

**Problems with Unity of Consciousness Arguments  
for Substance Dualism**

The brain constructs a tenement for mind but fails to disclose the tenant.

- Sherington, *The Endeavor of Jean Fernel*

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Consciousness is often taken to be an impediment to materialism and to provide a motivation for some form of dualism. Contemporary arguments for dualism typically focus on the qualitative character of consciousness. Materialists, it has often been argued, face insuperable objections in explaining why there is ‘something that it’s like’ to be conscious, and why what it’s like to be in one kind of conscious state is different from what it’s like to be in other kinds of conscious states (see e.g. Chalmers 1996). Although some of those who endorse arguments of this kind are substance dualists, more commonly they espouse a dualism only of properties, and either remain silent on the nature of the subject of experience or identify subjects of experience with purely material entities, such as brains or organisms. This chapter sets arguments from the qualitative character of consciousness to one side, and focuses instead on arguments for dualism that appeal to the unity of consciousness. Unlike arguments from the experiential nature of consciousness, unity of consciousness arguments are explicitly designed to establish subject dualism rather than property dualism; indeed, advocates of unity of consciousness arguments are often silent about the nature of conscious properties themselves.

Objections to materialism that appeal to the unity (or ‘simplicity’) of consciousness have a venerable history; in fact, they seem to predate objections to materialism that focus on the qualitative character of consciousness. In the early modern period one can find unity of consciousness arguments in the writings of Descartes and Leibniz, and in the recent literature they have been defended by David Barnett, William Hasker, and Richard Swinburne (among others). The idea that the unity of consciousness is an impediment to materialism—and by the same token supports

dualism—clearly has a deep and abiding appeal. I will argue that that appeal is not warranted.

### **1. Descartes on the Unity of Consciousness**

Descartes's unity of consciousness argument for dualism is to be found in the sixth of his *Meditations on First Philosophy*. Although this argument has been overshadowed by the other two arguments for substance dualism that Descartes gives in the *Meditations*—the argument from doubt and the argument from the conceivability of disembodiment—Descartes claims that his unity of consciousness argument was itself sufficient to establish substance dualism. The argument runs as follows:

there is a great difference between the mind and the body, inasmuch as the body is by its very nature always divisible, while the mind is utterly indivisible. For when I consider the mind, or myself insofar as I am merely a thinking thing, I am unable to distinguish any parts within myself; I understand myself to be something quite single and complete. Although the whole mind seems to be united to the whole body, I recognize that if a foot or arm or any other part of the body is cut off, nothing has thereby been taken away from the mind. (1996: 59).

Descartes's claim that the mind is "utterly indivisible" is on its face puzzling, for it seems evident that the mind can be divided in multiple ways. We can divide the mind into its various faculties, distinguishing action from perception, and distinguishing both of these faculties from the faculty of thought. We can divide the mind into its various acts, distinguishing making an inference from retrieving a memory; and we can distinguish both of these acts from the act of making a decision. And we can

divide the overall stream of consciousness into its various components, distinguishing between experiences associated with distinct perceptual modalities, and between perceptual experiences, bodily sensations and affective experiences. Rather than the mind being “utterly indivisible”, it would seem to be more accurate to say that there is no end to the ways in which the mind is divisible.

Descartes was aware of this general line of response, but he denied that it undermined his argument. As he put it,

As for the faculties of willing, of understanding, of sensory perception and so on, these cannot be termed parts of the mind, since it is one and the same mind that wills, and understands and has sensory perceptions. By contrast, there is no corporeal or extended thing that I can think of which in my thought I cannot easily divide into parts; and this very fact makes me understand that it is divisible. (1996: 59)

At first glance it might be puzzling what Descartes has in mind here, for it's not clear why he thinks that his critic need deny that it is one and the same mind which wills, senses and understands, or indeed why they need deny that it is one and the same mind which makes inferences, retrieves memories, makes decision, and has experiences of different kinds. Why couldn't the critic agree with Descartes that although it is indeed I myself who am the subject of willing, sensing and understanding, it is nonetheless the case that I engage in these activities in virtue of the fact that one part of me wills, another senses, and a third understands? Descartes seems to assume that the mind as a whole is the basic (non-derivative) subject of willing, sensing and understanding. That claim might indeed be correct, but it is not at

all clear what entitles Descartes to assume its truth. Claiming that it is “one and the same mind which wills, which senses, which understands” certainly fails to provide it with any support.

A second problem with Descartes’s argument is that it assumes that any parts that the mind might have would need to be structured in ways that are introspectively accessible. Even if none of the distinctions that folk psychology recognizes fail to demarcate distinct parts of the mind, it is possible that the mind might decompose along other lines. It is possible that Descartes is at this point leaning on his views about the transparency of the mind, and assuming that if the mind has parts then the divisions between these parts would need to be introspectively apparent. But if this is indeed the assumption on which Descartes is leaning then so much the worse for his argument, for few contemporary theorists are persuaded that the mind is transparent to introspection in the required sense.

But perhaps Descartes’s central point is not that the mind is indivisible, but rather that the parts into which it can be divided are not capable of independent existence. To use E.J. Lowe’s (1996) useful phrase, perhaps Descartes is denying only that the mind has “substantial parts.” This interpretation of the argument perhaps receives some support from its capacity to illuminate Descartes’s puzzling reference to the fact that “if a foot or arm or any other part of the body is cut off, nothing has thereby been taken away from the mind.” (1996: 59). Consider a human body. Although it forms a unity, its parts can exist in isolation from each other. (Amputated limbs can survive in freezers and decapitated heads can be preserved in formaldehyde.) By contrast, the ‘parts’ of a mind cannot exist independently of each other. An act of willing cannot exist independently of a mind that wills; the making of a decision cannot exist

independently of a mind that decides; and neither perceptual experiences nor propositional attitudes can exist in isolation from the minds to which they are attached. Moreover, these claims appear to be conceptual truths rather than empirical generalizations that might be subject to revision in light of future findings. Thus understood, Descartes's argument can be understood as an implicit rejection of an atomistic conception of mental phenomenon, according to which mental states, acts and episodes can exist independently of the particular mind in which they are located—or indeed independently of any mind at all.

I will return shortly to the question of why the rejection of atomism might be thought to put pressure on the materialist, but let us first explore in more detail the claim that the mind lacks substantial parts. A critic might suggest that even if individual mental items (experiences, thoughts, and so on) are incapable of independent existence, perhaps the results of the split-brain experiments show that the mind has substantial parts of *some* kind. In the words of one of the leading split-brain surgeons, perhaps the split-brain data show that “when you divide the brain surgically by midline section of the cerebral commissures the mind also is correspondingly divided” (Sperry 1984: 661). And if that is the case, wouldn't it show that the mind has substantial parts?

Let us first note that there is disagreement about precisely how to interpret the split-brain data. Sperry holds that split-brain patients have two, independent, streams of consciousness, one of which is associated with left-hemisphere activity and one of which is associated with right hemisphere activity. Although this ‘two-streams’ view dominates the literature, other accounts of the split-brain data have been offered. One alternative to the two-streams view is that the split-brain procedure creates a fragmented stream of consciousness, in which patients have pairs of simultaneous

experiences that are each unified with a third experience but not with each other (Lockwood 1989; Schechter 2014). I myself have defended a third view of the split-brain, according to which consciousness in the split-brain remains unified and the appearance of disunity is created by rapid switches between left-hemisphere activation and right-hemisphere activation (Bayne 2008). Evaluating the respective merits of these accounts would take us too far away from our present concerns, suffice it to note that Sperry's claim is not uncontroversial.

But let us assume—as the majority of commentators do—that split-brain patients have two streams of consciousness. Would this show that the mind has substantial parts? No, for even if the split-brain procedure brings two minds into being, further argument is needed in order to show that the descendent minds (or parts thereof) were parts of the ancestor mind. Consider what happens when a single nation gives rise to two nations, as when for example Czechoslovakia gave rise to Czech Republic and Slovakia. The two resulting states derive from the ancestor state, but it is a further question whether either of the descendent states was a proper part of the ancestor state. (Typically they won't have been, for nation states don't ordinarily contain states as proper parts.) Another analogy: one can create two houses from the materials provided by the destruction of one house, but it is a further question whether either of the resulting houses were parts of the ancestor house. (Typically they won't have been, for houses don't ordinarily contain houses as proper parts.) The split-brain operation might show that it is possible to create two minds from the constituents of a single mind, but this doesn't show that the original mind was composed of substantial parts. Indeed, the holism of the mental undermines the suggestion that any of the

mental items that are associated with the two descendent minds might also have been associated with the ancestor mind.

I have suggested that Descartes's claim that the mind lacks substantial parts is left unscathed by the split-brain data. This obviously doesn't vindicate Descartes's claim, but it is *prima facie* plausible, and I am happy to accept that minds lack substantial parts. What implications might the mind's lack of substantial parts have for the prospects of materialism? Why might Descartes have thought that the mind's lack of substantial parts is inconsistent with materialism?

I suspect that Descartes was reasoning as follows: "If materialism is true then the mind must be a (non-fundamental) physical entity—it must be an organism or a (non-fundamental) part thereof. But all non-fundamental physical entities have substantial parts. Organisms clearly have substantial parts, as do brains and all of their macroscopic parts. (Indeed, the divisibility of the majority of brain parts is manifest in their bilateral nature, with the pineal gland functioning as a noteworthy exception to this general rule.) So if the mind lacks substantial parts then materialism is false."

But if this is how Descartes reasoned then his argument was fallacious. The argument might pose an objection to identity theorists, but the materialist need not be an identity theorist, and indeed most materialists are functionalists rather than identity theorists. From the functionalist perspective the identification of a mind with a brain is a category mistake—it reifies minds. Minds are not substances, but are systems that emerge from the appropriate functioning of an organism (or a part thereof). The existence of a mind is grounded in and supervenes on the activity of an organism (or a part thereof), but minds are not things in the way in which organisms (and their parts)

are things. From the functionalist perspective it would be preferable to say that an organism is minded or has mental properties than to refer to 'its mind'. Crucially, the fact that the material basis of a mind has substantial parts no more entails that minds themselves have substantial parts than the fact that the economy has a material basis entails that an economy has substantial parts.

## **2. Leibniz on the Unity of Consciousness**

Let us turn now to Leibniz's 'unity of consciousness' argument. In one of the most celebrated passages in the *Monadology* Leibniz presents the following objection to materialism:

... we must confess that the perception, and what depends on it, is inexplicable in terms of mechanical reasons, that is, through shapes and motions. If we imagine that there is a machine whose structure makes it think, sense and have perceptions, we could conceive it enlarged, keeping the same proportions, so that we could enter into it, as one enters into a mill. Assuming that, when inspecting its interior, we will only find parts that push one another, and we will never find anything to explain a perception. And so we should seek perception in the simple substance and not in the composite or in the machine.

(Leibniz 2000, paragraph 17)

Although this is clearly an argument for substance dualism rather than an argument for property dualism, at first glance it is difficult to see why it qualifies as a unity of consciousness argument, for it contains no obvious appeal to the unity of consciousness. However, it is reasonable to treat this as a unity of consciousness objection to materialism (as it often is) on the grounds that the argument involves the

claim that the conscious subject must be a unity, not just in the sense that it must be a single thing but in the more fundamental sense that it must be simple. On the basis of that claim Leibniz argues that the subject cannot be a material entity, for none of the material substances that might plausibly be identified with the subject of experience is simple.

How does Leibniz attempt to establish that the self is simple? His argument is curious. He begins with the relatively plausible claim that the operations of a mind that is constructed in the manner of a mill could never explain consciousness. Leibniz's worry here is best understood as a version of the explanatory gap objection to materialism (Levine 1983; Chalmers 1996). The idea, in a nutshell, is that mechanistic explanation can account only for structural-cum-functional phenomena, and because mechanistic explanation is the only form of explanation that is available to the materialist when it comes to accounting for mental phenomena, it follows that the materialist can account for mental phenomena only if such phenomena can be fully analysed in structural-cum-functional terms. But of course there are good reasons to doubt whether mental phenomena *can* be fully analysed in structural-cum-functional terms. Thus, we will never find anything to explain a perception by appealing "only to parts that push one another", as Leibniz puts it.

So far, one might think, so good—but how do these considerations motivate the claim that the self must be simple? Leibniz might indeed have shown that the materialist faces a serious (and potentially unbridgeable) explanatory gap, but how would positing a simple subject of experience help? Leibniz moves directly from the failure of mechanical explanation to the conclusion that self must be simple—"so we should seek perception in the simple substance and not in the composite or in the machine"—

but I fail to see the motivation for this inference. It might be justified if it were obvious how the activity of a simple substance could explain consciousness in all its myriad manifestations but that is patently not obvious, and Leibniz fails to provide even a sketch of how such an explanation might go. Indeed, my hunch is that the dualist is forced to treat the relationship between the subject of experience and its states of consciousness as primitive. But doing that, it seems to me, is no advance at all on versions of materialism that posits metaphysically brute relations between physical-functional states and states of consciousness. If Leibniz had offered us an account of how the operations of a simple substance explained consciousness then we might be in a position to compare the merits of that account those of the accounts offered by materialists, but he didn't and so we can't.<sup>1</sup>

### **3. Barnett on the Unity of Consciousness**

With the arguments of Descartes and Leibniz in the background, let us now turn our attention to three of the unity of consciousness arguments that have been defended in the recent literature. Might contemporary versions of the unity of consciousness objection represent improvements over the versions developed by Descartes and Leibniz?

One of the more complex unity of consciousness objections to materialism is due to David Barnett. The starting point of Barnett's argument is what he calls *The Datum*—the intuition that a pair of people cannot be conscious:

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<sup>1</sup> As Angus Menuge has reminded me, dualists who are also theists might argue that a dualist conception of consciousness is overall simpler than a materialist conception, since the theist will need

You might pinch your arm and feel a pain. I might simultaneously pinch my arm and feel a qualitatively identical pain. But the pair we form would not feel a thing. Pairs of people *themselves* are incapable of experience. (2010: 161; emphasis in original)

Barnett argues that the only plausible explanation for *The Datum* is that in order to be conscious an entity must be simple. He then uses that conclusion to reject materialism, for—echoing Descartes and Leibniz—he claims that no version of materialism is consistent with the simplicity of the self.

Barnett’s route from *The Datum* to the simplicity of the self is not straightforward. As I read it, his argument begins with the claim that there are only four features that a materialist could reasonably appeal to in order to explain *The Datum*. She could invoke the fact that pairs of people lack: the right number of immediate parts (*number*); immediate parts standing in the right kinds of relations to each other (*relations*); immediate parts of the right nature (*nature*); immediate parts that have the right kind of structure (*structure*). Barnett argues that none of these features can account for *The Datum*, even when they are considered collectively. But if these features cannot account for *The Datum*, then—Barnett concludes—the human body is “no better a candidate for being a subject of experience than a pair of people” (2010: 168). But if the human body is not a plausible candidate for being a subject of experience then something that is ordinarily associated with a human body must be.

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to posit basic relations between states of an immaterial substance and consciousness in order to account for God’s consciousness.

Barnett says little about what that something might be, but the obvious candidate for this role is an immaterial self.

The crucial step in this argument is clearly the claim that none of the four features just mentioned can account for *The Datum*. Barnett argues for that claim by considering a number of entities that are in some sense ‘intermediate’ between a pair of human beings on the one hand and a normal human body on the other, suggesting that in each case it is “absurd” to suppose that the entity in question might be conscious. The evident absurdity of ascribing consciousness to each of these intermediate entities is meant (I take it) to help motivate the (far-from-evident) absurdity of ascribing consciousness to a normal human body, since there is no relevant difference between the intermediate entities and a normal human body. So, at least, I take Barnett to be arguing.

One of the intermediate entities that Barnett considers is Ned Block’s (1978) ‘miniature men in the head’ creature. In this scenario we are to imagine

that the head of an otherwise normal human is filled with a group of little men. ... Also inside the head is a bank of lights connected to inbound sensory neurons, a bank of buttons connected to outbound motor neurons, and a bulletin board on which a symbol (designating the current state of the system) is posted. Each man is given a simple set of instructions: if a given symbol is posted, then if certain lights are illuminated, press a given button. Together, the billions of men function, on a relevant level, just as a normal human brain functions. Yet the idea that this collection of tiny men might also be conscious is absurd. (Barnett 2010: 168)

Barnett concludes that since a normal human brain functions “in just the way in which a system of miniature men functions,” and since it would be “absurd” to ascribe consciousness to the system of miniature men, it follows that we cannot appeal to functional (that is, structural and relational) considerations to explain why it is not appropriate to ascribe consciousness to a pair of human bodies. And since, Barnett claims, the same point can be made with respect to both of the other features that materialists might plausibly appeal to in accounting for *The Datum* (that is, *Number* and *Nature*), it follows that the materialist cannot justify the intuition that individual human beings, but and not pairs of human beings, can be conscious.

It seems to me that this line of argument is wholly unconvincing. For one thing, it is highly doubtful that the various ‘intermediate’ entities that Barnett consider really do elicit the kind of intuitive response that Barnett takes them to or—more importantly—that his argument requires. I certainly don’t share his view that it is absurd to ascribe consciousness to the system of miniature men. I agree that it’s not *obvious* that the system of miniature men would be conscious, but little of significance follows from that claim, for it’s equally true that it’s not obvious (*a priori*, that is) that *anything* should be conscious. This point is really nothing more than a re-statement of the claim that facts about consciousness are not *a priori* entailed by any other kinds of facts—they are conceptually primitive. (Those who embrace behaviorism or analytical functionalism regarding consciousness will reject this claim, but it is pretty much common ground between everyone else.) Crucially, Barnett’s argument doesn’t require that it’s not obvious that the miniature men system is conscious; instead, it requires that it’s obvious that it’s *not* conscious. And that claim is highly controversial. Why should we assume that consciousness would be absent if indeed

the billions of tiny men function “just as a normal human brain functions”? To assume that is to assume that functionalist accounts of consciousness are false. Functionalism might indeed be false, but rejecting it would be question-begging in the present context. Barnett’s argumentative strategy requires that our intuitive response to the tiny men scenario should not differ from our intuitive response to the scenario involving a pair of individuals, and that it is as ‘absurd’ to attribute consciousness to the system of tiny men as it is to attribute it to a pair of human beings. I don’t find that claim at all intuitively plausible, and the fact that these two scenarios differ from each other along dimensions which materialists reasonably take to be relevant to the presence of consciousness surely motivates treating them very differently.<sup>2</sup>

We might also note that the very structure of Barnett’s own argument seems to presuppose that our intuitive response to the pair of people is not on a par with our intuitive response to the miniature men scenario, for if one thought that it was equally “absurd” to ascribe consciousness to a system composed of miniature men as it is to ascribe it to a pair of human beings why discuss the latter scenario at all? Why not simply begin with the miniature men scenario? It seems clear that Barnett begins by asking his reader to reflect on whether a pair of people could be conscious because he assumes (rightly, I think) that it is much more obvious that a pair of people couldn’t

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<sup>2</sup> There is reason to think that philosophical intuitions don’t operate in a theoretical vacuum, but are instead theory-dependent. Given this fact, one could argue that an individual’s willingness to ascribe consciousness to the system of miniature men is dependent on his or her prior (and perhaps unarticulated) commitments regarding such issues as the plausibility of functionalism. But if that is right then the intuitive absurdity of these scenarios is not pre-theoretical in the sense in which Barnett takes it to be (p. 169), and his argument would be robbed of much (if not all) of its dialectical force.

be conscious than it is that a system of miniature men couldn't be conscious. But this fact not only undermines Barnett's argument, it actually provides positive motivation for materialism, for the materialist has the resources to explain why we are more inclined to think that a system of miniature men could be conscious than we are to think that a pair of individuals could be conscious. By contrast, it is not obvious that the dualist has the resources to explain why our intuitions about the miniature men differ from our intuitions about a pair of people, or indeed why they differ from our intuitions about ordinary human beings. After all, why should we suppose that immaterial selves cannot attach themselves to systems of miniature men or pairs of human beings just as easily as they can attach themselves to individual human beings?

There is a second problem with Barnett's objection to materialism. He writes:

One way to show that no combination of Number, Relation, Nature, and Structure can explain *The Datum* is to consider the human body, not as we ordinarily do, as a solid, human-shaped object, but rather as a structure of many organs, or of billions of cells, or of quadrillions of particles. We need to make salient the composite aspect of the body. The more salient we make this aspect, the less comfortable we will be ascribing consciousness to the body itself, until, at the limit, the whole idea will seem absurd. (2010: 167)

I am happy to concede that many people might feel slightly 'queasy' about ascribing consciousness to human beings when they consider them not as whole, unified, organisms but rather as complex structures composed of billions of tiny particles. I have no idea just how common such feelings might be, but I wouldn't be surprised to discover that they are relatively widespread; I myself have had such feelings on

occasion. But why we should assume—as Barnett’s argument requires us to—that such intuitions are to be trusted? More precisely, why should we privilege these intuitions over those that are prompted by considering the human body as a ‘solid, human-shaped object’—intuitions that clearly motivate the ascription of consciousness?

In fact, there are good reasons to think that intuitions that are generated in the context of adopting the ‘mereological stance’ towards an object—that is, treating it as nothing over and above the sum of its parts—are generally untrustworthy. Consider a painting as nothing more than a structure of quadrillions of particles and one might be ‘less comfortable’ ascribing aesthetic properties to it; consider a society as nothing more than a structure of quadrillions of particles and one might be ‘less comfortable’ ascribing political properties to it; consider a nation state as nothing more than a structure of quadrillions of particles and one might be ‘less comfortable’ ascribing economic properties to it. In each case we seem to be subject to what we might call ‘the mereological illusion’, in which adopting the mereological stance towards an object undermines one’s willingness to attribute ‘high-level’ properties to it.<sup>3</sup> Barnett’s argument, I submit, will be compelling only to those who fail to recognize the mereological illusion for what it is.

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<sup>3</sup> The mereological illusion should be distinguished from what Bennett and Hacker (2003) call ‘the mereological fallacy’, which is the fallacy of thinking that the proper parts of a conscious subject can possess the kinds of properties that only conscious subjects can possess (such as consciousness).

#### 4. Hasker on the Unity of Consciousness

A second theorist who has defended unity of consciousness objections to materialism is William Hasker, who takes as his point of departure Leibniz's analogy of the mechanical mill. The crucial feature of the mill, says Hasker, lies in the fact that it is:

... made up of many distinct parts, coupled with the fact that *a complex state of consciousness cannot exist distributed amongst the parts of a complex object*. The functioning of any complex object such as a machine, a television set, a computer, or a brain consists of the coordinated function of its parts, which working together produce an effect of some kind. But where the effect to be explained is a *thought*, a state of consciousness, what function shall be assigned to the individual parts, be they transistors or neurons? Even a fairly simple experiential state—say, your visual experience as you look around this room—contains far more information than can be encoded in a single transistor, or a single neuron. Suppose, then, that the state is broken up into bits in such a way that some small part of it is represented in each of many different parts of the brain. Assuming this is to be done, we have still the question: *who or what is aware of the conscious state as a whole?* For it is a fact that you *are aware* of your conscious state, at any given moment, as a unitary whole. So we have this question for the materialist: when I am aware of a complex conscious state, what *physical entity* is it that is aware of that state? This question, I am convinced, does not and cannot receive a plausible answer. (2010: 181-2, emphasis in original.)

This passage would benefit from some unpacking, for it contains a number of quite distinct lines of argument.

One line of argument should already be familiar, for it is in effect a simple restatement of Leibniz's explanatory gap objection. Hasker's version of this objection adds nothing to Leibniz's, and we needn't repeat the points that we have already made concerning it.

A second line of argument appeals to the idea that the contents of consciousness contain more information than can be encoded by individual neurons. Precisely what sorts of representational contents can be encoded in single neurons is still something of an open question. The popularity of 'grandmother cells'—cells whose contents are fine-grained enough to represent particular individuals such as one's grandmother—has been invigorated in recent years due to discovery of neurons that appear to represent particular buildings (the Sydney Opera house; the Taj Mahal) and people (e.g. Halle Berry; Jennifer Anniston (Kreiman et al. 2000; Quiroga et al. 2012)). Whether or not these neurons really do have the selectivity that is claimed for them is something of an open question (see Loosemore & Harley (2010) for some salutary scepticism), but even if these neurons are indeed 'Grandmother cells' it is highly implausible to suppose that all conscious content is encoded by individual cells. Instead, much neural representation involves population codes that are distributed across many neurons. On these models, complex contents are not represented by particular neurons, nor is it the case that 'the state is broken up into bits in such a way that some small part of it is represented in each of many different parts of the brain.' Instead, content as a whole is represented by the state of the representational system as a whole. The details of how the brain manages to represent the contents of

consciousness have yet to be worked out, but there is no principled reason for thinking that they can't be worked out, and thus no principled objection to materialism here.

A third line of argument that is implicit in the above passage involves the claim that a complex state of consciousness cannot be distributed between the parts of a complex object. The argument clearly assumes that the materialist is committed to the claim that complex states of consciousness must be distributed amongst the parts of a complex object.

Hasker doesn't say what it would be for a complex state of consciousness to be distributed between the parts of a complex object, but I suspect that he has something like the following in mind. Suppose that auditory experiences were fully located in auditory cortex and visual experiences were fully located in visual cortex. In that case, the complex state of consciousness consisting of a visual experience and an auditory experience would be distributed between the visual and the auditory cortices, and strictly speaking we should ascribe the auditory experience to one entity (the auditory cortex) and the visual experience to another entity (the visual cortex). But if these two experiences are ascribed to different entities then—the argument continues—we have failed to secure the unity of consciousness, for in its robust form the unity of consciousness requires that unified experiences are both states of the same entity (that is, they are co-subjective) and that they are co-conscious (that is, that they possess a conjoint phenomenal character). But if the auditory experience is fully located in one region of neural real estate and the visual experience is fully located in another region of neural real estate then it is hard to see how either of these two conditions could be met. The experiences might bear various kinds of external relations to each other

(such as being supported by the same brain), but they would be no more internally related than *my* auditory experience and *your* visual experience are. Most importantly, they would be neither co-subjective nor co-conscious.

I regard this as the strongest unity of consciousness objection to materialism. That said, however, I don't think that it succeeds. Although an atomistic conception of consciousness of the kind just sketched does raise questions about how consciousness could be unified, I am not persuaded that the materialist is committed to atomism. Surely it could turn out that the fundamental unit of consciousness is the entire conscious stream, such that it is not possible for modality-specific experiences to be fully located in discrete regions of neural space? Indeed, one might well argue (as I have—see Bayne 2010) that the evident unity of consciousness is itself a reason to reject conscious atomism. But what of the science of consciousness?

Assuming that materialism is consistent with the rejection of conscious atomism, might Hasker nonetheless argue that the science of consciousness indicates that materialists should also be atomists?

If he were to make such a claim he certainly wouldn't be alone, for a number of theorists have argued that the science of consciousness supports atomism (see e.g., O'Brien and Opie 1998; Zeki 2008). But although he wouldn't be alone he would be mistaken, for the science of consciousness is perfectly consistent with phenomenal holism—the claim that a subject's overall conscious state cannot be broken down into independent units of consciousness. So, at any rate, I argue.

The dominant argument for atomism begins with the claim that the neural mechanisms underpinning consciousness—the 'neural correlates of consciousness'

(NCCs), as they are often described—are not to be found in any one location but are instead scattered throughout the brain.

The multiplicity of cortical loci where correlations with awareness have been found provides some evidence against one of the oldest ideas about consciousness, that the contents of awareness are represented in a single unitary system.... Instead, the data described above seem more consistent with a view in which the contents of current awareness can be represented in many different neural structures. ... In contrast to the idea of a unitary and content-general Cartesian theatre of awareness, the data ... fit more naturally with the following simple hypothesis: *the neural correlates of awareness of a particular visual attribute are found in the very neural structure that perceptually analyzes that attribute.* (Kanwisher 2001: 97, emphasis in original)

The data that Kanwisher has in mind concern the fact that different perceptual attributes seem to be associated with activity in particular cortical areas. For example, the visual experience of motion is associated with activity in MT. Lesions to MT will produce deficits in the capacity to visually experience motion, and the artificial stimulation of MT will produce hallucinations of visual motion. We might think of MT as the locus of the analysis of visually-represented motion, as Kanwisher puts it. It is an open question whether *all* conscious contents are represented in this localized manner—I myself doubt it—but let us assume for the sake of argument that the localization that seems to hold of visual motion holds more generally. Would it follow that the NCCs are distributed across many different neural structures, as Kanwisher suggests? I don't think so.

In order to see why not we need to distinguish different types of NCCs. The kind of NCCs on which the science of consciousness has focused are *differentiating* NCCs (Bayne 2010; Hohwy & Bayne 2015).<sup>4</sup> A neural event functions as a differentiating NCC for conscious state C if and only if its occurrence is typically sufficient for the occurrence of C in a conscious creature. MT seems to be a differentiating NCC for visual experiences of motion, for the evidence suggests that MT activity is typically sufficient for conscious states of that kind in conscious individuals. Differentiating NCC must be distinguished from total NCCs. Whereas differentiating NCCs abstract away from the domain-general mechanisms that are implicated in conscious states of all kinds (what some authors misleadingly refer to as ‘enabling NCCs’), these mechanisms are built into total NCCs. Thus, it is total NCCs rather than differentiating NCCs that correspond most closely to the intuitive notion of an NCC—that is, the neural event that is minimally sufficient for the occurrence of the corresponding conscious event.

We are now in a position to see why Kanwisher’s discussion is potentially misleading. Although her comments are naturally understood as suggesting that MT functions as a total NCC for visual experiences of motion, the available evidence suggests only that it is a differentiating NCC for visual experiences of motion, for all of the data linking visual experiences of motion with MT activation presupposes a conscious subject. Moreover, one wouldn’t expect a slice of MT that had been excised from a brain and placed in a petri dish to generate visual experiences, no matter how robustly it was zapped. It is plausible to suppose that in order to generate experiences

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<sup>4</sup> Differentiating NCCs are often referred to as a ‘core NCCs’ (see e.g. Block 2005, Chalmers 2000: Koch 2004).

of any kind MT activity needs to be suitably integrated with non-differentiating neural activity. Of course, none of the foregoing establishes that holistic approaches to consciousness are more plausible than atomistic approaches. That is not my point. Rather, my point is that the neuroscience of consciousness doesn't establish consciousness atomism.

Let us return to Hasker's argument. Although I have argued that the neuroscience of consciousness isn't committed to the claim that complex states of consciousness must be distributed amongst the parts of a complex object, it is obviously possible that the materialist might be committed to this claim for other reasons. However, if the materialist is so committed to that claim then surely the onus is on Hasker to show that this is the case. As far as I can see, Hasker has not done so.

Let me turn finally to Hasker's fourth unity of consciousness argument, which concerns a problem that the materialist allegedly faces in accounting for the awareness of complex conscious states. Hasker lays out this argument as follows:

- (1) I am aware of my present visual field as a unity; in other words, the various components of the field are experienced by a single subject simultaneously.
- (2) Only something that functions as a whole rather than as a system of parts could experience a visual field as a unity.
- (3) Therefore, the subject functions as a whole rather than as a system of parts.
- (4) The brain and nervous system, and the entire body, is nothing more than a collection of physical parts organized in a certain way.

- (5) Therefore, the brain and nervous system cannot function as a whole; it must function as a system of parts.
- (6) Therefore, the subject is not the brain and nervous system (or the body, etc.).
- (7) If the subject is not the brain and nervous system then it is (or contains as a proper part) a non-physical mind or ‘soul’. [...]
- (8) Therefore, the subject is a soul, or contains a soul as part of itself.

Premise (1) seem plausible, although I myself would want to distinguish between the various components of a visual field being experienced ‘as a unity’ and their being experienced by the same subject of experience, for there is at least a conceptual gap between these two dimensions of the unity of consciousness. But the real puzzle here concerns not (1) but (2): what precisely does it mean for something to function ‘as a whole’ rather than [just?] ‘as a system of parts’? Does something function as a whole in virtue of doing things that none of its parts do? In that case, photocopiers function as wholes, for only the photocopier itself produces photocopies. The functions of a photocopier’s parts are obviously essential to the functioning of the photocopier as a whole—what it is for a photocopier to make copies *just is* for its parts to be appropriately related and for them to perform their various functions—but it is nonetheless true that only the photocopier makes photocopies. So if this is what Hasker means by something having a function ‘as a whole’ rather than as a ‘system of parts’ then I see no reason to deny that an organism (or indeed the parts thereof) cannot function ‘as a whole’—indeed, there is every reason to think that organisms (and the parts thereof) *can* function as wholes. (There are clear echoes of the

mereological illusion here.) I conclude that Hasker's unity of consciousness arguments for substance dualism are no more persuasive than the previous arguments that we have considered.

### **5. Swinburne on the Unity of Consciousness**

In a number of places Richard Swinburne has argued that substance dualism is “forced upon anyone who seriously reflects on the fact of the unity of consciousness at a time and over time.” (1997: 160) Let us consider Swinburne's arguments for this claim, beginning with the unity of consciousness at a time.

The heart of Swinburne's argument from the synchronic unity of consciousness is contained in the following passage:

... neuroscience seems to indicate that the immediate causes of conscious events of different kinds (e.g. visual sensations, auditory sensations, or olfactory sensations, occurrent thoughts, etc.) include events in different parts of the brain; and also that the immediate causes of different properties (e.g. the colour and the shape) of what we must regard as one conscious event (e.g. perception of a coloured shape) include events in different parts of the brain. So we would fail to tell the whole history of the world if we traced only the history of each part of the brain, regarded as a separate substance, and the instantiations of mental properties most immediately causing or caused by events in that part; for there would then be truths about properties (such as co-experienced sensory properties) which we would have to attribute—falsely—to two different substances. (2013: 143).

Taking certain exegetical liberties, we might formalize Swinburne's argument as follows:

- (1) It is a necessary truth that co-conscious experiences are had by the same substance.
- (2) The neuroscience of consciousness indicates that if materialism were true, then many co-conscious experiences would be assigned to distinct substances.
- (3) Therefore, materialism must be false (and the substance of human experiences must be an immaterial entity rather than the organism or any part thereof).

Most materialists—at least, those who hold that conscious states are states of substances in the first place—will agree with (1). But few, I think, will find (2) plausible. Swinburne's sole argument for (2) involves the paragraph quoted above, in which he claims that “neuroscience seems to indicate that the immediate causes of conscious events of different kinds (e.g. visual sensations, auditory sensations, or olfactory sensations, occurrent thoughts, etc.) include events in different parts of the brain.”

There are obvious echoes of Hasker's third unity of consciousness argument here, and clearly everything turns on what Swinburne means by ‘the immediate cause of a conscious event.’ His claim has some plausibility if we are to understand this notion in terms of a differentiating NCC, but I see no reason to equate the substance to which an experience belongs with its differentiating NCC. MT activation might indeed function as the differentiating NCC for visual experiences of motion, but it wouldn't follow that MT was the basic subject of such experiences. The prospects of equating the substance of an experience with its total NCC seem to be more promising, but for

the reasons outlined above there is little reason to think that total NCCs are distributed throughout the brain. If the neuroscience of consciousness showed that the total NCC of an auditory experience was fully located in auditory cortex and the total NCC of an visual experience was fully located in visual cortex then *perhaps* Swinburne's argument would have some bite,<sup>5</sup> but I know of no reason to think that the total NCCs of visual and auditory experiences are located in visual or auditory cortices.

I turn now to what Swinburne's describes as his diachronic unity of consciousness argument for substance dualism.<sup>6</sup> Swinburne's central line of argument involves deploying a number of puzzle cases, and arguing that our intuitions about these cases can be accommodated only by adopting a 'further fact' view of the self, according to which the continued existence of a person over time consists in the continued existence of a mental substance, and "it is metaphysically possible that the substance acquires a totally new body, totally new apparent memories, and character" (2013: 163). I have some sympathy with the idea that the continuity of the self is relatively independent of both bodily continuity and psychological continuity, and in previous work I have explored various ways of developing this idea (Bayne 2010; Dainton & Bayne 2005), but I am not convinced that our intuitions regarding these puzzle cases justify a further fact view of the self.

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<sup>5</sup> Although even here materialists (about our identity) would presumably argue that (1) can be met by simply denying that cortical regions are substances. The only genuine substance in this ballpark (they might claim) is the organism of which the relevant neural region is a part.

<sup>6</sup> I'm not convinced that this argument really deserves to be described as a unity of consciousness argument, but nothing of note turns on the label.

Swinburne's central puzzle case involves a twist on the familiar split-brain procedure. Here, Swinburne imagines that the two hemispheres of one person ( $P_1$ ) are split, with  $P_1$ 's right hemisphere then being transplanted into the head of an individual ( $P_2$ ) who has only a left hemisphere and  $P_1$ 's left hemisphere being transplanted into the head of a third individual ( $P_3$ ) who has only a right hemisphere. Each of  $P_1$ 's half-brains are then connected in the appropriate ways to the half-brains of  $P_2$  and  $P_3$ , so that  $P_2$  and  $P_3$  function as ordinary subjects of experience. Swinburne stipulates that  $P_2$  and  $P_3$  would exhibit equal degrees of neural and psychological continuity with  $P_1$ . The central question concerns what we are to say about the survival of  $P_1$  in this scenario.

Swinburne argues that  $P_1$  cannot be identical to both  $P_2$  and  $P_3$ , for they are not identical to each other, and identity is of course a transitive relation. That leaves, he suggests, only three possible accounts of what has happened: (1)  $P_1$  has survived only as  $P_2$ ; (2)  $P_1$  has survived only  $P_3$ ; and (3)  $P_1$  has not survived. Swinburne then proceeds to argue against complex (or 'reductive') accounts of personal identity—that is, views which deny that facts about personal identity outstrip fact about physical and psychological relations—on the grounds that they cannot accommodate the intuition that there is a fact of the matter as to which of these three scenarios is correct. Swinburne does not himself state which of these scenarios is correct—nor, for that matter, does he offer any guidance as to how we might possibly determine which of these scenarios is correct—but he insists that one of these three scenarios must in fact be correct.

Call the intuition that there is a determinate fact of the matter about what happens to  $P_1$  in this case 'the determinacy intuition'. I think Swinburne is right in thinking that complex accounts of personal identity cannot accommodate the determinacy intuition,

but I'm not convinced that we should we follow him in assuming that this is an intuition that *ought* to be accommodated. Why shouldn't we simply jettison it?

Swinburne motivates the determinacy intuition by appealing to a device that will be familiar to many: Williams's (1970) famous thought-experiment in which one of the descendent will receive a million dollars and an enjoyable life while the other will be subjected to a life of torture.

The surgeon asks  $P_1$  to choose whether the person who will receive such-and-such parts will be rewarded and the other person tortured, or the person who will receive the other parts will be rewarded and the first person tortured; and the surgeon promises to carry out  $P_1$ 's wishes....Being selfish,  $P_1$  wishes to be rewarded and not tortured. So how is  $P_1$  to choose? Whether someone's future life will be happy or painful, or whether they will continue to exist at all after the operation [...] do seem very clearly to be factual questions. Yet, as  $P_1$  awaits the transplant and knows exactly what will happen to his or her brain, they are in no position to know what will happen to them, and so in no position to know how to choose which subsequent person will be rewarded. [...] When we know everything about which planks in the ship of Theseus have been replaced or reassembled when, then we know all there is to know about what is the same and what is different about the subsequent ships; although there are different ways in which we can describe what has happened, they are logically equivalent to each other. But when we know everything about the extent to which later persons have the same brains and the same apparent memories and other mental life of earlier persons in the half-brain transplant experiment, it does look very strongly that there is still

something all-important to know—as the mad surgeon addition to the story brings out: it is the all-important fact about who survives the operation and what happens to them. (2013: 153f.)

I agree that the mad scientist scenario is effective in eliciting the determinacy intuition, but I don't think it provides us with reason to take that intuition seriously—that is, to afford it the kind of warrant which Swinburne's argument requires. Indeed, scepticism about the robustness of this intuition is motivated by the very article in which the mad surgeon scenario was introduced, for one of the signal lessons of that article is that intuitions about personal identity are vulnerable to framing effects.<sup>7</sup>

That being said, it is worth reflecting on the “all-important thing” that  $P_1$  wants to know in contemplating the mad surgeon's proposal, for it seems to me that reflection on this matter motivates the idea that  $P_1$  survives as both  $P_2$  and  $P_3$ . What  $P_1$  wants to know concerns the first-person perspective.  $P_1$  currently has a first-person perspective, and we can assume that each of the descendent individuals will also have a first-person perspective.  $P_1$ 's question is whether either (or indeed both) of these future first-person perspectives qualifies as a continuation of his or her current first-

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<sup>7</sup> Williams presents two versions of what is essentially the same scenario. One version (typically) elicits the intuition that personal identity follows bodily continuity, and the other version (typically) elicits the intuition that personal identity follows psychological continuity. The explanation for these contrasting intuitions is provided by the different context (or ‘frame’) associated with the two versions of the scenario. Many theorists take Williams to have shown that thought experiments are not reliable ways of adjudicating between rival accounts of personal identity. Although that conclusion is perhaps premature, there is little doubt that Williams's paper shows that our intuitions regarding personal identity are highly malleable. For some discussion see Dainton and Bayne (2005).

person perspective. To answer these questions we need to understand the mechanics of first-person reference, and the ways in which the continuity of the ‘I’ is transferred across times, both retrospectively in the form of memory retrieval and prospectively in the form of the planning (that is, in the formation and execution of intentions). Although the splitting of the self complicates these relations in various ways (see Hirsch 1991), there seems to be no principled reason to deny that  $P_1$ ’s first-person perspective isn’t inherited by both descendants, for both descendants have first-person access to  $P_1$ ’s experiences in the form of autobiographical memory, and both descendants will inherit, and will be disposed to implement,  $P_1$ ’s intentions.<sup>8</sup>

Should we say that there is one person who survives as both descendants (and thus that the descendants are identical to each other—Dainton 1992), or should we say that there are two persons in this scenario, albeit individuals who share a common temporal part (Lewis 1976)? I see little to choose between these alternatives, for they agree on all the essential facts—namely, the ways in which experiences are distributed between first-person perspectives.

## 6. Concluding Thoughts

I bring this chapter to a close by taking a step back from the details of particular unity of consciousness arguments and reflecting on some of the general features of this family of objections to materialism.

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<sup>8</sup> This entails either that the descendants are the same person (and in effect that the person is ‘scattered’), or that two individuals can have the same first-person perspective. Both descriptions are counter-intuitive, but given how unusual the situation is it’s hardly surprising that there is no intuitive way of describing its results. Thanks to Angus Menuge for prompting me to say more here.

As we have seen, unity of consciousness arguments focus on the alleged shortcomings that materialists face in attempting to account for the unity of consciousness. From this point, theorists move quickly—and typically without comment—to the claim that dualism is true. This line of argument is essentially a negative one. It assumes that dualism and materialism exhaust the theoretical alternatives, and that it must be possible for an immaterial substance to have a unified consciousness, since (the theorist assumes) the kind of consciousness that we enjoy is obviously unified, and (the theorist claims to have established that) our experience could not possibly be unified were we purely material beings.

What this approach manifestly fails to do is to provide any positive account of the relationship between substance dualism and the unity of consciousness. Not only do theorists make no attempt to show how dualism explains the unity of consciousness, they don't even make any attempt to show that it is consistent with the unity of consciousness.<sup>9</sup> One might well argue that the obstacles that dualists face in accounting for the unity of consciousness are no less pressing than those that materialists face in this regard. In fact, it seems to me that there is an important sense in which the obstacles facing the dualist are *more* pressing than those which face the materialist.

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<sup>9</sup> Some theorists might be tempted by this thought that simplicity of the self would entail that consciousness is unified, but I myself see little reason to endorse this thought. The simplicity of the subject of experience does not itself ensure—let alone 'explain'—the unity of consciousness, and I see no obstacle in the idea that a 'simple' entity could be in two conscious states at one and the same time without those two states being co-conscious with each other.

Unity of consciousness arguments concern the challenges posed by accounting for the contents of complex states of consciousness. Whether they focus on the components of a total experiential state that subsumes experiences associated with distinct perceptual modalities (Bayne & Chalmers 2002), or whether they consider instead the distinct perceptual attributes drawn from a single sensory modality, the dualist's interest is with the question of how the various components of consciousness are bound together to form a unified conscious state that is had by a single subject of consciousness. That is all well and good, but how is the dualist to account for the diversity of these experiential elements in the first place? How is the dualist to explain why one subject enjoys an experience of the sound of trumpets at one time and the smell of roses at another, or why another subject enjoys an experience of the sound of bell-birds together with an experience of the smell of roasting coffee. Substance dualists offer no answers to these questions, and given their insistence on the simplicity of the self it is difficult to see what answers they could offer to them. By contrast, materialism at least offers the prospect of accounting for the diversity-within-unity that consciousness exhibits, for the materialist associates consciousness with the operations of a complex system. In focusing on the challenges posed by accounting for the unity of consciousness, substance dualists have been guilty of overlooking those posed by accounting for its diversity.<sup>10</sup>

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<sup>10</sup> I am grateful to Angus Menuge for his very helpful comments on a previous draft of this chapter.

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