



PARTIAL TWINNING AND THE BOUNDARIES OF A PERSON

Abstract: *In special cases of partial twinning, two heads, each supporting a more-or-less normal human mental life, emerge from a single torso. It is often argued that there must be two people in such a case, even if there is only one biological organism. That would pose a problem for ‘animalism’, the view that people are organisms. The paper argues that it is very hard to say what sort of non-organisms the people in such cases would be. Reflection on partial twinning is no more comfortable for those who think we’re not organisms than for those who think we are. We may have to accept that a single person could have two separate mental lives.*

Keywords: *Animalism, constitution view, embodied mind account, personal identity*

1. The metaphysical puzzle of partial twinning

In special cases of partial twinning, two heads emerge from a single torso: *dicephalic parapagus* in medical jargon. Each head may contain a normal brain. The best-known example is the Hensel twins, who have not only survived to adulthood but passed their driving test and graduated from university. Between them they have two hearts, two stomachs, four lungs, and two spinal cords merging at the tailbone, but only one liver and intestine. Each brain controls the limbs on its own side and not those on the other.

How many people are there in such a case—two, sharing their lower parts, or just one with extra organs, like someone with a third kidney? Are there two thinking, conscious beings with one head each, or one conscious being with two heads? There might of course be both: two partially overlapping twins and also a two-headed person having both twins as parts. I’ll set this unattractive suggestion aside. But there can’t be both two people and also just one.

It’s very natural to say that there are two. Tabloid papers may speak of two-headed babies, but everyone else describes Abigail and Brittany Hensel as twins, as I myself did a moment ago. This is not just because we see two faces and hear two voices, though that’s of course a completely reliable indication of there being two people in all cases that most of us will ever encounter.

The deeper and more important fact is that each face manifests a separate mental life: a set of sensations, attitudes, emotions, and so on that interact in a characteristic way with each other and not with anything outside the set. It appears as if the owner of one face can be awake while the owner of the other is asleep, and that they can have different beliefs, plans, preferences, and experiences. Call this the *two-person view*.

The alternative—the *one-person view*—is that there is just one person, with two brains and a radically disunified mental life—or, if you like, with two independent mental lives.¹ She could have blatantly inconsistent beliefs, plans, and preferences, but because they're realized in different brains, this would not cause any cognitive dissonance as it would in you or me. She could even be both awake and asleep at once. That's not to say that she could be both awake and not awake. She would be conscious in one brain, so to speak, and unconscious in the other.² This is a lot more counterintuitive than the two-person view. We know, more or less, how to interact with people who share parts. We don't know how to interact with someone who has two separate mental lives. It's easier, on the face of it at least, to suppose that there are two psychologically ordinary people who are physically joined than one person who acts like two.

No one would say that there is just one person in *every* case of partial twinning. There are doubtless two in cases where there are two torsos, for example, with four arms, joined to a single pair of legs. The serious one-person view is that one person *could* have two mental lives owing to partial twinning, and the serious two-person view is that there must be two people wherever there are two normally functioning brains.

If the one-person view is so implausible, why would anyone hold it? Well, because people are animals: biological organisms of the animal kingdom. And even if most cases of dicephalic parapagus involve two overlapping animals, there may be cases where there is only one, with two brains. Given that all people are animals, there cannot be one animal but two people. There must be either one person or none. And no one would deny that there is anyone there at all. That leads to the one-person view.

This shows that 'one-personers' and 'two-personers' disagree about deeper matters than just the number of people in these unusual cases. One-personers think we're animals. (Someone could hold the one-person view for another reason, without taking us to be animals, but I'm not aware of anyone who does or of any such reason.) Two-personers don't think we're

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- 1 Some say she would have 'a divided mind'. I dislike this phrase because it suggests that there are things called 'minds'—a term that no one ever defines. When people speak of 'minds' as countable objects, I often don't know what they're talking about.
 - 2 I discuss arguments for the two-person view and defend the logical consistency of the one-person view in Olson 2014.

animals. If they have any view on the matter, they think we're *not* animals. When philosophers discuss the metaphysics of partial twinning, it's almost always in order to argue for this claim.³ Their reasoning is this: if there could be two people but just one animal in such a case, those people could not both be animals. (If there is just one F and there are two Gs, it follows that at least one G is not an F.) Presumably neither person would be an animal, as both would relate to the animal in the same way. And if the people in these cases would not be animals, no human people are. (I'll revisit this last step in the next section.)

The two sides also disagree on the more general question of what determines how many people or thinking beings there are at any one time. The reason for supposing that there must be two in these cases is that there are two separate mental lives: two systems of beliefs, preferences, plans, sensations, memories, and other mental items, each of which is in some sense unified. The items within each system relate to each other as your mental states and activities relate to each other, and they relate to those in another system as your mental states and activities relate to mine. More generally, two-personers take the number of people existing at a given time to be determined by facts about psychological unity and disunity.

One-personers deny this. They say that the number of people existing at a given time has nothing to do with psychological unity and disunity. They may accept that to be a person, as opposed to a nonperson, is a matter of psychology: to have certain special mental properties such as rationality and self-consciousness. (What it is to be a person, as opposed to a nonperson, is different from the question of what determines how many people there are.) But they take the number of human people to be necessarily equal to the number of human animals having those special mental properties, because human people *are* animals. Given the apparent fact—which two-personers do not dispute—that the number of animals is not determined facts about psychological unity, it follows that the number of human people existing at a given time is not determined by such facts either.

I concede that the attraction of the two-person view is a reason to deny that we are animals. But whether it's a *good* reason depends on whether that view is compatible with any plausible alternative account of what we are. If we're not animals, we must be nonanimals of some sort. And it's very hard to give a detailed and plausible account of what we are that is compatible with the two-person view. Reflection on partial twinning is no more comfortable for those who think we're not animals than for those who think we are. The one-person view may be the best of a bad lot.

3 E.g. McMahan 2002: 35–39, Gunnarsson 2010: 126–138, Campbell and McMahan 2016: 229–231. Campbell and McMahan take themselves to be arguing against the view that we are *essentially* animals, but this is a red herring: their argument would imply that we're not animals at all, essentially or otherwise.

2. Retrenched animalism

I'm not convinced that there is just one organism in any real case of dicephalic parapagus. I think the Hensel twins are probably two overlapping animals. But for all I know there *could* be a single organism with two brains, each supporting an independent mental life sophisticated enough to be that of a person. If people are animals, there can be only one person in such a case, with two independent mental lives.

I said the one-person view was motivated by the thought that we are animals: 'animalism'. Why suppose that we're animals? Well, it seems possible for a biological organism to think and to be conscious. And in that case the animal you see in the mirror is thinking and conscious right now. But it would be silly to suppose that it was a thinking, conscious being *other* than you. Wouldn't that make it a second person? And how could you ever know which of these people *you* were? To avoid these awkward questions, opponents of animalism must deny that human animals can think. More strongly, being a biological organism must be metaphysically incompatible with having any mental properties at all: if any organism could possibly have mental properties, the one you see in the mirror would now be thinking. This would be a metaphysical dualism of mind and life. Opponents of animalism face the unenviable task of explaining what it is about mental properties that makes them incompatible with being an animal. Why not accept the apparent fact that we're animals instead?

But even if *most* of us are animals, we may wonder whether the people in dicephalus cases must be. Might all people be animals *except* when there are more mental lives than animals? We might call this *retrenched animalism*.

Though it may have some superficial appeal, however, it's unlikely to satisfy anyone. All the objections to animalism apart from the one from conjoined twinning apply equally to retrenched animalism. They imply that *no* people are animals. It's often claimed, for example, that if your brain were transplanted into my head, and this gave the resulting person your memories, beliefs, preferences, and other mental properties rather than mine, he would be you and not me. More generally, people persist by virtue of some sort of psychological continuity. But no biological organism persists by virtue of psychological continuity. No animal would go with its transplanted brain: the operation would simply move an organ from one animal to another just as a liver transplant would. It would follow that even though no one will ever have such a operation, each person has a modal property that no animal has, namely persisting by virtue of psychological continuity. And anything having a property that no animal has is not an animal, ruling out even retrenched animalism.

Animalists won't be happy with it either. They'll want to know more about the thinking nonanimals in partial-twinning cases. What sort of

things would they be, and how would they relate to the animal? Why are there no such thinking nonanimals in ordinary cases—here in my chair right now, for instance? No animalist would accept that there is: otherwise it would be a second person in addition to me, raising the same ‘too-many-thinkers’ problem that features in the standard argument for animalism. And why is the human animal in a twinning case not itself a person—that is, not thinking and conscious? (If it were, there would be three people in such a case, not two.) I don’t know any good answers to these questions. Retrenched animalism looks doomed to be a friendless view.

3. Partial twinning and the constitution view

The metaphysically interesting cases of partial twinning are those where a single animal has two normal brains: call them *one-animal-two-brain cases*. If there were two people in such a case, they would not be animals. What would they be, then? What sort of *nonanimals*? What properties would they have besides the mental properties that make them people? What parts would they have, if any, and where would their boundaries lie?

Now the same questions arise if ordinary people—those who aren’t conjoined twins—are not animals. What sort of nonanimals are *they*? What nonmental properties do they have? The most common answer is that they’re material things ‘constituted by’ animals: the ‘constitution view.’⁴ Each of us is made of the same matter as a certain animal, with the same physical properties and behaviour (in both actual and counterfactual circumstances), but different modal properties: we persist by virtue of psychological continuity; the animal does not. “Constitutionalists” generally say that differ from the animal mentally: otherwise the animal would itself be a person, one who *didn’t* persist by virtue of psychological continuity. The usual constitution view is that strictly speaking animals have no mental properties at all, making them ‘zombies’ in the philosophical sense (Olson 2018).

But if there are two people in a one-animal-two-brain case, they can’t be constituted by animals. If they were, they’d both be constituted by the *same* animal, seeing as there is only one animal there. They would each be made up of that animal’s matter—all of it—and extend all the way out to the animal’s skin. Each would have two heads. They would be physically indistinguishable, and that would presumably make them mentally indistinguishable as well: if the left brain is a part of both people, how could the mental activities going on in it belong to one person but not the other? Each would have two mental lives. But if it’s hard to believe that there could be one person with two mental lives in such a case, it’s even harder to believe that there could be *two* people with two mental lives each. It would be better to accept the one-person view.

4 E.g. Baker 2000, Johnston 2007, Shoemaker 2008.

This looks like an important objection to the constitution view. No constitutionalist will be happy with the one-person view. That would mean accepting that there is never more than one person (at a given time) in any case where there is just one animal. The number of people at a given time would be determined by the number of biological organisms and have nothing to do with psychological unity and disunity. If you have to say that, you may as well accept that we're animals.⁵ (That would also avoid the consequence that human animals are zombies.)

Could it be that all people are constituted by animals *except* those in one-animal-two-brain cases—'retrenched constitutionalism'? This would raise many of the same awkward questions facing retrenched animalism. If there is something constituted by an ordinary human animal, will there not be something constituted by a human animal having two brains? Will that thing not be a person with two mental lives? And if the two people in such a case are not constituted by animals, what *are* they constituted by? What are their parts and their boundaries? The constitution view tells us nothing about this.

This question about our boundaries arises not just on retrenched constitutionalism, but on any two-person view, or at least any who takes us to be material things. If some human people are smaller than a human animal, how big *is* a person? I'll devote the rest of the paper to this point.

4. The Lockean view of our boundaries

If there are two people in a one-animal case, they must be physically different (assuming they're physical things at all). They may share some of their parts, but they can't share all of them. And this physical difference must account for their mental difference: why each has just one mental life different from that of the other. It looks as if they must each have only one head and one brain.

What other parts would they have? Maybe the parts of the animal controlled exclusively by the right brain are parts of the twin whose brain it is—call her 'the right twin'—and of her alone, while those controlled exclusively by the left brain are parts of the left twin and of her alone. Or if 'control' means voluntary control, it's the people whose brains they are who have it. The left twin has exclusive voluntary control over the animal's left arm, for example, in that she can move it at will by means of a mental act realized in her brain (the animal's left brain), whereas the right twin alone can move the animal's right arm. And the reason why the animal's right head is not a part of the left twin may be that she has no voluntary control over

5 Some constitutionalists say that in a loose sense we *are* animals, even though each person is numerically distinct from the animal constituting her. But this description only confuses matters (Olson 2016) and does nothing to address any of the difficulties arising from partial twinning.

it. Any parts of the animal that both twins have voluntary control over are shared. This suggests a general principle about the parts of a person:

Necessarily, a thing is a part of a person at a given time just if the person has voluntary control over it—she can move it at will—at that time.

(Or at least this would hold for any person who is a material thing. I won't speculate about what might make something a part of a god or an angel.)

This can't quite be right, as it implies that no atom is a part of anyone. No one has voluntary control over any single atom, yet we could hardly be made of matter unless the atoms making up that matter were parts of us. Perhaps atoms are parts of me by being parts of larger things that I *can* control: arms, say. In that case a thing is a part of a person just if she can either move it at will or move some larger thing that it's a part of. In other words, a person's parts are those things that she can control voluntarily and the parts of those things.

A related thought is that something is a part of a person because she can *feel* it. What makes an arm a part of me is my ability to feel sensations in it. And again, although I can't feel any individual atom, an atom might be a part of me by being a part of something I *can* feel. Locke once said something like this. The particles composing our bodies, he said,

whilst vitally united to this same thinking conscious self, so that we feel when they are touch'd, and are affected by, and conscious of good or harm that happens to them, are a part of our *selves*: *i.e.* of our thinking conscious *self*. Thus the Limbs of his Body is to every one a part of *himself*: He sympathizes and is concerned for them. Cut off an hand, and thereby separate it from that consciousness, we had of its Heat, Cold, and other Affections; and it is then no longer a part of that which is *himself*, any more than the remotest part of Matter. (Locke 1975: 336f.)

Or we might combine these two thoughts: something is a part of me (a largish part) if I can both move *and* feel it, or if I can do one or the other. Call this the *Lockean view* of our boundaries. (Not to be confused with Lockean views of what it is to be a person, or of what it is for a person to persist through time. Locke held views on many questions in this area, and it's important to keep them separate.)

But the Lockean view faces grave difficulties. One is that it doesn't actually tell us where our boundaries lie. We can see this by noting that it does not imply that there must be two people in a one-animal-two-brain case: for all it says there may be just one, who can move and feel all the animal's limbs. It doesn't tell us why there must be two people rather than one, or why the animal is not itself a person. As an account of our boundaries it's radically incomplete at best.

More seriously, it appears to have the startling consequence that a limb that was numb and paralyzed could not be a part of anyone. Cutting the neural connections to your left leg would immediately make you smaller, giving you the size and shape of an amputee. Someone numb and paralyzed from the neck downwards would be literally a head. You might suppose that numb and paralyzed limbs are parts of someone because they're parts of a larger thing that she can move and feel, namely an organism. That would suggest that you can move and feel an organism if you can move and feel any part of it. It would follow that any person in a one-animal-two-brain case would have two heads, contrary to the two-person view. And whether you could move or feel something would be almost entirely irrelevant to whether it's a part of you, leaving the Lockean view with little content.

Finally, nerve damage could deprive you of the ability to move or feel anything at all. Any Lockean view will imply that this would result in your having no parts. But nothing can exist without having parts—even itself, its 'improper' part. It would follow that you could not exist in this condition: total paralysis would be instantly fatal. It would be metaphysically impossible for any conscious, intelligent being to be, even for a moment, entirely numb and paralyzed (apart perhaps from a god or an angel). No one will accept that.

5. The brain view

We've seen that if there can be two people in a one-animal-two-brain case, they cannot be animals. Nor can they be things constituted by animals, or things made up of those parts of the animal that a person can move at will or feel. What else might they be?

The obvious thought is that they're smaller parts of an animal: things like brains. And in that case you and I are brains too. The people in the twinning cases are brains only if brains are the entities in those cases that are conscious and intelligent—those satisfying the definition of 'person.' An animal (or a thing constituted by an animal) would be capable of thought only in the loose sense of having a brain-sized part that can think. What *really* thinks must be brains. Otherwise our being brains would imply that strictly speaking we *don't* think and are not conscious, but are merely parts of thinking beings, and no one will want to say that. And if it's brains that think in cases of partial twinning, it will be brains that think in ordinary cases too. So we must all be literally brains. Strictly speaking, each of us weighs about two pounds and is made up mostly of soft, yellowish-pink tissue.

I don't know of anyone who actually holds this view.⁶ It would mean that we never really see or touch anyone, or even any part of anyone.

6 Some say that we're brains but don't mean it. Parfit says it, for example, yet in the same essay gives an account of our persistence that clearly does not apply to brains (Parfit 2012). Hudson (2001, 2007) thinks we're temporal parts of brains. His view avoids some but not all of the problems facing other versions of the brain view.

(Brain surgeons are an exception.) Nor could anyone walk or talk: except in an extended sense, those are not things that a brain can do. And despite appearances, conjoined twins would not actually share any parts. But I wouldn't worry too much about this. If I had a good reason to think that I was a brain, I could live with it. These are consequences of any view that denies that we're material things, yet almost no one objects to substance dualism (for example) on those grounds.

A more serious worry is that many parts of the brain are no more directly involved in producing our mental lives than our hearts and lungs are: the blood vessels supplying the nerve tissue, for example. If the blood vessels within the brain are parts of us, why not the blood vessels outside the brain? What's special about that boundary? The claim that we extend out to the surface of the cerebral cortex but no further looks arbitrary and unprincipled. At best a person might be a certain *part* of a brain, one excluding blood vessels and the like.

And the brain view is dialectically unstable. Suppose we're led to it by our allegiance to the two-person view. This reasoning is based on the thought that the number of people (or conscious beings generally) at a given time is determined by facts about psychological unity and disunity: about the number of mental lives in the sense characterized in §1. And that thought goes naturally with idea that the number of people existing during an extended period—the persistence of a person—consists in some sort of psychological continuity. To hold one of these views without the other would seem unprincipled, and I don't know of anyone who has ever done so. But this claim about our persistence is incompatible with our being brains, or even parts of them. Brains and their parts don't persist by virtue of psychological continuity. We could know whether your brain still exists without knowing anything about your mental properties. It could be removed from your head and pickled in a jar, just as your liver could, despite there being no psychological continuity in such a case. No one thinks that *you* could be removed from your head and pickled. If you were a brain, your persistence would have nothing to do with psychological continuity. But anyone who accepted that would take us to be animals rather than brains.

6. The embodied-mind account

Tim Campbell and Jeff McMahan propose a variant of the brain view intended to avoid these problems. They say:

a person is identical to those functional areas of her brain that are necessary and sufficient for her capacity for consciousness.⁷

7 2016: 233. Let me emphasize that it's not my intention to single out Campbell and McMahan for criticism. If they make a number of problematic claims, that's because they actually try to answer the hard metaphysical questions that arise on the two-person view, rather than ignoring them as its adherents more commonly do.

This is meant to avoid the arbitrariness in the view that we're brains rather than larger things by saying that we are only those parts of the brain ('areas,' as they say) that are necessary and sufficient for our capacity for consciousness. Presumably that excludes the brain's blood vessels. McMahan (2002: 66–94) calls this the 'embodied mind account'.

It requires a certain amount of explanation. First, it says that a person is certain *parts* of the brain. I don't think Campbell and McMahan meant to suggest that one thing could be numerically identical with many things—an idea of doubtful coherence at best (van Inwagen 1994, Sider 2007: 55–69). I assume they meant that a person is *composed* or *made up* of those functional brain parts that are necessary and sufficient for her capacity for consciousness. (Some things, the *xs*, compose something *y* =_{df} each of the *xs* is a part of *y* and every part of *y* shares a part with one or more of the *xs*.) So each of us is a certain *part* (singular) of a brain.

Or rather a *functional* part.⁸ The qualification is there to avoid the consequence that we could be pickled in a jar. The capacity for consciousness is essential to us: we couldn't exist without it (Campbell and McMahan 2016: 234). Because that capacity is not essential to a brain, we're not strictly brains, but 'functional brains': brains (or parts of them) having the capacity for consciousness. So when my brain stops functioning at death, the 'functional part' of it that I am does not simply stop functioning, but stops existing.

This, like one-many identity, may look like a logical confusion. It implies that the brain is one thing and the functional brain is another. That's like saying that a dog is one thing but a sleeping dog is something else. A dog can be either awake or asleep, but a *sleeping* dog can only be asleep: when it wakes up it doesn't just stop being asleep, but stops existing altogether, replaced by a waking dog that was never asleep. But surely a sleeping dog is not something other than a dog. To be a sleeping dog is simply to be both a dog and asleep. And of course a dog can survive the event of waking up. The sleeping dog exchanges the property of being a sleeping dog for the property of being a waking dog. That is, it remains a dog, loses the property of being asleep, and acquires that of being awake. That's what it is for a dog to wake up. And likewise, it would seem, something is a functioning brain just if it's both a brain and functioning. So when a brain stops functioning, it ought to exchange the property of being a functioning brain for that of being a nonfunctioning brain in the same way.

This is just what Campbell and McMahan deny. What then *is* a 'functioning brain'? How does it relate to nonfunctioning brain, or simply to a brain, without qualification? Someone might say that a functioning brain is something that the brain 'constitutes' until it stops functioning, at which point the functioning brain comes to an end but the brain itself carries

8 Similarly, Tye (2003: 143) proposes that we are 'brains insofar as they are in certain states,' though he gives no account of what this means.

on—much as a lump of clay might constitute a statue but carry on after the statue is destroyed by squashing. But if the brain itself were thinking and conscious, that ought to make it a person—a second person in addition to the functioning brain—which, apart from being absurd, would contradict the embodied-mind view. Alternatively, if the brain itself were not conscious, it would be a zombie: a thing physically indistinguishable from an ordinary person but devoid of consciousness.

Campbell and McMahan avoid this awkward dilemma by saying that there is no such thing as ‘the brain’ without qualification. There is only the functioning brain, which is essentially functioning, and the nonfunctioning brain, which is essentially not functioning. The functioning brain stops existing when it stops functioning—that is, when it loses the capacity for consciousness—but it’s not outlived by the brain *simpliciter*. Rather, a nonfunctioning brain comes into being to replace it. It’s this nonfunctioning brain that can be pickled. The specimen in the anatomical museum labelled ‘human brain’ was never in anyone’s head or able to support consciousness. Nor did my brain exist before it acquired that ability. There was of course a part of the foetus I grew from that anatomists call its brain, but it was not a brain in the sense that the organ in my head now is a brain. It was another nonfunctioning brain, which perished when it developed the capacity for consciousness. So a human organism starts out with a nonfunctioning brain, which is later replaced by a functioning brain that persists until it loses the capacity for consciousness, at which point it’s replaced by another nonfunctioning brain. The person is the functioning brain (or rather a certain part of it).

Campbell and McMahan don’t suppose that whenever anything loses *any* property, it thereby ceases to exist. They don’t think that when a sleeping dog wakes up, it vanishes and is replaced by a waking dog that was never asleep. Their view is only about one special property, namely the capacity for consciousness.

7. Why we could not be embodied minds

What should we make of all this? It certainly goes against what anyone would otherwise think about the persistence of bodily organs. You’d be forgiven for thinking that an ordinary human being has just one brain, which comes into being in the course of foetal development, acquires in late gestation the capacity to produce consciousness, and at death loses that capacity and carries on for a time without it. On the embodied-mind account a human being has three brains, each existing during just one of these periods.

But I haven’t got much faith in folk metaphysics. The real problems for the embodied-mind account lie elsewhere. It says, again, that a person is composed of those functional parts of her brain that are necessary and

sufficient for her capacity for consciousness. None of the the individual atoms composing a brain is 'functional'. The account is meant to tell us which larger things are parts of me. Some large parts of my brain are necessary for consciousness, in that I could not be conscious unless they were functioning, but not sufficient, in that their functioning alone would not make me conscious. The brainstem might be such a part. By contrast, the normal functioning of *all* my large brain parts is sufficient for consciousness but not necessary: I could be conscious even if some of them were disabled or destroyed. I am, then (according to the embodied-mind account) composed of those large brain parts whose functioning is individually necessary and jointly sufficient for me to be conscious. In other words, a large brain part is a part of me just if its functioning is necessary for me to be conscious and it's a member of a set of such parts whose functioning is jointly sufficient for it—and atoms are parts of me by being parts of one of these larger parts.

The trouble is that there is no such set. Consider my left cerebral hemisphere. Its functioning is not necessary for me to be conscious: I could be conscious without it. (Hemispherectomy—a real-life treatment for severe brain tumours—does not normally render the patient permanently unconscious.) So the embodied-mind account implies that my left hemisphere is not a part of me. My right hemisphere can't be a part of me either, for the same reason: it needn't function for me to be conscious. My only parts must be things that don't overlap either hemisphere: things like the brainstem, the amygdala, and the basal ganglia. But the functioning of such things is not sufficient for consciousness. To be conscious you need one hemisphere or the other, but not both. So any set of large brain parts whose functioning is jointly sufficient for consciousness will not be necessary for it, and any set of such parts whose functioning is necessary for consciousness will not be sufficient. The embodied-mind account entails that there are no people: you and I do not exist.

8. The supervenience-base account

Campbell and McMahan briefly mention a variant of the embodied-mind account saying that a person is 'the set of particles whose physical properties constitute the supervenience base for her phenomenal properties'—phenomenal properties being those characterizing the subjective nature of conscious experience.⁹ What it's like for me to smell buttered toast in the

9 2016: 233. Hudson (2007: 219) makes a similar suggestion. The definition of 'phenomenal property' is my own. Campbell and McMahan define such properties as those a being has when it's in a state that there is something it's like to be in. That would make my current weight phenomenal, since I have it while being in a conscious state. Perhaps they meant a property that *necessarily* a thing has when *and only when* it's in such a state. The precise definition is unimportant for our purposes.

morning would be an example. I don't think Campbell and McMahan meant to say that a person is literally a set in the mathematical sense. Sets cannot have different members at different times, but a material person would be composed of different particles at different times. I assume they meant that a person is composed (at a given time) of those particles whose properties form the supervenience base for her phenomenal properties (at that time).

I suppose certain properties of some things, the *x*s, are the supervenience base for something *y* just if there can be no difference in *y* without a difference in those properties of the *x*s. So the thought is that a person is composed of those particles such that there can be no difference in her phenomenal properties without a difference in the physical properties of the particles. In other words, a person is made up of the particles that would have to be physically different for the subjective quality of her experience to be different. This will no doubt include not just the particles' intrinsic properties, but also the causal and spatiotemporal relations holding among them.¹⁰ For example, I'm now having the auditory sensation of road traffic. (This is so even if I'm not actually hearing road traffic but only hallucinating: I'm speaking of the subjective quality of my experience.) For me to have the sensation of birdsong instead, certain particles would have to be differently arranged. More generally, there are certain particles that would have to be physically different for my current experience to be phenomenally different. Those particles are the ones that now compose me.

Call this the *supervenience-base account* of what we are. Though suggestive, I don't think it improves on the original embodied-mind account. There are probably no individual particles that would have to be physically different for my experience to be different. *Some* particles would have to be different—there couldn't be a difference in my experience without a physical difference in *any* particles—but there are no particular particles that would have to be different. Any individual particle could be the same, and the difference in my experience could be the result of differences in other particles. Imagine a picture composed of a million pixels. For it to look different, some of the pixels would have to be different: there couldn't be a difference in the visual appearance without a difference in any of the pixels. But there are no particular pixels that would have to be different: even if any individual pixel were exactly the same, the appearance might differ owing to differences in other pixels. It could be the same with the particles responsible for my experience. There appear to be no particles, the physical properties of which are the supervenience base for my phenomenal properties; and thus, on the supervenience-base account, there are no particles that compose me. Yet every material thing must be composed of particles. (Even an individual particle is, trivially, composed of itself.)

10 It might also include a specification of the laws of nature. Maybe the nature and arrangement of the particles produces a certain sort of conscious awareness only because of a contingent psychophysical law. I'll ignore this complication.

But set aside these tiresome matters. The idea behind the embodied-mind account is that a person is made up of just those particles that are directly involved in her experience. My hands and feet are not parts of me because, although they may be involved in my experience by contributing to my tactile sensations, they're not *directly* involved. Not all the parts of my brain are directly involved either. I'm made up of those that *are* directly involved. The story about supervenience bases is meant to spell out what 'direct involvement' is. It doesn't work, but there may be another that no one has yet thought of. Imagine that we have such a story.

9. The boundaries of conscious beings

As I understand it, the embodied-mind account is meant to be grounded in the nature of phenomenal properties. So it must hold not only for people: *any* conscious being must be made up, at a given time, of all and only the particles directly involved in its capacity for conscious experience at that time. It follows that dogs, fish, and pigeons cannot be conscious. At best they could be 'conscious' in the loose and derivative sense of having a part that's conscious strictly speaking—the same sense in which dogs are foot-shaped. It's metaphysically impossible for anything having feet or scales or wings as parts to be conscious. No biological organism (or for that matter anything 'constituted by' one) could have even the capacity for consciousness, because no such entity is made up entirely of particles directly involved in that capacity. And if an organism could never be conscious, it's hard to see how it could have any other mental property. This is another version of the metaphysical dualism of mind and life that I mentioned in §2.

If someone told me that conscious beings can never have feet as parts, I would expect her to say that this is because no material thing could have any mental property at all: conscious beings must be entirely immaterial.¹¹ That would be understandable: it really is hard to see how consciousness could arise out of physical activity. But I wouldn't expect a *materialist* to say it. The idea that a conscious being must be made up of all and only the physical particles directly involved in her conscious experience looks like an unhappy amalgam of Cartesianism and materialism.

Its consistency with the two-person view may perhaps give it some attraction. But it does not actually support that view. The embodied-mind account does not imply that there must be two conscious beings in a case of partial twinning, or even provide any reason to think so. For all it says, the particles directly involved in someone's consciousness might be spread across two independent brains. Campbell and McMahan's employment of it simply

11 Some materialists deny that there *are* any feet (van Inwagen 1990: 81–97), but the point can be made by replacing 'feet' with 'particles arranged footwise'.

assumes that in such cases the relevant brain parts in one head belong to one conscious being and those in the other head belong to another.

Of course, the embodied-mind account was not proposed as an argument for the two-person view, but as an answer to a pointed question arising from it, namely what sort of things those people are—more specifically, where their boundaries lie and why. But because it's consistent with the one-person view, the answer it gives to that question is far from complete. It says that every part of an organism that is directly involved in consciousness, and nothing else, is a part of a conscious being, but it says nothing about whether any two such parts belong to the same conscious being or different ones. It's entirely silent on the point of contention between the one-person and two-person views.

We could remedy this by combining it with the claim that nothing could be conscious unless its consciousness is in some way unified: no conscious being could have two mental lives in the sense spelled out in §1. But why should this be? Why could nothing have *disunified* consciousness? That question must presumably have an answer, and the friends of the two-person view haven't given one.¹² Until they do, the embodied-mind account will not tell us what to say about partial twinning.

10. Totalitarian properties and the problem of mental specialists

Here is a final problem for the embodied-mind account—and for any version of the brain view (Olson 2007: 87–98). The account says, again, that a conscious being must be composed of just those particles that are directly involved in her consciousness. But what about other mental properties? Is a being that remembers composed of just those particles that are directly involved in its remembering? The particles directly involved in my remembering are unlikely to be just those directly involved in my consciousness. There are almost certainly portions of my memory banks that would not have to be physically different for my conscious awareness to be phenomenally different. So if a remembering being had to be composed of just those particles directly involved in her memory, the embodied-mind account would entail that no remembering being was composed of the same particles as any conscious being. Nothing would both remember and be conscious. Seeing as I'm conscious—I could hardly be wrong about that—I'd be unable to remember anything. If I seem to remember things, that can only be because some other being—presumably another part of my brain overlapping with me—remembers, and its interaction with me somehow gives me the illusion that I'm remembering.

12 Shoemaker (1996), who thinks it follows from the functionalist theory of mind, may be an exception.

Or again, the particles directly involved in someone's thinking about philosophy are unlikely to be precisely those directly involved in her conscious awareness. If philosophers had to be composed of just those particles directly involved in their capacity for philosophical thinking, they could not be conscious. They'd be zombies. (It would be inappropriate for me to make a joke here.) And the same goes for other mental properties. What looks like a single being that is conscious, remembers, does philosophy, and so on would in fact be a large number of different beings—different parts of the brain—each having only a single mental ability. I take that to be absurd, and I'm sure the friends of the embodied-mind account would too. Call this the *problem of mental specialists*.

We can see that the original brain view faces it too. Why would anyone suppose that each of us is literally a brain—that we extend all the way out to the surface of the cerebral cortex and no further? The answer is presumably that a thinking being must be composed only of parts directly involved in her mental states and activities, or more generally in her mental properties. But which mental states, activities, or properties must someone's parts all be directly involved in? The particles directly involved in remembering will not be those directly involved in thinking about philosophy, recognizing shapes, and so on, even if there is considerable overlap. If every mental property must be had by a being whose parts are all and only those things directly involved in its having that property, then no being will ever have more than one mental property—because, again, different mental properties depend on different particles. This seems to me the most serious objection to any view on which we're brain-sized material things.

The problem would not arise if consciousness were metaphysically unique among mental properties. The embodied-mind account says that the capacity for consciousness can be had only by a being composed entirely of particles directly involved in it. That property forces direct involvement on every part of anything that has it. Like a totalitarian state, it demands not merely obedience, but active participation from every citizen around the clock. We might call such properties *totalitarian*. A property is totalitarian just if a thing can have it (at a given time) only if all its parts directly contribute (at that time) to its having that property. I don't know how to define the crucial phrase 'directly contribute to a thing's having a property', but any version of the brain view, as far as I can see, will require it. Let's see how far we can get without a definition.

We might wonder whether there *are* any totalitarian properties. *Being alive* in the biological sense might be one. Maybe all the parts of a living thing must be directly involved in its life processes: metabolism, immune activity, and so on (van Inwagen 1990: 81–97). It would follow that a prosthetic limb, a pacemaker, or a plastic heart valve—as well as any parts of an animal's hair and horns having no blood supply—could not be a part of an organism, but

only a part of its environment. *Being a material thing* might be another, given that all the parts of a material thing must themselves be material things.

The embodied-mind account says, again, that the capacity for consciousness is totalitarian: that's why a conscious being cannot extend beyond its brain. And any version of the brain view must say something analogous. The mental-specialists problem arises only if at least one other mental property is also totalitarian: that's what leads to the consequence that the bearers of different mental properties must have different parts. But what if none is? What if a being can remember, or think about philosophy, or recognize shapes, despite having parts *not* directly involved in those abilities? Then all these properties might be compatible, as they so obviously seem to be. We could accept the apparent fact a conscious being can also remember, recognize shapes, and so on, even though these abilities involve different parts of the brain. So maybe consciousness is totalitarian but other mental properties are not. Or perhaps some other mental property has this unique status. But no two mental properties are totalitarian.

I don't know of anyone who has actually made this proposal. It's an intriguing metaphysical conjecture. Apart from its utility in defending the two-person view, however, I can't see any reason to accept it. By itself it has no attraction. Without some account of *why* consciousness but no other mental property is totalitarian, it looks completely unprincipled. If a favourite view of mine led to a doubtful claim like this—a claim that I had no other evidence for—I'd worry. It would seriously undermine my confidence in it—especially if there were a sensible alternative. And there is a sensible alternative to all this: that conscious beings are animals.

11. More alternatives

I haven't considered all accounts of what we might be that are consistent with the two-person view. I've said nothing, for example, about the view that a person is an immaterial substance or a bundle of mental states and events. I can't see that partial twinning creates any *new* problems for these views. The view that there are two immaterial thinking beings in a case of partial twinning does not introduce any problems in addition to those arising from the view that there is one immaterial thinker attached to each ordinary human being. Someone might be led by the two-person view to conclude that conscious beings must be immaterial—not merely a dualism of mind and life, but an old-fashioned dualism of mind and body. In any event, I haven't yet seen a credible two-person view that's compatible with our being material things.¹³

13 I am grateful to Tim Campbell and Karsten Witt for comments on earlier versions.

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