resolution to this conundrum be so elusive? The problem comes down to the very essence of mind and matter, or what we *think* mind and matter are. They seem to us to be so distinct in their very mode of being that we are hard pressed to think of anything they have in common. It therefore seems hard to fathom that one could affect or arise from the other. How does something physical, such as the brain, create something that seems nonphysical, like consciousness? And how are we to conceive of the manner in which they interact? It's easy to imagine interactions between two physical objects: one bumps another, and the other moves. And it's equally simple to imagine mental interactions: one idea sparks another, and memories affect moods. It is much more difficult, however, to imagine how a physical object can interact with thoughts, memories, moods, and other mental entities. These are the questions and issues to which I refer when I talk about the problem of mind and matter.

To date, no one has presented the world with a resounding and unanimously agreed-upon solution to this problem. Countless theories have been put forward and have found small and factious followings, but none have been so compelling that the world has said in unison, "Ah! At last, we have the answer!" Of course, this is not to say that the theory I present in this book will be the first to induce such a response—so don't hold your breath—but I do mean to introduce this theory as a plausible alternative to the theories that are most widely accepted today. I believe that my theory is unique and holds a special edge above all others, and of course, *I* believe in it wholeheartedly (why else would I be writing this book?). But I would like my readers to judge this for themselves.

Before I dive straight into the nuts and bolts of my theory, let me introduce my theory's major competition (which is also competition for David Chalmers' theory): physicalism. Although I stand by what I have just said—that no one theory of consciousness has grabbed the attention and garnered the consensus of the scientific and philosophical communities as a whole, physicalism came very close. It came so close, in fact, that it dominated scientific and philosophical thought on the topic of consciousness for the greater part of the twentieth century; and although small pockets of dissent could be heard here and there (such as that voiced by Chalmer, Nagel, and Jackson), most remained silent.

Physicalism's grip on today's philosophical and scientific thought is much less dominant than it was mid-twentieth-century, but I would hesitate to say that it has fallen out of favor. I would say that most thinkers in these disciplines are still hardnosed physicalists. The good news—at least, for us nonphysicalists—is that nonphysicalism is gaining ground, and alternatives to physicalism are become more and more acceptable.

At this point, the reader will naturally ask, "What is physicalism?" In its broadest scope, physicalism states that everything real is ultimately physical and that all things can, in the end, be explained in physical terms. Physicalism is not necessarily eliminativist, that is, it does not necessarily hold that things that can only be captured through abstract concepts are not real; but it does demand that such abstractions be tied to the physical if they are to make any claim to existence. So, for example, physicalism does not deny the existence of something as abstract as government, but it does insist that in the end, government must turn out to be nothing over and above the collection of all of its physical constituents—things like politicians, documents, buildings, computers, and perhaps even information, as long as the latter can be defined in physical terms, perhaps as electrical signals and the sound waves of spoken language.

With respect to consciousness, physicalism admits no exceptions to its general demand. It holds that consciousness is nothing above and beyond the brain's physical constituents and activities. Consciousness consists of interactions between neurons and neurochemicals and everything physical that follows immediately from those interactions, and it is *nothing more.*

This "nothing more" is what troubles many, including Chalmers and me. Of course, any reasonable and educated thinker who seriously considers the question of consciousness will acknowledge the important role that neurons and neurochemicals play in the workings of the brain, but there is something bitterly unnerving about settling the matter in these terms alone—unnerving, that is, to those of us who have reservations about the physicalist doctrine. I call this unnerving feeling the "absurdity" of physicalism. I do not use this term so much as a jab at physicalism itself (although, as far as I'm concerned, it could very well be taken as such), but more as the most apt expression of how hard

it is for us nonphysicalists to swallow physicalism. That is, I use the term to make a comment about what makes physicalism not only unpalatable, but also unintelligible, for many of us.

The absurdity is this: Physicalism, it might be said, is fine as a theory in isolation, as a self-sufficient idea whose sole virtue is its logical consistency. But physicalism seems intuitively false when we consider our common, everyday, hands-on experience of both the world and our inner mental life. We do not experience either our conscious awareness of the world or our minds as anything remotely like the actions of neurons and neurochemicals. In fact, I'd scarcely say that we experience our consciousness and minds as physical, let alone neurochemical. For example, feeling the pain of a hurtful emotion reveals nothing about the neurochemical activity or about anything physical underlying that feeling; and conversely, a description of neurochemical activity is not sufficient to indicate the presence of the hurtful emotions that it underlies. The same holds for any mental state and its underlying physical infrastructure. The only exception to this would be the case in which one is educated in the brain sciences and understands the correlations between the neurochemical activities and the corresponding subjective experiences. In that case, one would know what to look for, but only in virtue of the scientific studies which have established the correlations between neurological activity and subjective experience, and not in virtue of direct introspection alone or understanding neurochemical descriptions alone.

If we did experience our minds and consciousness as neurological phenomena, we'd have figured out all of the brain sciences soon after the dawning of our species—because introspection would have been all that we needed. But it was only during the last century that we began to understand the workings of the brain in significant detail. The fact that our brain sciences are so new and revolutionary underscores how unexpected their findings were and still are, and how *unlike* the first-person introspective world to which we all have immediate access and with which we are all intimately acquainted.

That these two worlds—the introspective one we call "our mind" and the one constructed by the brain sciences—should be one and the same is what strikes many individuals, even those who

are well-read and educated, as absurd. How is a thought, with its meaning, intentionality, and subjective feel, anything like a neuron or a neurochemical? How could it be physical? When we consider the experience of mind and consciousness as an ordinary human being would describe these, the conclusion seems, at least at first blush, as simple as it is obvious: physicalism must be wrong. There must be *more* to our conscious life than the physical workings of the brain.

I said that my ascription of "absurdity" is not intended as a jab directed at physicalism. Physicalists deserve much credit. They have a rich and powerful toolkit of philosophical arguments and ideas, enough to erase the impression of absurdity and to clarify what they propose and why they propose it. But the sense of absurdity is undeniable for those confronting the physicalist doctrine for the first time, and it remains for many who, after listening carefully to all of the details of what the physicalist has to say, are still unconvinced.

This is where Chalmers comes in. I'm convinced that his case against physicalism is not only correct, but that it can also serve as the archetypal challenge that every physicalist theory of consciousness worth its salt must surmount. So let's lay out what Chalmers has to say (Chalmers, 1996).

Chalmers asks us to imagine zombies. Now, it's important, for the sake of this thought experiment, *not* to imagine creatures covered in rotting flesh, carrying dangling appendages, limping at a snail's pace, and so on. We must imagine that anyone looking at these zombies would not be able to distinguish them from ordinary human beings who are alive, aware, and fully functional, and perhaps even healthy, happy, and attractive. Unbeknownst to you, they may be members of your family. You may work with a few of them. They may work for local law enforcement, keeping your streets safe and free of crime, or they may work at the grocery store down the street (the one where you buy bread each week). Everything about them, every detail right down to the molecules in their bodies, is what you would expect of a typical ordinary human being.
The only difference is that they are not conscious. Even though they act like conscious beings, talk like them, laugh like them, cry

like them, go to the movies like them, go out to dinner like them, and care for their children like them—that is, even though they have us fully convinced that they are no different from ordinary conscious human beings—they have nothing of an inner mental life. There is only a blank, a nothingness. They feel nothing, they know nothing, they themselves are nothing.

Their bodies obviously exist, and if you were to peer into the cranium of one of these bodies, you would see a brain no different than that of any conscious human being. This brain would behave the same as a brain belonging to a conscious human being. No test that you might apply to this brain, in order to see whether it reacts the same as a conscious human being's brain, would be able to tell you whether it belonged to a zombie or to an actual person. Right down to neurons and molecules, zombie brains are indiscernible from ordinary, living, thinking, feeling, conscious human brains.

If we are only interested in the question of *how* zombies get around and perform all these seemingly human activities, Chalmers has no problem (nor do I) with physicalist explanations. He sees no problem in accounting for our *behavior* in physical terms; our behavior is, after all, just as physical as the brain. Whereas some may insist that our overall behavior can only be explained by something as intangible as "desires" or "intentions" or perhaps "free will," Chalmers is satisfied that the brain is all that's needed. The brain is a very busy place, with billions upon billions of neurochemical actions coordinating with one another to compute information and churn out results in the form of electrical signals deployed throughout the body to muscles whose orchestrated contractions constitute acts of behavior. This neurophysiological system is complex—there is no doubt of that—but it is organized and is sufficient to account for all our behavior. So if zombies' brains are identical to ours, why shouldn't this system be able to account for their behavior as well?

Yet a question remains: Although the brain activity of zombies could account for their behavior just as well as our brain operations account for our behavior, does brain activity account for consciousness? Can zombies behave as they do without consciousness? Perhaps Chalmers would not have us believe outright that their behavior can proceed without consciousness, but Chalmers would

at least urge us to believe that we have no grounds for saying that it cannot so proceed.

Of course, Chalmers doesn't expect us to seriously consider the possibility of real zombies, even though no experiment in the brain scientist's repertoire could prove conclusively whether a subject is a zombie or a conscious human being. How could it? What would the experiment look for? Anything accessible to science must be publicly observable by anyone peering under the hood of the skull, and the parameters of Chalmers' thought experiment clearly stipulate that all such scientifically observable phenomena would be detected in the brains of both zombies and nonzombies—so such observations would be useless for determining whether or not we had a bona fide zombie on our hands. But there is, nonetheless, something absurd about the idea that some human brains come along with consciousness while others don't, about as absurd as the notion that consciousness *just is* a physical brain operation, and Chalmers knew this.

His point wasn't so much that the brain by itself is insufficient for producing consciousness, but that *what we understand* of the brain is insufficient to *explain* consciousness. And of course, if the brains of zombies are identical in *every* respect to those of conscious human beings, then Chalmers is saying that we will never understand enough about the brain—at least in terms of its *physical* description—to explain consciousness.

We need not believe in zombies, but insofar as we can *imagine* them without too much conceptual difficulty (insofar as we can at least entertain their existence and see no problem with the idea *in principle*), we don't have the whole picture of consciousness. To the extent that we can imagine zombies without a sense of being inescapably bound up in paradox, we obviously don't have a grasp on why the physicality of the brain *must* result in consciousness, and so the physicalist's story is at least incomplete —if not totally wrong.

As I said earlier, I'm convinced that Chalmers' argument remains the quintessential argument for underscoring the pivotal problem with which philosophy and science must still grapple as they attempt to explain consciousness. But no doubt many will disagree. I know there were plenty of naysayers in the discussion that I

sparked on the philosophy forum. I refer to this forum discussion because I would like to use it as a template for my argument. I intend to follow a line of argument that is similar to that in the forum discussion (but much abridged), and I hope that this will succeed in showing the reader why I think the problem of mind and matter is indeed still a problem. I shall also use this template to point out ways in which physicalism can be and is *misunderstood*—a lesson I learned well by the time the forum discussion ended.

This latter aim may seem odd; why would I argue that Chalmers was right but also that physicalists are misunderstood? The simple answer is that the latter will make my job a whole lot easier. I *could* go through the entire physicalist arsenal, quoting the likes of physicalists such as Daniel Dennett and Paul and Patricia Churchland[2], and attacking their arguments point by point, but others have already covered that ground (Nagel, 1974; Jackson, 1982; Chalmers, 1996). If the apparent absurdity of physicalism might be a consequence of a *misunderstanding* rather than the radicalism that most nonphysicalists attribute to it, then our first step should be to forge a clear understanding of what physicalists actually believe. I find that, once it is made clear, this new understanding paves a way for reintroducing Chalmers' zombie argument such that it is immune to the charges of physicalism, and that will be sufficient for my purposes in this work.

So I shall first present (an abbreviation of) the introductory argument that I made in the discussion forum, follow this with a presentation of three main points on which I think physicalism is misunderstood, and then explain why I think Chalmers' zombie argument still applies within the context of this new understanding of physicalism. My overarching goal is, of course, to show that there is still a need for a novel theory of consciousness, a theory that explains the relation between mind and matter. So I shall conclude with a sneak peek at what my theory of consciousness says.

REASONABLE PHYSICALISM

I started the discussion as a response to reading Daniel Dennett's *Consciousness Explained* (1991), a book in which Dennett responds to Chalmers. In response to Chalmers' asking us to imagine zombies, Dennett asks: *Can* we imagine them? Here is my response:

> [Dennett seems to be saying that] if one were to really imagine zombies in all their elaborate and complex physicality—right down to every minute detail that makes possible and fortifies the link between the brain and consciousness/mind—one would find, emerging before [one's] very (mind's) eye, consciousness itself. Since the patron argument in defence of [physicalism] is a reductive one (i.e., consciousness/mind reduces to brain processes), the idea is that brain processes *just are* consciousness/mind—constituting the latter—much as the atomic structures inside a rock *just are* the rock, and if one could imagine—in all its elaborate and complex physicality—such a structure of atoms, one would at the same time be [imagining] the very rock that they constitute (it would emerge before [one's] mind's eye, so to speak). The argument goes on to say that any difficulty we may presently grapple with in understanding how consciousness/mind can be reduced to the brain and its processes is simply that we can't—not yet at least—[imagine] the brain and its processes in all its elaborate and complex physicality. The gap, in other words, is one of a missing ability to [imagine] or understand, and ... all that would be needed to fill the gap, if it were possible (and may yet be), are physical concepts given by scientific knowledge.
>
> My bone with this is that the problem goes deeper—much deeper—than a mere lack of scientific knowledge of the [brain's physical workings]. It has to do centrally with the inability to understand how consciousness/mind *could* be accounted for by anything physical. Consciousness/mind is *not* experienced as something physical—whether an object, a property, a process, a state, or whatever—not in our most intimate acquaintance with it—and

> it is this most intimate acquaintance that is the most in need of explanation (for without this, the mind/brain problem wouldn't exist). The suggestion that this explanation is forthcoming so long as science persists down the path of uncovering more elaborate and complex details about the brain's physicality simply will not do, for in that case, the only destination one can imagine this path bringing us to is merely more elaborate and complex physical understandings. This misses the whole point—the whole reason why there is a mind/brain problem—namely, that we want to arrive at something nonphysical, something that *bridges* the gap between the physics of the brain and our nonphysical mode of being intimately acquainted with consciousness/mind. Science must definitively reveal something nonphysical. Is such a feat within science's purview? It seems to me that science functions only to uncover the physical—physical facts, physical objects, physical processes, etc.—and so the answer is no. You don't bridge such a gap—between the physical and non-physical—by adding more physical.
>
> The reason I can imagine zombies is not because I lack enough physical information about the brain, but because such information—*even if I had it*—would still be physical. I need to *bridge* the chasm, not stroll further along one of its banks. The problem, as I said, is not that we haven't had the opportunity to allow science to take us far enough, but that it is taking us in the wrong direction. That we can imagine zombies is a valid strike against physicalism, for what it tells us—what it *really* tells us—is that, not only do we not yet understand how physicality accounts for consciousness/mind, but that, given the (mis)direction in which it takes us, it *never will*.[3]

It is important to note, for the sake of this discussion, that my use of the term "nonphysical" here is not an appeal to dualism—the Cartesian theory that there are essentially two distinct and separate entities or substances to our being, namely, the body (or brain), which is physical, and the mind (or consciousness), which is not—but rather harkens to our mode of being intimately acquainted with consciousness/mind. In other words, I use "non-physical" as a description of how consciousness and our mental

content *seem* to us, for that is how we know our minds most intimately. It is the mind *as we are acquainted with it* that must be explained, and if physicalism is correct that the mind is indeed exhaustively physical, then we need an explanation of why this is not reflected in our experience.

The catch-22 here is that this explanation must be nonphysical, or at least semiphysical or quasiphysical, for anything else would be an exercise in futility: the problem would continually re-emerge with respect to each new physical picture that science paints for us, each one more detailed and complex than its predecessor, and we would spiral down a hopeless infinite regress.

The problem, in other words, is not in the incomplete nature of our scientific knowledge about the brain, but in the *kind* of knowledge that science is in the business of producing, namely, physical knowledge. The problem is that given something physical, we can always imagine that it has a mind or that it doesn't. Consciousness always seems to be something superfluous, something that can be added to a body or taken away, and the structure or constitution of that body, however simple or complex, cannot account for either the presence or the absence of the mind.

The reason why consciousness always seems superfluous is, of course, that it only exists as a first-person perspective. It allows us to *see* objects but it isn't an object itself. When we look at an object such as a brain, we see not only something physical but also something that can only appear for us in the third-person (or third-object). The first-person as such cannot appear—at least, not in this way. Thus, we have the peculiar circumstance in which we *know* there is this third-person object before us and we ask whether there is also a first-person coinciding with it. The latter does not appear—it isn't supposed to—and so the question remains unanswered. The result is that we are free to imagine the third-person object as having a first-person perspective or not, and no logical inconsistency arises in either case. This is the case not only with respect to brains, but with respect to all of the possible physical constituents and processes that science may ever illuminate. However deep our future scientific knowledge of the brain may become, and however vast, no matter what infinitesimal particles we may discover therein along with their effects and

interactions, we will always be able to question whether any of these come with a first-person or not. This is the infinite regress of physicalism[4].

In its original formulation, Chalmers' argument is really not that impressive. It is not often considered to be one of the more potent arguments against physicalism. This is why I felt that, if I was going to resurrect the argument on a discussion board, I needed to strike at the heart of the problem a bit more precisely. One of the weaknesses of Chalmers' argument that has been (rightfully) pointed out by critics is that, as originally formulated, it seems to be arguing for dualism. It seems to state that if, given our current scientific understanding of brains, we can imagine them without consciousness, then consciousness must be something *different* from those brains. I'm not prepared to embrace this interpretation, and based on his later interviews, I doubt that Chalmers ever did, either. Chalmers may have been (and may still be) *open* to this interpretation of his argument, but it seems to me that someone as learned and intelligent as Chalmers would not be so daft as to confuse our *current* finite and incomplete scientific knowledge for the physicalist's entire case. His point was not only that our current scientific knowledge of the brain allows for zombie thought experiments, but that science *in principle* will *always* allow these. Thus, I could not help but extract a key insight from his argument that perhaps could have been better articulated: the answer to the question of why zombie thought experiments are possible lies in the *very nature of physicality itself,* in its third-person mode of being (for us) that leaves the first-person out of the picture. I had to make this very clear if I was going to resurrect the zombie argument after it had been considered dead and buried by its physicalist critics.

But the voice of these critics could be heard reverberating through much of the feedback I received from fellow members of the discussion board. Nor was that voice confined to just *this* particular critique—the one that promised that science would one day fully resolve the mystery of consciousness. Another criticism, for example, was the frequently-raised point that Chalmers is question-begging. If you *assume* from the outset that consciousness is nonphysical, then of course physicalism is going to be wrong. But the whole premise on which physicalism stands is that consciousness is physical. If you don't want to grant that

premise, that is fine, but you haven't thereby falsified anything. One is still free to maintain the physicalist premise that consciousness is physical and therefore to consider Chalmers' zombies to simply be an incoherent concept. Chalmer's argument presupposes that we can imagine zombie brains that are identical to ordinary conscious human brains in all physical respects but that differ with respect to consciousness itself. But then, since physicalists claim that consciousness is physical, the physicalists' position is that zombie brains and conscious human brains are *not* perfectly identical in every physical respect. Chalmers, they say, wants to have his cake and eat it too.

Here we arrive at the first of the three points that I want to make about physicalism which, thanks to my discussion board peers, has shown me how physicalism is often misunderstood. Even if the physicalist were correct in accusing Chalmers of a question-begging fallacy, there is still the notorious absurdity that emanates from physicalism in the first place. A nonphysicalist would like to say, in response to the accusation of question-begging, "It may be fine for you to define consciousness in physical terms—if that is what suits you—but don't expect anyone with a shred of common sense to buy it, for only a second's attention paid to the inner workings of your mind should convince you that you're wrong." The things we find in the inner workings of our minds are clearly not what we typically call "physical," and thus, the physicalist doctrine can only be maintained in a fantasy—that is, unless the physicalist is *redefining* "physical."

This is what occurred to me during the conversation on the discussion forum. I used an analogy:

> The misconception is that the physicalist wants to deny the existence of internal states [and to assert] that such so-called "internal states" are really just the things we can [observe] externally. On the contrary, the physicalist wants to say that such internal states are just as worthy of the label "physical" as any externally observed state. [This] is comparable to the claim that Paris is in Germany. Without being clear that by "Germany," one really means all of Europe, the claim seems blatantly false. Why one would want to call all of Europe "Germany" is up to [that

> person] to justify, just as it is up to the physicalist to justify why he [or she] wants to call both externally observable states and internal ones "physical," but so long as it is understood that this manoeuvre is one of *expanding* the term "physical" to encompass more territory than it had hitherto covered, rather than [bringing] phenomena (like internal states) into its territory when they just don't belong there, then all's fair as far as the nomenclature is concerned.[5]

Now I could understand why so many would deny the very possibility of imagining brains that are in every physical detail identical to those of ordinary conscious human beings, yet lack consciousness. At first, I thought this was merely a statement about what was possible as brute fact—as one of my interlocutors, Jayson R. Abalos, eloquently put it: "If you build a human being biologically, it *will* have sentient, conscious self-awareness."[6] Of course it will. No one, not even Chalmers, really *believes* in zombies (although the zombie thought experiment still points to a problem in our physicalist explanations of consciousness). I had apparently missed my friend's point: for him, the term "biologically," like the term "physical" for most physicalists, *encompasses* consciousness. Biology is not merely the ground for consciousness—it is not merely the physical infrastructure that underlies and allows for consciousness—rather, biology is itself the fabric, as it were, of consciousness. In that case, how *could* we imagine a brain whose physical constitution is exactly that of an ordinary conscious human but that excludes consciousness? Consciousness is *part* of that physicality. This is no mere argument from causation (brains *cause* mind) but from definition (brains *include* mind).

This could very well be what Dennett had in mind when he asked: Can you imagine it? But with Dennett, it's hard to say. Like most physicalists that I have encountered, he plays a bit of an obscurantist game. Dennett himself even admits this in *Consciousness Explained:* "I do resist the demand for a single, formal, properly quantified proposition expressing the punch line of my theory. Filling in the formula *(x) (x is a conscious experience if and only if . . .)* and defending it against proposed counter-examples is not a good method for developing a theory of consciousness...." (Dennett, 1991, p. 459). He adds that if his theory should come up against questions whose answers run the

risk of incurring counterexamples, such questions "can be decided as a matter of diplomatic policy, not scientific or philosophical doctrine." (Ibid.) Certainly, they can, but that doesn't mean that science and philosophy have nothing to say on the matter. We sometimes can—and have a right to—explore the minutiae of physicalism or any other philosophy with a bit more scrutiny, if that is our purpose.

However, regardless of whether Dennett or any other physicalist refutes the zombie argument on the ground that consciousness ought to be regarded as physical or that science will one day *prove* it to be physical (and consequently imaginable), a variant of Chalmers' argument can still be levelled against the physicalist. I call this a "variant" because, as we have noted above, Chalmers' original formulation of the argument appears to be geared more towards defending dualism than anything else, and the point must be argued more subtly in light of this new understanding of the physicalist's position.

The members of the discussion forum reached a certain measure of consensus once we agreed to abandon the terms "physical" and "nonphysical" in favor of the terms "scientifically observable" (or "publically observable") and "privately observable," respectively. Nothing in the physicalist's conceptual repertoire disputes the fact that consciousness is a first-person occurrence, that a conscious being indeed has a "private world." No one in the discussion objected to the idea that we can't get directly at the contents of another's world insofar as it belongs to someone other than ourselves—that is, no one claimed that we can feel these contents in the same way that their owner does (rather than *inferring* them). And everyone, of course, agreed that whatever was *scientifically observable* was accessible to all.

Based on these understandings, the "new and improved" zombie argument can be put as follows: We can imagine brains whose constitutions are identical to those of ordinary conscious human beings in every way *that science can allow us to observe* yet that do not experience the private world that is observable only to the conscious human being whose brain it is. Thus, what science can tell us about the brain is not enough to explain consciousness. When I advanced this version of the argument, I did not receive any noteworthy objections, and so I am satisfied that this is an

important restatement of the argument.

The second point that I have come to understand is what physicalists mean when they talk about "neurochemical events." This phrase has several variants such as "neuronal event," "neurochemical activity," "brain event," and "neural process," but I shall use the term "neurochemical event" to cover its variants as well. Physicalists do not simply use the phrase to mean neurons and neurochemicals doing stuff—at least, not necessarily. The phrase does not have to refer simply to a collection of neurons that are firing in reaction to chemicals binding to them and that are emitting further chemicals in response. The heat given off by this activity can also be considered a "neurochemical event," as can fluctuations in the firing neurons' local electromagnetic fields. These count as "neurochemical" because of their direct, intricate involvement with neurons and brain chemicals, not because they *are* neurons and brain chemicals.

This extended meaning is obviously connected to the previous point about physicalism—that mind and brain are united under the banner of "physical." If mind can be classified as physical, then it also ought to be classified as neurochemical. This is simply a narrowing down, a specification of what *kind* of physical thing mind is. This is common sense, but only after wearing the physicalist's visors for a considerable while; that is, it was only after I came to understand the first point about physicalism that this second point became "common sense" for me. If consciousness is physical, then of course the kind of physical thing it is must be a "neurochemical event."

Of course, unlike heat or electromagnetic ripples, the mind happens to be quite beyond the reach of scientific detection, even as a neurochemical event. Consciousness is still quintessentially first-person. Yet we can at least appreciate the case here: it *may,* if we grant the physicalist's position, be an effect, maybe even an epiphenomenon, of *scientifically observable* neurochemical events.

Nevertheless, the zombie argument strikes again: we can still imagine a brain with all the scientifically observable neurochemical events (to which I shall henceforth refer with the acronym "sonces") of an ordinary conscious human brain but without any

of the privately observable neurochemical events (to which I shall refer to with the acronym "ponces"). If the physicalist's argument turns on ponces just *being* a certain class of sonces—for example, many have entertained the thought that mind is really a form of energy or electromagnetic wave (a rather silly notion if you ask me, but taken seriously by some)—it still makes no difference to the zombie argument. One can imagine these sonces, events that are observed or imagined as third-person, without first-person experiences or ponces. Thus, whatever we understand about these sonces, it is not enough to discern a link to (or an identity with) ponces.

The third point on which physicalists are usually misunderstood is this: they mean something quite specific by "consciousness" and "mind." It became clear during my discussion with fellow forum members that it was not enough to define "consciousness" or "mind" simply as a first-person perspective in which subjective experiences occur. Consciousness is, after all, typically defined as an awareness of reality, and this means that it could at least be questioned whether someone in the midst of a dream, for example, really was conscious. The dreamer would certainly be experiencing something from a first-person point of view, but what the dreamer believed to be happening would in fact be an illusion and, for all intents and purposes, the dreamer would not be conscious of what was happening in the real world. Does dreaming count as consciousness? Is it enough just to be having an experience of some kind?

For the purposes of the discussion forum, I therefore defined consciousness for the physicalist as "having at least a minimal awareness of the immediate world of an organism's environment, currently and in the past insofar as the past is relevant or useful to the organism, and having a minimal ability to predict future events insofar as those are also relevant or useful to the organism."[7] I believe that this definition is sufficient to capture the kind of "consciousness" the physicalist has in mind. In turn, I defined "mind" as that inner realm of the subject in which thinking occurs. It may also include emotions, dreams, or anything else one would usually take to be "internal."

Well, one may ask, what else could consciousness be, if not an awareness of reality? Consider the nematode, as we did in the dis-

cussion forum. This organism became the basis for characterizing minimal scientifically observable and privately observable neurochemical events: the simplest nervous system that is capable of giving rise to the simplest kinds of first-person experiences.

Nematode

Nematodes are wormlike creatures, usually microscopic in size, and contain only a few hundred neurons in their nervous systems, so it is questionable whether they can be "conscious" of anything at all. The most reasonable expectations we might have of them would be that they are capable of sensing or feeling things. Such a sensation or feeling may be enough to elicit a behavioral reaction, but this would be no more than a reflex, rather than a planned or well-thought-out strategy that the creature implements in order to maneuver around its environment or to gain resources. For all intents and purposes, therefore, the nematode is not conscious in the physicalist sense.

Yet no one—certainly not on the discussion forum—would deny the assumption that the nematode experiences something, some subjective sensation or feeling that can only be had from a first-person perspective. It may not *know* it has this experience—it would not know anything, really—but the members of the discussion forum generally agreed that the experience, a ponce, was there. Therefore, a distinction can still be drawn between the third-person nematode and its first-person experiences, a distinction that permits the existence of the latter, unlike the former, to be brought into question.

We need not venture too far from human brains to find ponces that are below the level of full-blown consciousness. Take the experience of pain, for example. Suppose we anesthetized the entire brain of a human subject so that every neuron lay dormant for a short while, except for a small bundle of c-fibers that fired when the subject felt pain. In this scenario, the subject could not be said to be conscious of or experience anything other than pain if we stimulated those c-fibers. But even if we did stimulate those fibers, would the subject really be "conscious" of the pain? According to our physicalist definition, the answer is "no." To be fully conscious of the pain (or anything), many other brain parts

must be functional. They must process that information, that is, they must be able to take the signals present among the c-fibers and translate them into thought and knowledge, thereby producing an "awareness" of the pain. On the other hand, we would be able to say, even by the physicalist definition, that the subject was at least experiencing the pain, that is, sensing or feeling it. The subject would not *know* that he or she was feeling the pain, but the feeling would be there.

The brain is chock full of centers like this: centers for ponces that may exist without our being fully aware that we are experiencing them. Seeing colors is only possible because of specific centers in the visual cortex. The same is true of hearing sound and feeling hot or cold. These ponces are the components into which consciousness can be broken down. But just as a single brick is hardly a house, neither are these sensations by themselves consciousness—or so the physicalists would have us believe.

And these physicalists are being reasonable, for their definition of "consciousness" is itself reasonable. But we should not deny the presence of *something* corresponding to these brain centers or the nematode's simple nervous system, something privately observable, subjective, and only possible because of a first-person point of view. We may not be able to call this "consciousness," but the term "ponce" seems to serve well.

With this new understanding of what "consciousness" means for physicalists, we can begin to make sense of their claim that the brain sciences have figured out how to explain consciousness. To the physicalists, explaining consciousness is nothing more than explaining *human* consciousness, and the task demands nothing more than breaking consciousness down into its constituent ponces and showing how the processing of the latter correlates with the processing of its corresponding brain activity. If there is a question about how these ponces ever coordinate with one another to create consciousness, the physicalist can appeal to the brain's development as its owner grows from infancy to adulthood or to our species' evolution from apes and other prehistoric organisms. The point would be that ponces existed long before consciousness appeared, and the question of how consciousness emerges is as different from the question of how ponces emerge as the question of how *homo sapiens* evolved is from that of how

life began.

But, of course, the latter questions *can* be asked, and therein lies the infamous zombie argument: we can imagine nematodes in all their neural complexity (or simplicity?), yet without any ponces. How do we know that ponces are there? If we go with common sense and assume that wherever we find neural activity we will also find a ponce of some kind, we can still ask what creates this ponce. We can ask how the nematode's nervous system creates ponces. We can ask this question of the very first form of life that experienced something—anything—or of a single neuron if we remove it from the brain (but keep it alive) and stimulate it with an electrode. Where do ponces come from? How do neurons create them? *Do* they create them?

These last few questions proved to be a pivotal turning point for the discussion forum's conversation. In response to my question of how first-personhood emerges (which is really no different than the question of how ponces emerge), Jayson R. Abalos wrote:

> Here's the real question. How does a cell of any kind end up with a skin at all? How does a bubble have a skin? How did I ever separate me from everything else?... This skin structure is ultimately what causes the private realm at all. And why it exists at all appears to be a rather interesting mixture of circumstance, product, and timing.[8]

That is, what makes me a first-*person* is the fact that I've separated myself from my surroundings (or my evolution has), and I've done this by evolving a relatively secluded brain protected by a thick and nearly impenetrable barrier known as a skull, so that what goes on in my brain can and will be experienced as an isolated system, a unit that is distinct from everything else. This is the cardinal reason that I experience myself as separate from my environment. In fact, this holds for any system that has managed to close itself off from its environment and maintain an internal system capable of self-perpetuation.

In response, I raised the question,

> Do you believe that there was a 'me' before the cell membrane introduced this separation? Obviously, it wouldn't be a 'me' as we now experience it—as an individuated subject with his own private mental world—but perhaps a 'me' that was, for lack of a better word, 'smeared out' throughout the environment, not attached per se to any one object or local [system] of objects?[9]

Abalos's response was:

> There is, yes. Acceptance. The recognition of its constituents is evident in its not refraining from being in the proximity of its constituents. Basically, the atomic, electrical, and chemical bonds are what innately determine the basic level of adherence that determines one group from another. It reacts to attraction and resistance, or, it recognizes—either way technically refers to the same concept; the latter is simply reflective consciously.[10]

I didn't quite understand this at first, so I responded:

> Here's how I read this: Yes, Gib, there was a 'me' before the split—but like you said, not individuated as we now experience ourselves. The three forces that make for 'objects' in our world are the atomic, electrical, and chemical. These in some way *might* end up feeling individuated. Attraction and resistance are the main modes of 'affect'—or that is to say, the modes of 'communication' or 'transfer of information'—essentially, any exchange of energy between systems counts as 'recognition.' The one system 'knows' about the other—or at least, 'feels' something which can be considered a 'recognition' of the other. This 'feeling' counts as our ponce (or perhaps in this more generalized context, we should talk about a 'pope': privately observable physical event). Is this correct?[11]

He answered in the affirmative. So in the end, this gives us a picture of physicalism that would have privately observable physical events occurring everywhere in nature, everywhere an exchange of energy took place with one particle affecting another. According to this picture, mind is in everything—"mind," that is,

in the broad sense.

Physicists will often talk about "messenger" particles being passed between other particles, such as two electrons exchanging photons. The idea here is that the repelling force between two electrons is really a dance that is carried out when the particles "talk" to each other. One sends the message "Move away! I'm a fellow electron" to the other by packaging it in a photon (like a note in a bottle) and shooting it at the other electron. The other electron does the same in turn, and they each obey the other's message and do the dance.

So where do ponces (or popes) come from? Nowhere. They were there since the dawn of time. They are woven, as it were, into the very fabric of existence. They are not "produced" by anything, but are rather reshaped and remolded as their physical (or scientifically observable) counterparts transmit, translate, and transform them.

But does this answer our question about the link between the former and the latter? Aren't we in the thralls of the zombie argument even here? Can't we still imagine two electrons exchanging photons without any "information" being gleaned by either one, without one or the other feeling anything? Frankly, I don't see anything in this picture that convinces me that such particles, or any other physical system, must experience an exchange or reception of information or have a kind of "feeling" or "sensation" or anything of that sort—at least, not from a first-person perspective.

Of course, if we dissolve the boundaries between inner and outer, between self and world, that are created by cell membranes, it can be questioned whether there is any more "person" to be "first," or whether its experiences are really "private" anymore. Yet, if a pair of electrons somewhere outside my body are having an experience or an exchange of information, I'm certainly not privy to it. The electrons are still third-person *to me,* and I can still question whether such an exchange comes along with an "experience" or is taken by the electrons as "information." If the answer to these questions is "yes," then obviously they occur in a world that is *private from me,* and perhaps the "person" to whom they occur is none other than the universe itself (or simply the

local environment).

Oddly enough, this view comes strikingly close to my own theory of mind—the very one presented in this book—although, as I shall later make clear, the former view still suffers one crucial difference without which it could not be called "physicalism." This was enough, however, to bring the discussion more or less to a close—although in my closing posts, I couldn't pass up the opportunity to reassert the zombie argument. Despite my newly acquired understanding of physicalism, I could not help but see that Chalmers' point still held plenty of water. I could still imagine these electrons, or any other physical system, as not feeling anything; I couldn't see why they s*hould* feel anything (you can imagine how easy this was, considering it was already relatively easy for me to imagine *human beings* without consciousness). The problem was the same one I had been arguing throughout the whole discussion: physicality is always third-person, which, by definition, stands in contrast to first-person. Imagining a third-person doesn't require imagining a first-person. No amount of understanding of a phenomenon (such as an electron or a brain) in physical terms—that is, in third-person terms—is going to suddenly and necessarily bring a first-person into the picture.

But physicalism does seem much less absurd now, doesn't it? Despite my resistance to accepting physicalism, I have attempted to make it more manageable and more intelligible—not so much to reach a consensus about physicalism, but rather to figure out exactly how the zombie argument must be recrafted to address physicalism in the proper way, that is, in a way that most physicalists, if they're honest, can digest and appreciate. Without this new understanding, we're just arguing past each other; with it, we can at least understand, and maybe even appreciate, our differences and the reasons for our disagreement. Physicalists can now understand why we nonphysicalists have a rough go at their theory, and we nonphysicalists can now understand that what the physicalists are *really* trying to say is not so absurd after all.

Yet my three points about physicalism hardly address every possible misunderstanding about physicalism. Physicalists, probably because of their scientific penchant, tend to be sticklers when it comes to exact meanings and proper definitions. One term I have been

using rather liberally so far, but have since learned to be cautious about in my encounters with physicalists, is "experience." This term, like "consciousness," often carries highly specific connotations for physicalists and neuroscientists alike. It does *not* refer to any old ponce such as pain or seeing red or tasting pineapple—at least, not in isolation—but to a more holistic and integrated apperception of the situation or event surrounding the ponce. The experience of tasting pineapple, for example, involves not only the sweet taste itself, but also the pineapple's juicy texture, the sensation of chewing it, any thoughts or emotions that it may arouse, the satiation that follows, and everything else that surrounds and influences the raw taste. Another term that I found to be a matter of contention in the discussion forum was "observable" (as in "privately observable"). To the physicalist, this term probably conjures up notions like introspection or cognitive recognition. So I had to be very careful in making clear what I meant when describing the nematode's "experience." I had to make a distinction between "observ*able*" and "observ*ed*"—the latter implying that the experience is, in fact, observed by some power of introspection or cognitive appraisal, and the former only that it *could* (in principle) be observed *should* there somehow be such powers, but not necessarily that there are any. It is a fair bet that the term "first-person" will be contentious when applied to anything other than human beings since only humans are "persons." But this latter nuance can be removed through a simple reminder that the term refers to a *point of view* rather than the kind of animal that has it. The meanings of these and other ambiguous terms should never be taken for granted by either the physicalist or the nonphysicalist, for a great deal of head butting can, in my estimation, be avoided if we pay them due attention.

There is another danger in nonphysicalists' discussions with physicalists—namely, making the grave mistake of pigeonholing all physicalists. No group of people, regardless of how we define them, fit a mold perfectly. One can expect to find diversity within any philosophy or system of thought that is as wide-ranging as its adherents are numerous. For example, when my forum discussion turned toward what I could only describe as a sort of panpsychism (the idea that every exchange of energy and every cause–effect interaction is accompanied by a "feeling" of sorts), I became particularly cautious about taking my interlocutor's insights as representative of physicalists' views in general. I

suspect that a large portion of physicalists, if not the majority, would not venture much beyond nervous systems when attributing consciousness or ponces. Nevertheless, I believe that my third point about how to properly interpret the physicalist—as holding that "consciousness" refers very specifically to a fully developed awareness of the world that only the most sophisticated animals, principally humans, can attain—makes a lot of sense of the physicalists' claims and can reasonably be said to be roughly representative of their views on the whole.

But there are bound to be exceptions. There are bound to be one or two physicalists out there who fervently believe that consciousness and mind are nothing more than what we see when we look through a microscope at the brain and observe the busy clamor of third-person neurochemical events, and that one need never talk about the existence of something over and above this clamor, something that is private, subjective, or first-person. In my experience, physicalists can be quite hard to pin down, and it can be very difficult to decipher precisely what a physicalist really believes (for example, whether the three points outlined herein accurately describe his or her views). But one need not work one's self to the bone trying to pin down exactly what one's interlocutor means to say. One need not even make the assumption that one has misunderstood one's interlocutor. If one's interlocutor's point seems absurd, one has a right to call a spade a spade. One has a right, that is, to dismiss the point, after numerous failed attempts to reason it out, as absurd (or incoherent, or paradoxical, or just plain wrong) and move beyond it.

Though there is no coming to terms with radicals and fanatics of any "ism" (not just physicalism), one can at least explain the difficulty of swallowing an analogy that should strike *anyone,* physicalist or not, as objectionable because of its sheer absurdity. This analogy comes from the discussion forum, and will serve as the perfect note on which to close this brief exploration of physicalism. About midway through the discussion, I almost conceded defeat at what looked to me at the time as a colossal wall of absurdity, ready to admit that there was no getting past it. But I decided to at least bow out gracefully with the analogy, if only to express my frustration and angst in face of a paradox undermining the whole physicalist paradigm as I had understood it up to that point. I said that the notion that consciousness or

mind is nothing more than the physical processes of the brain as we can observe them under a microscope is as absurd and impossible to swallow as the notion that red might be nothing more than a pattern of black and white. Anyone with a shred of sanity should agree that the latter notion is clearly absurd and therefore plainly wrong. I had no hope that this would make converts of my physicalist friends, but I did expect them to at least appreciate my troubles and to believe me when I told them exactly what I felt. It doesn't help to point out that consciousness *emerges* from the physical microstructures of the brain over a long course of development and evolution; for it would strike one as no less absurd to be asked to entertain that red emerged from a pattern of black and white over a long course of development and evolution, once it became complex enough or was arranged in the right configurations. The problem remains. Red is a color that we cannot imagine emerging from a mixture of pure black and white. So too with consciousness: we nonphysicalists cannot imagine that it arises out of a mixture of purely physical (i.e., third-person) particles.

But I mustn't get carried away. Having said all that, I must remind the reader that *most* physicalists are quite reasonable people, and the absurdity of their claims is superficial. A careful look beneath the surface reveals a different, more plausible, rendition of their views. I only present the color analogy as a last resort—a means of explaining, not so much why the physicalist is wrong, but why it simply doesn't compute with us. That's something the physicalist cannot take away.

I hope I have persuaded the reader that Chalmers' challenge, insofar as I have successfully resurrected it and properly reshaped its parameters in light of our new understanding of physicalism, still reveals a persistent weakness in the physicalist doctrine. Physicality, no matter to what extent our sciences may shed epistemic light on it, will always be presented to us as third-person, and this necessarily leaves any first-person out of the picture. We are therefore free to imagine the first-person's presence or absence, and because nothing about the third-person's mode of being (to us) implies or necessitates an accompanying first-person, the third-person perspective will never suffice to explain its connections to the first-person or why the first-person should exist at all. I would not go so far as to claim

that this proves physicalism wrong, but if it is not wrong, it is at least inadequate. If physicalism is correct, although I think it is not, it can never fully explain consciousness and how it relates to physicality. When brought to its logical conclusion, the best physicalism can say is that the link between physicality and consciousness (or any ponce) is beyond human comprehension, and the problem of mind and matter is utterly insoluble. Thus, the problem of consciousness *is still with us,* and so, by implication, no theory of consciousness has ever been fully adequate.

ALTERNATIVES TO PHYSICALISM

Leaving physicalism and Chalmers' zombie army behind, where do we go from here? If we abandon physicalism, what are our other options? Well, dualism—the belief that mind and brain are two distinct and separate entities—comes to mind, but philosophers are generally inclined to say that dualism is plagued with perhaps even more problems than physicalism[12]. Its key strength, at least in Descartes' rendition[13] (Descartes is the father of modern dualism), lies in the universalization of its two substances (mind and matter). This gives us some nifty categories into which we can place all things that exist or that could exist. This makes for parsimony, and a useful tool for classifying things. Dualism's greatest weakness—the key reason for its widespread abandonment in modern times—is that the two categories are utterly incommensurable. That is, once the world is posited as consisting of two universal and separate substances, there is no way to explain, save the positing of a miracle, how any interactions between the two can occur. (This point is highly technical in philosophical circles, hinging on precise definitions of "substance"; see the work of Spinoza for more on this[14]). Thus, far from resolving anything regarding the problem of mind and matter, Descartes more or less sabotages the whole enterprise by rendering the problem insoluble. On the Cartesian account, mind and matter simply *can't* interact. An act of God is necessary, which is not an adequate explanation in rigorous philosophy.

Of course, we can also entertain a somewhat weaker form of dualism, a form that we might call "folk dualism," (Bloom, 2004) which is more or less the common layperson's understanding of his or her own mind and its relation to the body. Generally

speaking, unless they are highly educated about these matters, people take it on intuition that they have a mind and a body and that these are two different things. Questions about universality and commensurability simply do not arise for the layperson; nor do questions about classifying substances. The layperson does not think of the mind and the body in terms of substances but rather as two different phenomena, like trees and the fruits they bear, that happen to occur in human beings and other animals. There may even be, as far as the layperson is concerned, ways in which the mind can affect the body and vice versa, ways that science can perhaps even illuminate. In fact, there *must* be such ways, for it just seems obvious that they do interact.

Although this watered-down version of dualism is not nearly as frought with problems as the Cartesian variety, it nonetheless remains silent on the question of how to explain consciousness in terms of the brain. Both versions in fact remain silent. Cartesian dualism can't explain it, while folk dualism merely doesn't.

Seen through a philosopher's eye, folk dualism really isn't dualism at all, if it permits of interactions between mind and brain. If they can interact, a philosopher would tell you, they must be one substance. The layperson can remain on solid ground by identifying them as two distinct *forms* of this single substance, two distinct phenomena, but now this is really a variant of monism. (If the reader understands the term "dualism," it shouldn't be a great stretch to understand "monism"—it is obviously the view that only one substance exists throughout the universe and that everything we encounter in the world is cut from this single substance.)

Monism eventually became the preferred solution to the mind/matter problem (James, 1904; Broad, 1925; Whitehead, 1929; Place, 1956; Smart, 1959; Feigl, 1967; Putnam, 1975), as it became more and more evident that Cartesian dualism simply wasn't going to cut it. If we want to abandon dualism for a form of monism, Descartes gives us two options: we can reject either the mind side of the mind/matter dichotomy or the matter side. We have seen that physicalism rejects the mind; physicalism is a materialistic monism. Idealism is what you get when you reject matter. Idealists (Fichte, 1847; Renouvier, 1899; Royce, 1919; Luce, 1954; Peirce, 1958; Gentile, 1922; Foster, 1982; Collier, 2010) say

that the world and all of reality are fundamentally mental in nature. The objects strewn about us are really only sensations or perhaps hallucinations or a grand dream.

But idealism leaves much to be desired. Although it eliminates the question of how mind and matter interact, idealism raises more perplexing questions and urges us to accept a picture of the world that is even more absurd than the physicalist world that I have described. Where do all these mental apparitions come from? How is a universe rooted directly in my own mind even possible? What is my mind rooted in? George Berkeley, the father of modern idealism (Berkeley, 1710, 1713), would have us believe that everything is sustained, not so much in the minds of individuals, but in God's mind. When one sees a tree, for example, one is really looking at a divine thought. God is imagining the tree. He allows it to be communicated to us through our senses. In essence, to be in the world is to be in the mind of God.

Berkeley is a material skeptic, which is to say he doubts the reality of the material world. He thus calls himself an "immaterialist." This would not be true if it weren't for Descartes. While rejecting the material side of dualism, Berkeley models his understanding of mind straight after his predecessor. Descartes' concept of mind is designed for doubt. He reasons, quite cleverly, that one can never be certain whether the world as it appears at one moment or another is the product of a dream, a hallucination, or even an evil demon set on deceiving us (Descartes lived in very religious times). He even casts doubt on our abilities to reason our way through such considerations. If it is possible that we are hallucinating in our perceptions, we can also be delusional in our thoughts. We can even be delusional in our most well-thought-out and cogent deliberations, so that even our most powerful convictions —such as the conviction that 2 plus 2 equals 4 or that all circles are round—might just be the ramblings of madness (evil demons can be quite insidious). Therefore, we have no reason to say—that is, no absolute proof—that any of the world as it appears is real or that any of the theories that we believe are true. In other words, there is nothing in appearances, or in the way things seem to us in our thoughts, that indicates conclusively that those appearances or thoughts are of reality, and so "realness", in and of itself, does not exist in appearances, thoughts, or anything mental.

This creates a severe problem, not only for Descartes, but for any brand of idealism that banks on Cartesian notions of mind. Descartes is essentially saying that the reality of the world (of anything) is never to be found in appearances. Though this facilitated the material skepticism that permitted Berkeley to propose a monistic theory of mind (and thereby resolve many of Cartesian dualism's difficulties), it also created a new problem: now the world as it appears, consisting exclusively of mind, has no reality. This was not Berkeley's position, of course, for he overtly claimed that the world, though exhaustively mental, was indeed real. But herein lies the incoherency: when brought to its logical conclusion, Berkeley's idealism, if it rests on the Cartesian conception of mind, *must* embrace the implication that the world is completely without reality[15].

On this note, it is important that I stress what my critique here aims at: it is *not* Berkeley or his idealism, but Cartesianism. I believe that what Berkeley was *attempting* to do was to *undo* Cartesianism—that is, the Cartesian concept of mind and the skepticism over the material world that follows from that concept of mind—but that he fell short in virtue of his following (perhaps unconsciously) in Descartes' footsteps. That Berkeley was influenced by Descartes in this way is a conjecture[16], of course, but only someone who brings himself to doubt the reality of matter in the style of Cartesian skepticism could call himself an "immaterialist." Only someone who works from within the Cartesian framework would ever choose between the Cartesian concepts of "mind" and "body" and reject the latter in favor of the former. This is not to say that Berkeley ever doubted the existence of objects like rocks or trees or human bodies, but that ultimately he doubted they were material. But in the same stroke, he wanted to undo the Cartesian perspective that if a thing exists only in perception, it is not real—that a thing is real only in virtue of existing *outside* perception—and to replace this perspective with one according to which the perception itself is the ultimate reality. What he failed to do, however, was to recognize that if by "perception" one understands *Cartesian* perception (i.e. Cartesian mind), then his goal of making this perception the ultimate reality becomes incoherent. As argued above, the Cartesian concept of mind is *defined* for doubt. It is conceptualized such that it is essentially devoid of any inherent reality. What Berkeley needed was to first reject the Cartesian concept of mind and then to replace it with

something more accommodating to minds, by themselves, harboring some inherent reality. Thus, it is not Berkeleian idealism which I reject, but any vestiges of Cartesianism which it may contain. It is really the Cartesian concepts of mind and matter which I reject, and with respect to Berkeley's idealism, I say merely that it could use the kind of improvement that only the exorcizing of Cartesianism from it could accomplish.

To clarify this point, we should note that even though Descartes denied the manifest reality of anything in its appearance alone, he did define mind as a substance—one of the two that exist. This is most likely what Berkeley fell back on in maintaining that the mind was real. Though this leads to the aforementioned incoherency in Berkeleian idealism, it is not a problem for Descartes. At least Descartes, through some fancy philosophical chicanery, was able to posit the existence of the material world as a *copy* of what we find in appearance (God, he reasoned, would never allow us to be deceived). He could do the same for the mind itself: he could conceptualize the mind as a container and that which the mind perceives as its contents. Thus, the mind, though not showing up for itself in appearances (not one of the container's contents), can be real in virtue of existing *outside* appearances. For Berkeley, however, this was nonsense. It made no sense to talk about the existence of anything outside perception, certainly not as a *copy* of perception (how could an apple still be red if no one was around to see it as red?). This didn't mean that for Berkeley, the world was irreconcilably unlike what it appeared to be in our perceptions, but rather that it was always within the purview of some perception (i.e., God's). But herein lies his fatal mistake. If he is borrowing his concept of mind from Descartes, which, as I've just shown, prohibits the reality of anything in its appearance, then it prohibits the reality of even God's ideas in their appearances to *Him*. If God's ideas are to be of real things, those things must exist outside *all* perception—even God's.

Though this goes directly against the heart of the Berkeleian doctrine, idealists in general might try another avenue: they might say that there are no real things—not as they appear to the mind at least—but that the mind *itself* is nevertheless real. The problem with this is that the reality of this mind cannot show up for itself. Whatever appears to a mind would have to be illusory, and although we might like to say that a *copy* of that illusion

exists (as a real thing) somewhere outside its appearance, we find ourselves inevitably brought back to the same catch-22: that there must be something real outside of not only our own perceptions, but *all* perceptions. But in this case, that something turns out to be those very perceptions. Could the mind be outside *itself?* Not likely. Either nothing is real, which is nonsense, or idealism, at least when it relies on the Cartesian concept of mind, is false.

So it looks like we are out of options. Neither dualism nor physicalism nor idealism is satisfactory. What do we do now? It's deceptively simple: we recognize that the problem lies in the options we were given at the outset. We shouldn't be choosing between the mind side of dualism and the matter side. The kind of monism we need to aim for is one that embraces a hybrid of the two Cartesian substances. We must somehow reconceptualize our understandings of both mind and matter in such a way that we recognize them as different forms of the same substance, a *new* substance. What we really need is a novel way of looking at substance itself, one that permits us to appreciate substance as the very fabric of reality and of which both mind and matter are instances.

This is what I've set out to accomplish in this book: I present a new concept of substance. It embodies a radical shift in the way we understand mind and matter, and it not only solves the problem of mind and matter, but also presents a strange and wonderful new world view, the likes of which the world has not yet seen.

I expect my readership to consist mainly of academics and laypeople who are interested in philosophy and spirituality. To the academics, I offer an economization of philosophical disciplines. The philosophy of consciousness and that of ontology are the same, with only their respective vocabularies to distinguish between them. Although this may seem obscure at this point, it will become clear as the reader continues. My point is that the problem of mind and matter can be solved by simplifying and uniting what at first may appear to be distinct fields of philosophy.

To the layperson, I offer a new spirituality, one that fits well with science and that is guaranteed never to come into conflict with

any of its findings. We live in materialistic times where hard science and cold objectivity seem to relegate spirituality and religion to the margins. It is sometimes difficult to reconcile spirituality with hard science, and it is not uncommon that scientific evidence is brought in to tear down certain religious articles of faith. I promise the reader that the theory I present in this book is *in principle* fully compatible with science and therefore allows us to embrace a holistic view of reality that encompasses both scientific fact and a spirituality that complements it.

This book is the first of a three-volume series. It lays out the theory itself. This introductory chapter is followed by a couple of chapters that contain background material: one chapter on neuroscience, and only those aspects of neuroscience that are relevant to my theory, and one chapter on some of the philosophical ideas that I believe are necessary for understanding my theory. Neither of these two chapters presents novel material; experts in the fields of neuroscience and philosophy should be entirely familiar with their content, and so if you are one of these experts, you may get by without reading one or both of these chapters.

My theory itself is presented in two parts, in Chapters 4 and 5, "The Basic Theory of Mind and Matter" and "The Advanced Theory of Mind and Matter." Together, these chapters comprise the complete body of MM-Theory (as I call it). The Basic Theory has a customized definition of "experience" at its core, as well as a formal correlative description of the relation between mind (or experience) and the brain. The Basic Theory presents this correlation only as a *descriptive formula* (rather than an explanation), and it doesn't diverge too much from a crude form of dualism. The full theory, the reader should note, is *not* dualist; the Advanced Theory extends the customized definition of "experience," along with the descriptive correlation, to all matter and every physical system in the universe, fusing the material and the mental into one ubiquitous substance. Ultimately, the theory does aim at explanation, and it is finally rendered as a variety of monism.

What the Advance Theory will leave unaddressed at the end of chapter 5, and what chapter 6 will pick up on, is the question of what makes for individuals—that is, the "self" which one feels him or herself to be—and without a thorough treatment of this question, the theory of consciousness which I present in this book

could not be considered complete. Chapter 7 takes the more general implications of my theory of consciousness—that is to say, the implications of consciousness's relation to physicality in general (not just brains)—and touches on some of the most basic relations between consciousness and the fabric of the physical universe. These will include questions on the atomic infrastructure of matter, fundamental particles, space and time, and how these relate to consciousness and experience. In short, chapter 6 will deal with consciousness as it relates to the self, and chapter 7 will deal with consciousness as it relates to everything else. All the foregoing will, no doubt, be a lot to chew. Therefore, this book will conclude, in chapter 8, with a summary of my theory.

Volumes II and III respectively address logical/conceptual topics and scientific/ontological topics that stem from MM-theory. I say "topics," not "problems," because these volumes address both problems *and* implications, the latter being worthy of attention purely because of their interesting allure. Although the theory would leave much to be desired without these last two volumes, they mostly present comments and reflections about MM-theory more than vital components thereof.

I do encourage you, after you have read through volume I, to go further. I invite you to explore not only the theory itself, but also *all* of my ideas, as I'm confident they will stimulate and inspire. These three books may be long, but I promise they won't disappoint. I feel that I have something truly novel and intelligent to say and that the time that you spend reading my books will surely be worth your while.

Chapter 2:

NEUROSCIENCE

INTRODUCTION

If we were to categorize the subject matter of this book, it would have to fall under the philosophy of mind. However, any philosophy worth its salt should not conflict with science. It is even better if this philosophy not only avoids conflict with science, but is in fact rooted in it. The purpose of this chapter is to outline the thick scientific soil in which MM-Theory is rooted. The scientific bases for a philosophy of *mind* ought to be, and in the case of MM-Theory indeed are, none other than the neurosciences. In this chapter, therefore, we will cover the extraordinary breadth of neurological facts that have been uncovered during the past century. And what a breadth it is—much too vast to touch on every minute detail. Therefore, as much as we would like to strive to exhaust the plethora of neurological facts, we will have to satisfy ourselves with the basics. There are plenty of textbooks and articles that devote more attention to the richer details of neuroscience, and these sources are readily available to the reader who is interested in learning more (Johnson, 2004; Sacks, 1998; LeDoux, 2003; http://dericbownds.net,[17] "Understanding the Brain"[18]).

We will begin by looking at the neuron, which is the basic cell from which our brains, along with the nervous systems of all organisms, are built. We will then look at the brain piece by piece. These pieces are the major systems of which the brain is composed, systems that work together to make the brain a fully functional thinking device. We will examine the structures of these pieces as well as their functions as they relate to our perceptions, experiences, and behavior.

We will conclude this chapter with a bit of philosophical reflection on what the neurosciences have to tell us. This will serve as the perfect lead-in to the next chapter, where we will delve headlong into philosophical questions concerning the mind and the brain. With all of the above under our belts, we will be in the perfect position to discuss MM-Theory. So, without further ado, let's learn about the brain.

NEURONS

The neuron is the main cell of the brain and the nervous system. Although it is not the only type of cell that makes up the brain, it is central to the proper functioning of the brain as an information processing organ. Neurons are unique among the cells of the body insofar as their main function is to transmit chemical and electrical signals to each other as the means for processing information. Each neuron is like a wire that can carry an electrical current. The brain and nervous system are therefore to the body as an electrical system is to a machine. Their role is to "bring life" to the machine—as it were, animating it. We might say that the brain also serves as the body's computer. The senses provide the input signals that the brain processes in order to compute what's in the environment and how to react to it. The brain's output signals determine how the brain and nervous system control the rest of the body. All these signals are relayed from one area of the brain to another by the interconnections between the billions of neurons that constitute this entire system.

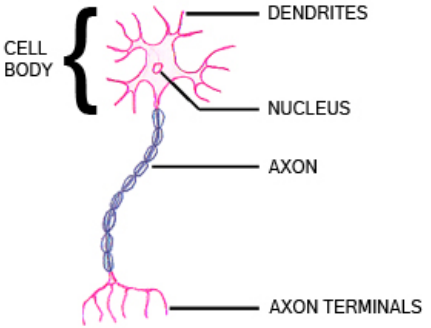
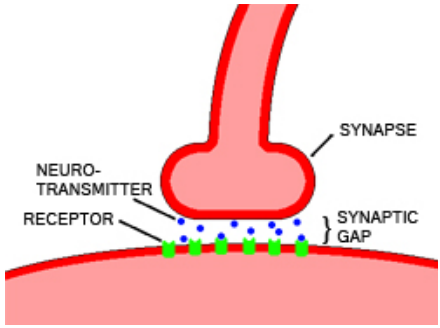


Figure 1: Neuron anatomy

There are approximately 100 billion neurons in the brain. As Figure 1 shows, their structure looks very much like a tree. The axon is like a trunk, the dendrites are like branches, and the axon terminals are like roots. This structure makes an efficient medium through which electric charge can flow. The electrical signal that

flows down the axon and dendrites is more of a quick impulse than a steady current. This signal is referred to by neuroscientists as an "action potential," and when it occurs, we say that the neuron "fires." The action potential travels from the cell body towards the axon terminals. These terminals usually connect to the dendrites of other neurons but sometimes to their axons or cell bodies. One neuron can have up to 10 thousand such connections, and it is these connections that allow electrical impulses to travel from one neuron to another.

Although these connections are firmly in place, most neurons don't actually make physical contact with one another. There is a gap on the order of about 20 nanometers between the synapses (the ends of the axon terminals) and the adjacent neurons. When an action potential reaches the synapse, chemicals called "neurotransmitters" are released into the gap between the synapses (which is called the "synaptic gap"). These neurotransmitters find their way across the gap and bind to the other neuron at what are called "receptor sites" or just "receptors." These are tiny mechanisms on the membrane of the recipient neuron whose function is to convert the chemical signal (the neurotransmitter) back to an electrical signal that travels down the neuron's length.



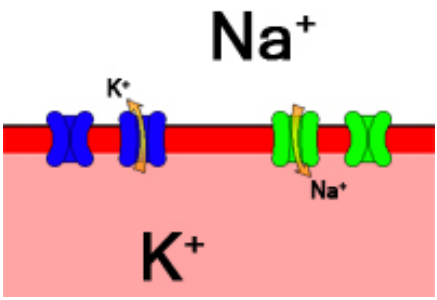
The synaptic gap

There are many kinds of neurotransmitters and receptors. Different parts of the brain release different kinds of neurotransmitters and have different receptors for receiving them. However, not all neurotransmitters transmit a signal. Some prevent the recipient neuron from firing. These neurotransmitters are called "inhibitory," whereas neurotransmitters that stimulate the recipient neuron into firing are called "excitatory." Because synapses usually don't have more than one type of neurotransmitter (although there are rare exceptions to this rule), we usually refer to the synapse itself as being inhibitory or excitatory. Some drugs interfere with the brain by binding to specific receptors. Some of these drugs mimic excitatory neurotransmitters, while others mimic inhibitory

ones. Yet other drugs chemically react with neurotransmitters so that they can no longer bind to the receptors, while still others block "reuptake," the process by which neurotransmitters are reabsorbed into the original neuron.

Even if a synapse is excitatory, this may not always be enough to cause an action potential in the recipient neuron. In order for the recipient neuron to fire, it needs to receive a critical amount of electrical charge flowing into the cell body. This is known as the cell's "threshold." The threshold is usually reached by summing up the amount of electrical stimulation from several synaptic connections, and at this point the neuron fires.

The action potential is made possible by an exchange of positively charged ions across the cell's membrane. When the cell is at rest, the exterior is coated with sodium ions (Na+) and the interior contains potassium ions (K+). Although the potassium ions are positively charged, there are other negatively charged ions within the cell, and the overall charge on the inside is negative (about -70mV). What happens when an action potential begins is that sodium channels on the membrane open up, allowing Na+ to flow into the cell. The interior becomes more and more positively charged until it reaches around +30mV. At that point, potassium channels open, allowing K+ to flow out of the cell. The charge inside the cell drops again and shoots slightly past -70mV. This process occurs in a chain reaction as sodium and potassium channels open successively along the length of the axon, and it constitutes the electrical signal.[19] As the signal travels away from a particular channel, the amounts of Na+ on the exterior and of K+ on the interior return to their resting levels. The neuron cannot fire again until these resting levels have been restored (usually after one millisecond).



Ion channels

The more frequently a neuron fires, the more intensely we feel the subjective experience that comes along with the neuron's

firing. If there is more than one neuron associated with this subjective feeling (for example, a whole group of neurons concentrated in one center), the frequency of firing for this group is not limited to the one millisecond threshold that a single neuron usually requires. This is because while one neuron must rest for at least one millisecond before it fires again, other neurons from its group may fire during the interim. Therefore, although a single neuron may be limited to a maximum frequency of one millisecond, the group as a whole can surpass this, and the intensity with which we feel our subjective experiences can be much greater than would be afforded by a firing frequency that was limited to one millisecond.

Neurons form connections with each other in two ways. First, when the brain is developing, neurons branch out, extending their dendrites and axon terminals, and make contact with each other. If these connections are found to be useful, they remain; otherwise, they atrophy. This process generally ends when the brain is fully developed. Second, the number of receptors in the synaptic gap can increase or decrease. A neural connection can be fortified by increasing the number of receptors for an excitatory synapse, and it can be weakened by decreasing the number of receptors. At an inhibitory site, increasing the number of receptors will make the synapse a more effective inhibitor of the recipient neuron, while decreasing the number will make it a less effective inhibitor. This process occurs both during and after the brain's development. A single connection can span from one end of the brain to the other, and axons can be several inches long, the longest in the human body being roughly one meter.

One approach that neuroscientists take to studying the brain is to see what parts of the brain become active when the subject is exposed to a certain stimulus. For example, a subject might be shown a set of moving spots on a computer screen while an fMRI machine scans the subject's brain to see which parts are active. In this way, neuroscientists can identify specific parts of the brain as serving specific functions. In the example of moving spots, certain areas in the parietal cortex might "light up," as they say, and therefore, these areas are recognized as "motion detectors." Other areas that detect many different kinds of stimuli—as well as internal mental states such as thinking and feeling emotions have been identified. The term "modules" is often used to refer

to these specific areas.

A module is a network of neurons that responds to a specific stimulus such as color, a human voice, a temperature change, or pin pricks on a certain part of the body. I will borrow this term for the purposes of this book, with a few small modifications. First, I shall call a module a "MOD," for short. Second, I shall generalize and use "MOD" to refer to neural networks that perform any function—not just the function of responding to external sensory stimuli. So, for example, the hippocampus, a structure deep in the brain that has little to do with sensory stimuli, is a MOD whose function is to aid in the formation of long-term memories.

DEFINITION: MOD

A MOD (short for "module") is a network of neurons.

A MOD need not be confined to one small area of the brain. MODs are simply networks of neurons and therefore can be spread out over a wide area. For example, a hypothetical MOD could be composed of only four neurons—one in the frontal lobe, one in the limbic system, one in the right temporal lobe, and one in the medulla (these regions of the brain will be described in the next section)—and as long as their dendrites and axon terminals were connected, these interconnected neurons would comprise a genuine MOD. Conversely, there might also be several thousand MODs taking up the same volume of space in the brain. A MOD can also be composed of several smaller MODs. For example, the occipital lobe (also to be described in the next section) can be thought of as a MOD for vision, and it would be composed of smaller MODs for detecting lines, color, motion, etc. Indeed, it would not be a mistake to treat the entire brain as one big MOD, if one so desired.

Furthermore, a MOD need not be found in a brain or a nervous system at all. Of course, this only makes sense in principle; you will never find a MOD anywhere other than in brains and nervous systems. But suppose, just for the sake of argument, that we

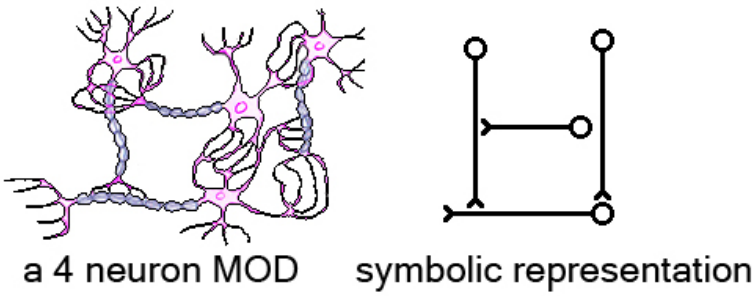


Figure 2: Example MOD

could build a MOD. Suppose, hypothetically, that we had a toolkit with a box full of neurons and all the trinkets the avid neural engineer would require for building a MOD. All we would need to do is sketch out a customized design for a MOD, as in Figure 2, determine how many neurons we need and in what arrangement they should be put together, and set to work. The neurons can be connected in any way we like, and the resulting structure will be a MOD under our definition. As you can see from Figure 3, these MODs might end up looking like the brains for a strange alien species.

But why contemplate such a silly scenario? We do so because the concept of a MOD is pervasive in this book, and it should be understood as generally as possible. The key insight to be gleaned from this fanciful scenario is that a MOD is really *any* possible arrangement of interconnections between neurons, including arrangements that don't in fact exist. We will indeed be considering MODs that don't exist, and we will be asking what kind of mental experiences an organism could have with such MODs.

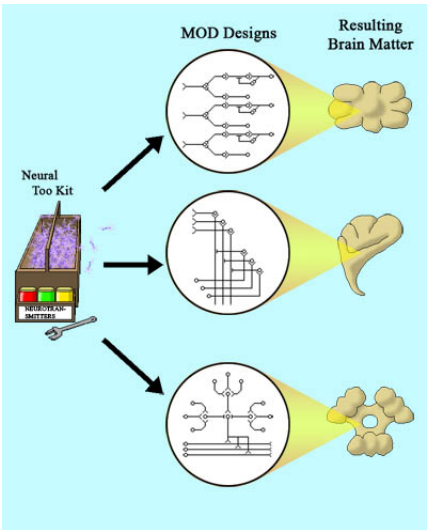


Figure 3: Possible MOD designs built from the neurological tool kit

But we are getting ahead of ourselves. A much more informative way of thinking about MODs

for our current purposes is to consider the major MODs that do exist. Therefore, we shall turn to the brain, an integrated system of MODs working together to bring about our conscious experiences. Let's look at the anatomy of the brain as a system of MODs, touching on each one in turn.

BRAIN ANATOMY AND FUNCTION

Chapter 3:

PHILOSOPHICAL BACKGROUND

INTRODUCTION

The last chapter covered what the reader needs to know about brain anatomy and function. It was a very brief rundown and barely does justice to the discipline of neuroscience, but it will suffice as a prerequisite for understanding MM-Theory. There is another bridge that needs to be built here, however, that will fully enable the reader to move from this neuroscientific background to MM-theory. This bridge consists of the body of philosophical issues that arise on the basis of this neuroscientific background. This chapter is devoted to these issues.

There are four issues, to be precise. First, we will focus on the binding problem, a conundrum with which most neuroscientists are familiar. It is usually phrased as a question: How does the brain "bind" all the information it receives into a unitary whole that we experience as consciousness? For example, when we perceive an apple, we perceive its redness, its roundness, and, if it is rolling across the table, its movement. How is it that we perceive all these qualities as belonging to the same object—the apple—when each of the qualities is, as we have seen, processed by a different part of the brain? How do these disparate MODs bind this information together?

The second issue we will focus on is the analogy drawn by functionalists that compares brains to computers. Functionalism is the belief that things ought to be defined by their functions, and as far as most functionalists are concerned, the brain functions as the body's computer and the mind is the software that runs on it[25].

A background in circuit design will be necessary for understanding this, and so we shall take a moment to go over some basics.

After looking at functionalism, we will find, now that we are familiar with neurology, that the brain looks very deterministic. Therefore, a portion of this chapter will be devoted to the question of how deterministic the brain really is. We will not resolve the many disagreements that surround this question, but we will look at what the neuroscientific facts have to say about the issue.

Finally, we will examine the relation between perception, the brain, and reality. This last section will raise more questions than we will start out with, but these questions will be the perfect lead-in to the rest of this book. The topic of reality and perception is a significant one for MM-Theory.

THE BINDING PROBLEM

Chapter Four:

THE BASIC THEORY OF MIND AND MATTER

THE PARADOX

Assuming that the reader understands the concepts covered in the last two chapters, in particular, the concepts of dualism, neurological determinism, and determinism in general, it is time to delve into the central theory of this book. I don't expect the reader to unreservedly subscribe to the aforementioned concepts, but I do expect that the reader at least understands what these theories purport and also that there is some good reasoning behind the theories—because this is our starting point. We begin by accepting the picture of the brain that the neurosciences have painted: a rather physicalistic and deterministic picture, at least at the level of neurons. This picture almost seems to dispense with the concept of mind and free will as superfluous and therefore unnecessary for explaining how the brain, and thereby human behavior, works.

At the same time, however, we also begin from a dualistic perspective—the perspective according to which there are two distinct entities, the mind and the brain, that seem to have a peculiar synchrony between them. We take this perspective because it is in this context, along with the context of the physicalistic and deterministic picture of the brain that the neurosciences have painted, that the infamous paradox of mind and brain arises. We treat the problem of mind and matter as though we were laypeople who have always taken dualism for granted and who have just been educated in the neurosciences.

The philosopher John Searle says that that the average person in the street is a dualist[30], meaning that dualism is the most intuitive way of understanding the relation between mind and brain. I believe this wholeheartedly. I believe this because I was a dualist long before I even heard of René Descartes, the father of the modern form of dualism.

Humans in general don't need to be exposed to philosophers or their views on the mind and its relation to the body in order to take dualism to heart. It is the most intuitive theory of mind simply because it describes how our minds and bodies feel with respect to each other, much like how, without being educated, we find geocentrism to be the most intuitive theory of the universe—and this, of course, without consulting Ptolemy or other ancient thinkers on the subject. It is intuitive because that's how things look. But if we are slipping into the mindset of the layperson who has just been educated in the neurosciences, then we are confronted with the paradox of mind and brain. The neurosciences tell us that our concepts of mind and free will are superfluous, that all that we need in order for understanding how we process information and control our behavior can be found in the mechanically and chemically driven actions of the brain. This, then, ought to raise perplexing questions for the dualist layperson, who might ask, "How can dualism, which seems to be privately verifiable and intellectually indispensable, be wrong?"

Some readers may be philosophers of mind themselves. Some may be dualists, some monists; some physicalists, some idealists. Whatever your persuasion, it's likely that you won't see the point of starting with a dualist layperson's perspective. Such a perspective, you may say, has been, or at least ought to have been, abandoned a long time ago; philosophers have since come up with much better solutions to the problem of mind and brain. In fact, this book presents such a solution—that is to say, I have my own solution to the problem, and it is not dualist. I dare not say it will be the final word on the subject, but I would like to offer this solution and hope that it will be counted as one of the more reasonable nondualist solutions. So why am I starting from a dualist layperson's perspective? I do so simply because that is where anyone ought to start when the objective is to present a new alternative to the more familiar, mainstream, and entrenched

accounts. Anyone who has such an objective ought to begin as if speaking to laypeople, showing an appreciation of how such people understand the problem to be addressed, especially if there might *be* laypeople reading the account. In summary, I'd like to reassure the reader that I am not *defending* dualism. It seems to me that if the goal is to find a unique path out of dualism, one that has not hitherto been blazed, then the best place to start is *within* dualism.

The dualist layperson who has just been educated in the neurosciences would characterize the paradox as a clash of two assumptions: the assumption that the brain is physically deterministic and the assumption that there is a nonphysical and indeterministic mind that accompanies the brain. Let me explain the paradox. These two assumptions entail that there are two primary mechanisms in control of our behavior which, for the most part, should be mutually exclusive. On the one hand, there is a neurologically deterministic system—your brain—that is governed solely by the laws of nature. On the other hand, there is your mind, governed by reason, emotion, and the power of your will. Let's focus on the former. Deterministic as your brain is, it should be possible, given a particular physical brain state, to accurately predict any future brain state, because your brain, and therefore your behavior, are on a predestined path. Of course, this excludes the influence of extraneous variables and assumes a superhuman ability to compute such states either at present or in the future, but the predictability still holds in principle. Now focus on the mind. Dualism assumes that the mind is as real as the brain, albeit in a completely different form. As a person continues along the path predestined by the brain, that person also observes, thinks, desires, evaluates, feels, and so on. It is therefore conceivable that at any point along this path, he or she might desire to alter it. This may happen regardless of whether this person knows where the path leads or that it is predestined. Having such a desire, he or she can freely choose to satisfy the desire, thereby breaking away from the predestined path.

I know that personally, I have never experienced resistance to my choices or my exercising my freedom because my brain neurons refuse to yield (as in "I'd like to, but the chemicals in my brain won't let me!!!")[31]. Nevertheless, the thought that I can so easily make such a choice seems to entail that my neurons have been

forced to break with their predestined path and have violated a whole slew of natural laws. But just as I have never experienced neurochemical resistance to my choices, I have never experienced violations of the laws of nature. This, therefore, is the paradox: there are two governing mechanisms of behavior that mutually exclude one another from playing a role.

The principle below summarizes this paradox:

PRINCIPLE: The Paradox of Mind and Brain

1. Human behavior is fully governed by a deterministic brain.
2. Human behavior is fully governed by a mind with free will.
3. Juxtaposed together, 1 and 2 result in a paradox.

I suppose some might subscribe to the idea of psychological determinism. The paradox still remains, albeit in a slightly different form. Psychological determinism maintains that the mind is indeed a governing mechanism but that it runs according to its own set of laws which are psychological in nature, involving desires, reasons, stress, fear, lust, sensations, and so on. These governing laws make for another predestined path, a psychological path in this case, that theoretically might diverge from the physical path that is followed by the brain. It is difficult to imagine a scientific test whereby such a divergence could be identified, but it is perhaps more difficult, if not impossible, to imagine the means by which these two mechanisms, so drastically different in essence, maintain a synchrony.

As a matter of fact, it seems as though nothing from one of these realms should affect the other. The physical sciences suffice to explain the processes in the brain, while the psychological factors suggested by psychological determinism suffice to explain the processes in the mind. In other words, each realm is self-sufficient

in its self-governance and the ensuing behavior. The only way one can affect the other, even in an effort to maintain synchrony, is in a manner that has no consequence at best, or by perturbing the other's self-governance at worst. Amazing coincidence thus becomes the only account that we can provide for the parallel activity of the mind and the brain. In this case, the paradox can be restated as follows: we have two self-sufficient causes of behavior, the removal of either of which will have no effect on the other or their common outcome (i.e., the behavior), because the other is fully sufficient for its own self-governance and actualizing the outcome. But if either cause can be removed without affecting the outcome one iota, then that cause is completely ineffectual. In what sense, then, is it really a "cause"?

The objective of this chapter is to resolve the paradox. The theory that is presented at the end of the chapter serves as the core thesis of this book. Of course, if the reader doesn't concur with premise 1 or 2 of the paradox (and there are some who won't), he or she will find no paradox and therefore no need for a resolution. I believe I've presented some good arguments in the last two chapters that support accepting the first of these premises, and the common everyday experiences by which the layperson understands his or her own mind (and which serve as our starting point) make it difficult to dismiss the second. This is why I contend that a solution is still needed. This chapter has been written for readers who see that there is a philosophical problem and who are interested in entertaining my proposal. Rest assured, my goal is not to reject either premise. Rather, my approach will be to focus on premise 2 and rethink the concept of mind in such a way that premise 2 becomes compatible with premise 1. The concept of mind will appear to be more deterministic in the end, but this is not essential to my theory. I intend to leave room for free will, but only in Volume III will I explain how it fits in.

REEXAMINING DUALISM

ABOUT THE AUTHOR

Gibran Shah was born in Saskatoon, Saskatchewan, Canada in 1976. At the age of 17, in 1994, he moved to Calgary, Alberta, finished grade 12, and moved on to the University of Calgary. There, he earned his B.A. in psychology and his B.Sc. in computer science.

Gibran Shah has been interested in the philosophy of mind since his adolescence. Such an interest has lead to a wealth of reading and writing on the subject, all of which has been brought to the table in his latest book, *The Nuts and Bolts of Consciousness.*

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To purchase your own copy, or additional copies, of *The Nuts and Bolts of Consciousness*, please visit www.mm-theory.com.

Philosophy/Metaphysics

The twentieth century has provided us with a plethora of knowledge about the brain and the mind, but we have yet to fully understand the relation between the two. We are still asking the age-old question of how we—ultimately physical and biological machines—come with subjective experience and consciousness.

In this book, you will find an answer to this question. It is proposed that the great difficulty of this question stems from the assumption that the mind, or consciousness, if it is to be explained at all, must be explained in terms of the brain, that the brain produces consciousness. This book presents a novel theory that rests on a complete inversion of this unquestioned assumption, and offers a fresh new look at the problem of how consciousness and the brain relate to each other.

Extrapolating from the theory, one may draw the conclusion that not only does this book explain human consciousness, or the consciousness of any living organism, but that it has profound implications for the very nature of the universe and existence. These implications run the gamut from the existence of God and the afterlife to insights into science and practical applications in one's own life. Needless to say, this book has much to offer—not only for scientists and philosophers interested in the subject of consciousness, but for anyone interested in spirituality and the human soul.

Both the philosophically minded and those that have any interest in the mind-matter relationship will find themselves fascinated with the theory advanced in this well-conceived book.

Cathy Reyes, Lawyer

The most insightful and compelling ideas are generated by those following a path they are passionate about. The Nuts and Bolts of Consciousness *is the result of a relentless passion for the search for a solution to the mind and matter problem.*

Darren Hamilton, Lawyer
Philosopher, Psychologist,
Computer Scientist

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