

A MATERIALIST RESPONSE TO DAVID CHALMERS' *THE CONSCIOUS MIND*

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IN THIS PAPER I will examine and criticize the arguments David Chalmers gives for rejecting a materialistic account of consciousness in his book *The Conscious Mind*. I will draw upon arguments and intuitions from the three main schools of thought in the philosophical study of consciousness—(a) forms of dualism, (b) materialism, and (c) eliminativism. Chalmers' book deals with what are currently the most controversial issues in the study of consciousness, especially among these three schools of thought, so it provides a good guide to the important issues. This paper will concentrate on the debate between dualist and materialist theories of consciousness. I will draw on the views of Joseph Levine and discussions with Ken Taylor for materialist theories, on Chalmers' book for a dualist perspective, and I will use Dennett's writings for eliminativist considerations.

In his book, Chalmers argues that if one is to "take consciousness seriously," one should endorse a dualistic theory like his *property dualism* because materialism cannot explain how consciousness *could* amount to physical structures and processes. In the process, Chalmers argues against the eliminativist position which he claims does not "take consciousness seriously." I will begin by explaining the important concepts in the dualist-materialist-eliminativist debate such as *consciousness*; *logical, metaphysical, and natural supervenience*; and *zombies*. Next, I will explicate what I take to be Chalmers' main argument for property dualism. I will then explain where a materialist could object to Chalmers' argument, and how Chalmers tries to rule out such a response. Finally, I will conclude with considerations of the fundamental intuitions and assumptions each of the three views of consciousness leads to, and I will ultimately argue that of all three views, materialism is the best theory.

First, what is consciousness? Consciousness is often referred to by philosophers as *what it's like* to feel pain or to see the color red. *Qualia*, *phenomenal feel*, and *the subjective quality of experience* are terms used by philosophers which all make reference to consciousness. The basic idea is that when one has an experience, a pain in the foot for example, it seems theoretically possible to separate all of the neuron firings, information processing in the brain, and behavioral responses, from

what will be left—the *feeling* of pain (this is also called the *phenomenal* feel or the *qualia* associated with pain). Dualists disagree with both materialists and eliminativists on whether it is possible to separate consciousness from all the nerve impulses, information processing, etc., which occur in a conscious person’s brain. Eliminativists such as Dennett claim that there isn’t any phenomenon above and beyond all such brain processes and their interaction left to explain. Performing imaginative thought experiments might make us think that there is something other than the things going on in our bodies (some *experience*), but we are mistaken. This fundamental difference of intuitions immediately separates eliminativist theories from theories like Chalmers’, and to a lesser extent from the sort of theory most materialists would defend. We are left with the question of how best to explain (or explain away) “consciousness”; this question is what I refer to throughout this paper as *the problem of consciousness*.

One way in which the problem of consciousness can be viewed is to think of it as the old mind-body problem with a new set of concepts to consider. One of the most important of these in recent debate about consciousness is that of *supervenience*. Supervenience can be understood on many levels. Basically, it describes a dependence relation between two sets of properties. A set of higher level properties supervenes on a set of lower level properties if the higher level properties depend upon the lower level properties. Chalmers defines supervenience as “*B*-properties *supervene* on *A*-properties if no two possible situations are identical with respect to their *A*-properties while differing in their *B*-properties” (Chalmers 33). The notion of supervenience is meant to capture our belief that in processes such as life, higher level properties of organisms (e.g., size, shape, and behavior) really depend upon and can be explained by much lower level properties (such as genes, DNA, nerve impulses, etc.). This rather simple notion of supervenience can be divided into many highly technical sub-categories, each with slightly different interpretations and meanings.

For the purposes of this paper, a grasp of the differences between *logical*, *metaphysical*, and *natural* supervenience will be sufficient to understand the arguments put forth by materialists, property dualists, and eliminativists. Logical supervenience can be characterized by the claim: *B*-properties supervene logically on *A*-properties if it is logically impossible for two situations to have exactly the same *B*-properties without also sharing the same *A*-properties.

Another way of thinking about this is to consider what it would be in God’s power to create. It would be impossible for God to create a world in which, for example, bachelors were married. Due to the meanings of those two terms, it is logically impossible for a bachelor to be

married. Therefore, bachelorhood logically supervenes on a man's marital status. However, it does seem possible that God could have made a world in which the ideal gas laws did not hold.¹ This certainly could not happen in our world, but if God were to change a few of the laws of physics, the ideal gas law could also change.

This brings us to the notion of *natural* (or *nomic*) supervenience. Chalmers describes natural supervenience as the result of two sets of properties being "systematically and perfectly *correlated* in the natural world" (Chalmers 36). Formally, the concept of natural supervenience is: *B*-properties supervene naturally on *A*-properties if any time two situations which could naturally arise in our world share the same *A*-properties, they also share the same *B*-properties. Whether some property naturally supervenes on another property depends upon our world and the natural laws (i.e., the laws of physics) in our world. Natural supervenience has to do with empirical possibility—situations which are causally necessitated in our world (though not in all possible worlds). The example of the ideal gas laws is an example of a naturally necessary phenomena which is not logically necessary (it's conceivable, at least, that it could be different). If *B*-properties naturally supervene on *A*-properties, then while it is conceivable that the same *B*-properties could be instantiated without the same *A*-properties, it could never happen in our world because it would break the laws of physics.

Finally, the notion of *metaphysical* supervenience is based upon rather subtle distinctions between *a priori* and *a posteriori* identities of substances. Metaphysical supervenience stems from the notion of *metaphysical identity*, which Saul Kripke is credited with discovering. In his book *Naming and Necessity*, Kripke distinguishes between two subtly different notions of identity. *Logical* identity is just the same as has been explained earlier—two things are said to be logically identical if, because of the meanings of the terms, it is impossible that they could be distinct things. *Metaphysical* identity, on the other hand, depends upon how our world turns out. The classic example of metaphysical identity is the identity of water and H₂O. Kripke argues that although it is imaginable that the stuff we find in lakes and oceans, which is good to drink, and which we call 'water', might not have had the chemical composition H₂O, once we discover that it does have this chemical composition in *our* world, H₂O will be 'water' in all possible worlds (even those which have a substance with a different chemical composition in the lakes and oceans). Therefore, even though it is imaginable that water is not H₂O, one can *discover* the identity of water and H₂O *a posteriori*, and this identity is as valid an identity as those which can be known *a priori*. So, water is metaphysically identical to H₂O. The fact that the

metaphysical identity of water and H_2O is *a posteriori* explains the apparent contingency of the statement “water is H_2O ” because, had the world been different, that statement might have been false.

Getting back to supervenience, the formal definition of metaphysical supervenience is: *B*-properties supervene metaphysically on *A*-properties if it is metaphysically impossible for two situations/objects to have exactly the same *B*-properties without having the same *A*-properties. For example, properties of physical objects in our universe metaphysically supervene on properties of atoms (or whatever the true fundamental particles are) because it is metaphysically impossible for two physical objects to have the same properties without the same properties of their respective atoms being instantiated. This is different from logical supervenience because it is imaginable that physical objects might not have been made up of atoms, in which case the properties of atoms would make no difference to the properties of physical objects. However, because we have empirically discovered that objects in our world are made up of atoms, then in all possible worlds the properties of those things which classify as physical objects will depend on the properties of atoms. Having established that framework, we can now move on to discuss Chalmers’ arguments.

In the recent debate over the problem of consciousness, materialists often appeal to some form of metaphysical identity or metaphysical supervenience as a way of holding on to materialism while still admitting that the problems Chalmers points out are real. Chalmers disagrees that the notion of metaphysical identity can save materialism, and he spends much of Chapter 2 and the entire section *Objections from a posteriori necessity* in Chapter 4 arguing against such a materialist approach. Before Chalmers begins to develop his own dualistic theory, he argues that materialism *must* hold that consciousness is logically supervenient on the physical; that materialists *cannot* appeal to metaphysical supervenience as a way of avoiding the problems he raises with logical supervenience; and that therefore, materialism fails. In this paper, I will first discuss Chalmers’ arguments against the logical supervenience of consciousness before turning to his arguments against the metaphysical supervenience of consciousness which I believe to be wrong.

In *The Conscious Mind*, Chalmers’ first argument against the logical supervenience of consciousness stems from the logical possibility of “zombies.” A zombie, in the philosophical literature, is supposed to be a being just like a person in all respects (behavior, language ability, appearance, possession of beliefs and desires) except that it lacks all consciousness.² Chalmers imagines his zombie twin, a being physically identical to him who lives on a twin Earth that has an environment phys-

ically identical to ours. Chalmers' zombie twin looks and acts just like the real Chalmers does in our world, but he does not have any of the phenomenal experiences that the real David Chalmers has.

This imaginative exercise is meant to show that zombies are logically possible creatures, and Chalmers argues that the logical possibility of zombies proves that materialism is false. His argument can be summarized as the following premises: (1) Consciousness exists in our world; this is an empirical claim. (2) Because zombies are logically possible, consciousness cannot logically supervene on the physical. If consciousness does not logically supervene on the physical, then one cannot reduce facts about consciousness to physical facts; therefore, one cannot explain the occurrence of consciousness just by appeal to the physical facts. Chalmers contends that materialism is committed to the view that consciousness is logically supervenient on the physical, in which case materialism is false. Although Chalmers provides other arguments for the falsity of materialism, this is his strongest, and it will be worth examining the premises and intuitions behind this argument.

(1) Arguing for the logical possibility of zombies is somewhat problematic because zombies don't exist in our world. The question of whether zombies are logically possible depends upon whether one believes that there are inherent logical contradictions in the notion of a zombie. Nothing containing logical contradictions in its nature (such as a married bachelor) can be logically possible; however, everything else is fair game (flying toasters, water which freezes at 200 degrees, etc.). I agree that there does not *seem* to be any manifest contradiction in the idea of a being who is physically identical to a person yet completely devoid of conscious experience. Indeed, eliminativists will be happy to endorse the possibility of zombies, but with a catch: according to the eliminativist view, our picture of a "zombie" is actually an accurate picture of ourselves. Dennett, for example, does not believe that any phenomenon matching what we call *consciousness* exists, even in us. However, he *would not* endorse Chalmers' claim that there could exist an exact physical replica of a person which lacked something that the person possessed. In Chapter 12 of his book *Consciousness Explained*, Dennett states, "There is another way to address the possibility of zombies, and in some regards I think it is more satisfying. Are zombies possible? They're not just possible, they're actual! We're all zombies" (406). In this passage, Dennett is *not* denying that we experience pain or that there is something it is like to see an apple (as opposed to seeing nothing), only that what is really going on in our heads does not add up to the mysterious thing called "consciousness" which Chalmers worries about. Dennett's stance is clearly adamant: "The time has come to put the burden of proof squarely on those who persist in using the term. The

philosophical sense of the term is simply ridiculous” (Dennett 405). Dennett and other eliminativists argue that everything philosophers call *consciousness* is really just a bunch of complex interactions between brain states, sensory input, and motor output occurring within our heads. The motivation behind his claim is that these sorts of things are exactly what Chalmers attributes to zombies. Regardless of whether conceiving of a zombie would cause you to think of yourself as one, a materialist would be hard pressed to come up with an inconsistency in the logical possibility of zombies.

(2) *Because zombies are logically possible, consciousness cannot logically supervene on the physical.* Consider Chalmers and his zombie twin: there is a high-level difference between them—the zombie lacks all conscious experience—and yet all of their low-level physical properties are the same. Therefore, the high-level property of being conscious cannot be logically supervenient on physical properties. There is some room for argument here, and Chalmers considers possible ways of denying this premise: “An opponent might agree that nothing in this sort of physics entails the existence of consciousness, but argue that there might be a new kind of physical theory from which consciousness falls out as a consequence.” He continues, “The trouble is that the basic elements of physical theories seem always to come down to two things: structure and dynamics of physical processes. . . . But from structure and dynamics, we can only get more structure and dynamics. . . conscious experience will remain untouched” (Chalmers 118). Chalmers dismisses the possibility that we could possibly expand our knowledge of physics in such a way that we would see that consciousness does logically supervene on the physical. Ultimately, I believe that materialism will be justified by a better understanding of physics. However, materialism’s success will not rest on the logical supervenience of consciousness. We can at least grant Chalmers that it would require a very different sort of physical theory from the one we presently have to physically explain consciousness.

(3) *If consciousness does not logically supervene on the physical, then one cannot reduce facts about consciousness to physical facts, and hence one cannot explain the occurrence of consciousness just by appeal to the physical facts.* This premise depends upon what a reductive explanation of consciousness would consist of. Chalmers argues that given only the physical facts about a person, there is no way you could ever infer the existence of consciousness in that person because of the logical possibility of zombies. Since zombies are logically possible, and because a zombie and its human counterpart would be physically identical, just knowing all of the physical information about a person is not enough to infer the existence of consciousness. Therefore, one

cannot explain consciousness physically. Chalmers seems to equate *explanation* with a bottom-up process of illustrating how low-level properties produce high-level properties.

The notion of what constitutes a *reduction* is very important in the debate between physicalists and dualists, and different notions imply different things about the prospects of reducing consciousness to physical terms. In one sense, some fact is reducible to other facts when the lower facts explain the higher fact (in the sense of “explain” mentioned above). This is how Chalmers uses the term *reduction*. According to this conception, it is impossible to reduce consciousness to physical structures and their movements. However, there is another sense of *reduction* which does not appeal to the notion of explanation, it appeals to how our world turns out.

The possible materialist response to Chalmers’ argument not only offers a viable alternative to property dualism, but also avoids the most counter-intuitive consequence of property dualism. This response involves acknowledging that zombies are *logically possible* and falling back on the claim that zombies are still *metaphysically impossible*. The article “On Leaving Out What It’s Like” by Joseph Levine³ illustrates why a materialist need not give up hope due to Chalmers’ arguments. Levine contends that arguments based upon what is conceivable (e.g., the logical possibility of zombies) only establish epistemic conclusions rather than metaphysical conclusions. Merely being able to conceive of a zombie does not yet prove *that a zombie could really exist, only that we can imagine that one could exist*. Levine argues that an additional step is required to get from such an epistemic conclusion to the metaphysical conclusion which an anti-physicalist needs to refute materialism (i.e., the conclusion that a zombie could exist). Levine’s objection to philosophers like Chalmers can be seen as the questions: Why should what is conceivable constrain how our universe really turns out? Just because we can conceive of a zombie, why should that limit how consciousness is instantiated? Or perhaps better: Just because we can’t conceive of how consciousness could be a physical phenomenon, why should that mean that it can’t be a physical phenomenon? Levine calls our current inability to reduce mental phenomena like consciousness to physical processes an *explanatory gap*, but he argues that the existence of an explanatory gap does not constrain how the metaphysics of our universe will turn out.

The concept of metaphysical identity, when applied to consciousness, can be understood to show that consciousness might be metaphysically identical to physical phenomena even if it is conceivable that consciousness is not a physical phenomenon (as the logical possibility of zombies shows). This response explains the contingency Chalmers

points out, while at the same time avoiding the conclusion that consciousness cannot be physically instantiated. Materialist theories will hold that the identity of consciousness and physical processes is similar to the identity of water and H_2O . It is logically possible (i.e., conceivable) that water might have been XYZ (God could have made the world in that way); however, water just is H_2O in our world; therefore, in all possible worlds, the term 'water' refers to H_2O . Similarly, materialists would argue that although it is logically possible for a being physically identical to you or me to exist without being conscious, in our world consciousness just is physically instantiated. Therefore, in all possible worlds, this same physical phenomena should be called "consciousness." A zombie world is logically possible, though metaphysically impossible according to this revised version of materialism.

Presumably, materialists who fall back on the notion of metaphysical identity believe that someday a conceptual revolution in physics and psychology will allow us to physically explain consciousness. Only after we possess a true and complete theory of nature (i.e., of physics) will a physical reduction of consciousness be possible; however, because we currently lack such a theory, Chalmers' argument from the conceivability of zombies does not refute materialism. We cannot be expected to understand the connection between consciousness and physical phenomena *a priori*, but the limits of our conceptual powers do not impose limits on how consciousness is instantiated.

A common analogy is that of explaining the phenomenon of life. Hundreds of years ago it would have been inconceivable that a complex phenomenon such as life could be explained by appeal to chemistry and minute particles rather than some miraculous vital spirits or other such substance. However, it appears likely that modern science will succeed in explaining life without appealing to any mysterious concepts such as souls or vital fluid, and we will be able to offer a reductive explanation of life in terms which do not make any reference to life. Materialists believe that someday we'll be able to do the same thing with consciousness, whereas Chalmers does not feel this will ever be possible.

In Chapters 2 and 4, Chalmers explicitly argues against materialist responses of this sort. For this reason I view these sections as the most important sections of his book. Chalmers *must* rule out the above materialist response to the possibility of zombies if his theory is to be preferred. If he is successful in ruling out the metaphysical identity move, then I think many philosophers would agree that the dualistic theory he later develops follows from the available evidence. But Chalmers does not provide a convincing argument that the notion of metaphysical identity is unable to save materialism, and for this reason he fails to establish his own theory as a stronger alternative to materialism.

In arguing against the materialist's metaphysical identity maneuver, Chalmers makes use of a distinction between *primary* and *secondary intensions*. An intension is something like *the meaning or reference of a concept*. The primary intension of a concept picks out whatever object or substance that concept refers to in the possible world that one is in. This idea is easier understood with an example such as water. The concept WATER refers to the clear, tasteless, drinkable liquid which is found in rivers, lakes, and oceans. This primary intension does not explain what the chemical composition of the stuff in the oceans happens to be. If it turned out that there was XYZ in the ocean, then the term 'water' would refer to XYZ; likewise, if there was H₂O in the oceans, 'water' would refer to H₂O. So the primary intension can really just be thought of as picking out what Chalmers refers to as "watery stuff" in whatever possible world one is in; therefore, the primary intension of a concept is *a priori*.

The secondary intension of a concept is not *a priori*; rather, its reference depends upon how our world is. The secondary intension is discovered by applying the primary intension of a concept in our world. For example, we discover that what we call 'water' actually has the chemical composition H₂O, and this is its secondary intension. We can then apply the same reference across all possible worlds, so that in a world in which XYZ is found in the oceans, the term 'water' still only refers to H₂O, not what's in the oceans. Given that the primary intension of water (i.e., watery stuff) picks out H₂O in our world, the concept WATER picks out H₂O in all possible worlds according to its secondary intension.

Once we understand this structure, we can determine the difference between logical (*a priori*) and metaphysical (*a posteriori*) necessity. A statement is logically necessary if it is true in all possible worlds when it is evaluated according to its *primary* intensions. Conversely, a statement is metaphysically necessary if it is true in all possible worlds when it is evaluated according to its *secondary* intensions.

Chalmers' strongest attack on materialists who wish to employ a Kripkean metaphysical identity move in the case of consciousness stems from the natural idea that having phenomenal experiences is all that it takes to be conscious in any possible world. According to this idea, if human consciousness consisted of physical processes and Martian consciousness, for example, consisted of immaterial processes, as long as Martians experienced phenomenal feelings, their consciousness would be as much a form of consciousness as ours is.

But this argument is based on a misuse of language. If Martian consciousness consisted of immaterial processes, we would be misdescrib-

ing them if we attributed phenomenal experience to them. The term ‘phenomenal experience’ corresponds to the term ‘watery stuff’ as it is used in the water-H₂O analogy, and Chalmers has already admitted that ‘watery stuff’ is not necessarily water in all counterfactual worlds according to the secondary intension of ‘watery stuff’. Chalmers must either find some mistake in the Kripkean theory, or apply it consistently to all examples. There is no reason we should consider consciousness to be some special sort of phenomenon which should be picked out by its primary intension rather than its secondary intensions in all possible worlds.

Chalmers makes one last effort to rule out the materialist response. He writes:

We can simply forget the semantics of these terms, and note that the relevant possible world [the zombie world] clearly lacks *something*, whether or not we call it “consciousness.” The Kripkean considerations might tell us at best how this world and the relevant features should be appropriately described, but they have no effect on its possibility; and the mere possibility of such a world, no matter how it is described, is all the argument for dualism needs to succeed. (Chalmers 134)

The materialist response to this argument is to say that Chalmers is wrong in asserting that this zombie world actually lacks something. What the Kripkean considerations show is that it is an exact duplicate of our world which is *misdescribed* as lacking consciousness when really it does not. The only thing lacking is a correct description of the phenomenon responsible for all of the zombie’s behavior—his consciousness. This is a semantic issue, but the metaphysics of this case cannot be such that anything is lacking in the zombie world as long as it is physically identical to our own.

Given that materialism remains as a plausible view of consciousness, how is one to decide which theory best describes consciousness as we experience it? I will argue that given the choice of dualism or materialism, materialism can best account for our intuitions about consciousness. In the following section, I will examine what I believe to be the main strengths and weaknesses of both of these schools of thought.

First, Chalmers is able to offer perhaps the most appealing explanation of consciousness of the three schools of thought. Chalmers endorses what is known as property dualism, which in his case boils down to the view that consciousness *naturally* supervenes, but does not *logically* supervene on the physical. Property dualism differs from interactionist theories such as Descartes’ in which two distinct types of *substance* exist. Chalmers and other property dualists hold that while there is only one type of substance (physical matter), there are *properties* of

objects which cannot (in principle) be explained in physical terms. He believes that there are *psycho-physical laws* which correlate certain physical states with phenomenal states. These laws are not laws of physics but must still be accepted as fundamental, for they cannot be reduced to any more basic laws or principles. Chalmers agrees that accepting the existence of such additional fundamental laws goes against our current scientific view of the world (the view that everything is explainable by physics), but he argues that it is necessary to satisfactorily account for consciousness.

Chalmers does not provide a full-fledged theory of consciousness, but he claims to provide an outline for how such a theory might go. He concentrates on the correlation between consciousness and awareness (where awareness is supposed to be explainable by psychology). The reason that property dualism might seem to provide a simpler explanation of consciousness is that instead of having to reduce consciousness to physical phenomena, which seem completely different, property dualists can claim that consciousness can only be reduced to low-level phenomenal properties which must be accepted as fundamental (in need of no further explanation). Scientific reduction is hard because one cannot just appeal to new fundamental laws in explaining consciousness.

Although Chalmers' theory is appealing because it provides an alternative to the difficult task of reduction, the fatal flaw that dissuades most philosophers from adopting property dualism is *epiphenomenalism*. Epiphenomenalism is the view that consciousness is not causally responsible for any of our actions/behavior. Most people know that the pain one has when one puts one's hand in a fire is the cause of one's withdrawing that hand with haste. Even if this is not thought of as the only cause, it must at least be one of the causes. In effect, we believe that our phenomenal experiences of the world make a difference in our behavior. If the fire did not hurt, why would we pull our hand away?

Chalmers acknowledges that this is a problem for his theory, and tries to downplay its significance. At one point he claims that "any view that takes consciousness seriously will at least have to face up to a limited form of epiphenomenalism" (Chalmers 158). Chalmers' theory leads to epiphenomenalism because of these two claims: (1) consciousness is only naturally supervenient on the physical, and (2) the physical realm is causally closed (i.e., only physical phenomena can cause other physical phenomena). These two views imply that subtracting consciousness from the world would not affect any of the causal relations within the world, so any phenomenon would have a causal explanation which make no reference to the existence of consciousness. Hence, it seems that consciousness does no causal work in bringing about what happens in our world.

There are ways Chalmers could avoid such a conclusion such as adopting a Humean view of causation. If causation merely consisted in the constant conjunction of the cause and its effect, then even if consciousness were only naturally supervenient, in our world it would always be present in the right circumstances; hence, it would be a part of the cause of whatever behavior follows it. But there are problems for any such view of causation which Chalmers does not want his theory to depend on. Imagine the case of identical twins and their hair color. Just because in all cases the second twin born has the same hair color as the first, this does not mean that the first twin caused the second twin's hair color to be what it is.⁴ Chalmers could also argue that our behavior is causally overdetermined; that is, although purely physical phenomena are enough to cause all of our behavior, consciousness also causes it, so that our behavior is overdetermined. But neither of these views capture our common sense intuitions about the nature of causation and how phenomenal states are responsible for our actions. Indeed, Chalmers rejects both of these possibilities.

Chalmers seems to accept the fact that on his theory "experience is superfluous in the explanation of behavior, whether or not it has some subtle causal relevance" (Chalmers 159). The strongest worry which this brings up for dualist theories has to do with what Chalmers calls *phenomenal judgments*. Phenomenal judgments are those judgments we make about our phenomenal states. How could the actual experience of a phenomenal state play no role in the forming of such a judgment? Chalmers devotes an entire chapter to this problem, but in my opinion he merely avoids the issue and tries to convince us that our strong intuitions that consciousness cannot be epiphenomenal are not good reasons for rejecting his theory. He states: "Epiphenomenalism may be counter intuitive, but it is not *obviously* false, so if a sound argument forces it on us, we should accept it. Of course, a counterintuitive conclusion may give us reason to go back and re-examine the argument, but we still need to find something wrong with the argument on independent grounds." This is exactly what materialists have done with the concept of metaphysical identity—provided a means of asserting that consciousness is physically instantiated, even though it's conceivable that it might not be. Therefore, Chalmers' argument is not sound, for it fails to rule out such a materialist theory.

Because Chalmers' theory leads to epiphenomenalism, materialism remains the most plausible position to take toward consciousness. Materialists must face the difficulty of reducing consciousness to more basic physical phenomena, so that while the details may be complex, the metaphysics of our world will be simple. (There is only one type of property—physical properties.) There is no need to posit any addition-

al fundamental laws or principles, and consciousness will not be epiphenomenal because the causal link between brain processes and behavior is clear. The problem materialism faces is that presently we have no idea how consciousness can be merely physical phenomena. There is an *explanatory gap*, as Levine puts it, between modern day physics and consciousness. Nonetheless, materialists would argue that we should not be pessimistic about the possibility that there will be a conceptual revolution in the future that will allow us to bridge this explanatory gap.

While one cannot forecast the coming of a conceptual revolution in physics, physiology, and psychology which would lead to the reductive explanation of consciousness, history has shown that similar revolutions in thinking have occurred. Before Charles Darwin, people assumed that complex organisms like humans, and complex structures like eyes could only be the result of some intelligent designer. Darwin gave scientists a new way of viewing complex organism structures which illustrated how they could have evolved from simpler organisms and structures. I believe that sometime in the future a similar conceptual revolution will take place in the study of consciousness, and we will be able to understand how consciousness is a physical phenomenon. This is the task that the relatively new field of cognitive science is confronted with, and while difficult, reducing consciousness to physical phenomena is not the impossible task Chalmers would have us believe.

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NOTES

1. The ideal gas law states that the pressure of a mole of gas depends on its temperature and its volume ($pV = kT$). This is an example which is often used in Chalmers' and other philosophers' writings about supervenience.
2. One may think that consciousness is intimately tied up with beliefs and desires, and so a being lacking consciousness could not truly be said to have beliefs or desires. In this case, beliefs and desires should be read in a deflationary manner which does not perfectly correlate with our beliefs and desires, but which none the less allows beliefs and desires to fulfill the same causal roles in producing behavior.
3. M. Davies and G. Humphreys, eds. *Consciousness: Psychological and Philosophical Essays*. Oxford: Blackwell, 1993.
4. Although it would be the case that had the first twin's hair color been different, the second twin's hair color would also have been different.

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