

Embodied mind sparsism

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Abstract If we are physical things with parts, then accounts of what we are and accounts of when composition occurs have important implications for one another. Defenders of restricted composition tend to endorse a sparse ontology in taking an eliminativist stance toward composite objects that are not organisms, while claiming that we are organisms. However, these arguments do not entail that we are organisms, for they rely on the premise that we are organisms. Thus, sparsist reasoning need not be paired with animalism, but could instead be paired with other accounts according to which we are composites. The embodied mind account—a version of the brain view—is one such account. Replacing the premise that we are organisms with the premise that we are embodied minds, in arguments that otherwise parallel those supporting animalist sparsism, yields an account according to which composite objects include thinkers, but perhaps nothing else. Since animalism has implausible implications about scenarios which are handled better by the embodied mind account, this approach is preferable to animalist sparsism. Furthermore, the role of mental features in sparsism makes embodied mind sparsism the more reasonable conclusion. Meanwhile, adopting sparsism allows the embodied mind account to dodge objections that may not be as easily avoided by it or other versions of the brain view if not paired with sparsism. These include objections about brains that are not persons, inorganic part replacement, and another form of part replacement that might seem to allow one to get a new brain.

Keywords Composition · Personal identity · Embodied mind account · Brain view · Animalism · Sparse ontology

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1 Introduction

If we are physical things with parts, then there are at least some composite objects and among them are whatever sort of things we are. The question of when composition takes place is thus closely related to the question of what sort of things we are. Olson (2007: 239) agrees these two questions are closely related. He argues that many objections to animalism are best avoided by endorsing a theory of composition according to which composition is restricted such that while there are composite objects, there are many fewer than found in folk ontology. As Olson (2007: 221) puts it, animalists ought to “solve their metaphysical worries by denying the existence of entities that generate them,” citing Merricks (2001) and van Inwagen (1990) as examples of animalists who do so.¹ Here I will follow Olson in calling the sort of ontology entailed by such an approach a *sparse ontology*, and follow Miller (2006) in calling the endorsement of a sparse ontology *sparsism*.

Olson (2007: 229) also claims the only accounts of restricted composition that have actually been endorsed are sparse ontologies according to which we are organisms, and that it thus seems that “anyone who rejects universalism and compositional nihilism ought to say that we are animals.” However, animalism is not entailed by sparsism, even the sort of sparsism that excludes composites that are not organisms. Of course, it would follow that we are organisms if it were true both that we are composites and that the only composites are organisms. However, this reasoning is not found in sparsist arguments. Along with arguments that other composites are eliminable, sparsists reach the conclusion that the only composites are organisms by supposing that we are composites and that we are organisms. Since animalist sparsism presupposes animalism rather than entailing it, one can consistently endorse sparsism while rejecting animalism in favor of some other account that agrees we are composites. One such approach is McMahan’s (2002) *embodied mind account*, a version of what is sometimes called the *brain view*. According to this approach, a human person is identical with a human mind, which McMahan takes to be something like a functioning brain or cerebrum, and continues to exist so long as its parts continue to sustain the capacity for consciousness. More recently, Parfit (2012) has defended a similar account, his *embodied person view*.²

In the next section, I give an overview of the sparsist accounts of van Inwagen and Merricks, and present a view that merges the embodied mind account with sparsism. The resulting *embodied mind sparsism* should have all the strengths of animalist sparsism, but reaches a different conclusion about what sort of composites exist. I then add that, given the sort of motivations behind sparsism, embodied mind sparsism is the more appropriate result of sparsist reasoning. In Sects. 3–5, I argue that embodied mind sparsism avoids various objections facing non-sparsist versions of similar views. One such objection concerns brains that clearly are not persons, such as brains preserved in formaldehyde. If your brain can exist when or where you

¹ Olson (1995) also presents his own arguments against the existence of some of the troublesome entities for animalism.

² For other defenses of this sort of account, see Campbell and McMahan (2010) and Persson (1999).

do not, then you are not your brain. Another objection is that we cannot be brains because we can become inorganic, but brains cannot. A third suggests that replacing chunks of one's brain with chunks of another brain might allow one to survive the gradual replacement of one's brain. Section 6 is a brief overview of some reasons to prefer the embodied mind account to animalism. In the remaining sections, I consider and reply to some potential objections to embodied mind sparsism.

2 Animalist sparsism and embodied mind sparsism

Peter van Inwagen (1990) and Trenton Merricks (2001) each argue for an eliminativist stance toward many of the composite objects of which we speak, such as rocks and tables. One might wonder why these sparsists do not reject composition entirely, endorsing nihilism. The reason is that each thinks *we* are ineliminable, having mental properties that cannot be attributed to mere aggregates of simple particles, nor of course to any individual simple particle (from here on, *simples*). For example, van Inwagen's objection to nihilism can be summarized as follows: we exist and have parts, and thus nihilism is false. Assuming we are physical things but not simples, we are composites. We are not mere collections of simples, for we have mental properties that are not entirely reducible to the properties of simples. No simple is in pain, but any pain has *some* individual subject and thus is not attributable to an aggregate (van Inwagen 1990: 118). Thus, if we are physical things, there are at least some composites.

Merricks also takes the irreducibility of thought as reason to think there are composites and that among them are thinkers like us, while considering other alleged composites to possess no such irreducible, non-redundant properties. When it comes to a baseball, for example, Merricks (2001: 111) does not find there to be any properties of the alleged composite that are not wholly reducible to and explainable by the properties of the particles of which the baseball is composed. If the baseball is thrown through a window, the particles arranged baseballwise suffice to shatter the window. So, either the baseball does not cause the window to shatter, or the shattering is overdetermined and the baseball's effects are redundant. If it is not overdetermined, then the baseball itself is not a cause of the window's shattering. If all of the baseball's effects are similarly reducible to the effects of its parts, then there may be no good reason to suppose baseballs exist in addition to particles arranged baseballwise. What is said here of baseballs and their shattering windows can be said of many other composites and their effects, and thus there may be little reason to posit the existence of most composites found in folk ontology. However, Merricks considers thinkers to non-redundantly cause things via their mental properties (2001: 114). That is, he considers our mental properties to have effects not wholly reducible to the collection of effects had by the particles of which we are composed.

Merricks agrees with van Inwagen that we are organisms, though Merricks states he does not endorse a biological approach to our persistence conditions and that his stance does not rule out the possibility of our becoming inorganic via the "gradual replacement of our cells by circuits until we are no longer biological entities"

(2001: 86–87).³ And while van Inwagen (1990: 121–122, 182) says the only composite objects are organisms and finds it arbitrary to draw an ontological distinction between thinking and non-thinking organisms, Merricks (2001: 114–115) takes a different approach in committing himself only to the existence of conscious organisms while leaving open whether there are non-conscious organisms. Arguing also for the eliminability of other types of alleged composite objects (those without irreducible properties), van Inwagen and Merricks each endorse a sparse ontology in which the only composites are organisms—or perhaps just *conscious* organisms, for Merricks (2001: 114–115).

While these sparsists have reasons for saying we are organisms, they do not first argue that the only composites are organisms and then conclude that since we are composites, we must be organisms. They instead say we are composites and organisms, and thus along with arguments for eliminativism about other composites, they conclude there are no composites besides organisms. Since the claim we are organisms is a premise and not an implication of the argument, one might instead pair sparsist reasoning with another account for which we are composite objects.

One such account is the *brain view*, which has it that a person is the part of the organism which thinks. One version of that sort of approach is McMahan's (2002: 66–69) *embodied mind account*, according to which we are functioning cerebra such that one's continued existence depends on one's retaining the capacity for consciousness. Since the embodied mind account agrees we are composites, one option for those who find sparsism appealing is to replace animalism with the embodied mind account in arguments for sparsism that otherwise parallel those of van Inwagen or Merricks. *Embodied mind sparsism* agrees with other forms of sparsism in rejecting many alleged composite objects, such as tables and rocks, which has the advantage of avoiding various metaphysical puzzles.⁴ It also agrees that mental properties are irreducible or causally non-redundant properties that give reason to think there are composite objects and that we are among them. Where van Inwagen says we are organisms and thus concludes that simples compose when giving rise to life, embodied mind sparsism has it that we are (physical) minds, in which case parallel reasoning leads to the conclusion that simples compose when giving rise to the capacity for thought.⁵

While Merricks says we are organisms and takes an eliminativist stance toward brains to avoid too many thinkers—that is, to avoid saying the organism and brain each think the same thoughts with the same parts of the brain—he points out that another way to avoid the problem is to say we are brains and take an eliminativist stance toward organisms. This approach, he says, “gestures more at friendly

³ Given Merricks's stance that we are only contingently animals, some may say he is no animalist. Belshaw (2011: 401) and Nichols (2010: 261), for example, each describe animalism as including commitment to the claim that we are essentially animals. However, Olson (2007: 26) disagrees, saying only that whether we are essentially animals depends on whether human animals are essentially animals.

⁴ For example, no questions arise about statues coinciding with lumps if neither statues nor lumps exist.

⁵ I say they compose when giving rise to the *capacity* for thought, as opposed to saying they compose when giving rise to thought, since I do not suppose persons go out of existence when asleep or when knocked unconscious. Even when we cease thinking temporarily, the capacity for thought remains.

amendment than at wholesale refutation,” for it shares many important aspects with his own account: according to each, we exist, we think, we are composite objects, and we escape eliminativist arguments against other alleged composites in virtue of our “non-redundantly causing things in virtue of our mental properties” (2001: 135). The stance he describes here is quite similar to embodied mind sparsism.

As discussed so far, the embodied mind account is at least as good a fit for sparsism as is animalism. Furthermore, there is an important reason why the embodied mind account is a *better* fit for sparsism than is animalism. As discussed earlier in this section, Merricks and van Inwagen take different approaches to mindless organisms. Whether such organisms exist is something which Merricks (2001: 114–115) leaves open, saying it depends on whether there are some irreducible, biological properties that entail that all organisms—not just the minded ones—have some feature that cannot be collectively had by a mere aggregate. van Inwagen (1990: 121–122, 182) takes a different approach, finding it arbitrary to exclude mindless organisms from his ontology while including minded ones. However, Merricks’s reason for only being committed to the existence of minded organisms seems to be a good reason to think that it is instead van Inwagen’s approach here which is arbitrary. Since irreducible mental features are both of these sparsists’ motivation for positing composites, there is no reason for them to ascribe to mindless organisms the same ontological status as minded ones. In short, both agree that the irreducibility of our mental features is reason to reject compositional nihilism, though both agree with compositional nihilists about things like chairs: there are no chairs, but only particles arranged chairwise. Furthermore, they agree that the compositional nihilist’s eliminativist stance toward persons is revealed to be false by the presence of mental features that cannot be had by a mere aggregate. None of this gives any reason to endorse mindless organisms.

We can add here that since it is only our mental features which play this pivotal role in sparsism, it seems similarly arbitrary to say we are whole organisms. Not all parts of a human organism contribute to the capacity for consciousness, or mental features in general. Concerning those which do not, there is no clear reason to consider them to be included in the relevant episode of composition, and thus no reason to consider them as parts of the person. Embodied mind sparsism, which says our parts are only those which together give rise to our mental features, thus seems a better fit for sparsist reasoning.

In making this objection, I rely on a distinction between the simple particles whose activities give rise to consciousness and those whose activities do not. While I cannot say exactly which simples contribute to your thoughts, it seems safe to say that *some* do, and these likely include many found in your cerebrum. Likewise, it is safe to say that some other particles are not: no particles on the bottom of the ocean are directly involved in your thoughts, and presumably there are parts of ‘your organism’ which are not involved in thought either. Hudson (2007: 224–225), who also uses a distinction between which parts of the animal do and do not contribute to thought in arguing we are not animals, makes similar remarks:

Presumably some parts of the brain are relevant, some parts of the hand are not, and some parts of the nervous system are borderline cases. But all I need

for my present point is that some parts of a living human organism obviously fail to contribute at all (including for example, hair, fingernails, and bone-marrow)...

It may of course be difficult to say just which particles play the right role, or just what that role is. For example, particles in your heart seem to play some important role in enabling you to think, but it is counterintuitive to think of them as parts of your mind. But, as Hudson points out, some parts of the organism do not even contribute in that way.

Olson (2007: 91–93, 2014a, b: 38–40) objects that since views like the embodied mind account rely on the notion that only some parts of an organism contribute to thought, such views need an account of which parts are *directly involved* in thought, but that this is impossible because there is no good way to make sense of the notion of direct involvement. But if this is a problem for the embodied mind account, then it is similarly a problem for animalism. Animalists need an account of the distinction between being directly or indirectly involved in living, without which they may be unable to say which particles are the parts of some organism. That is, if the embodied mind account needs a way to say why parts of the heart are not parts of the mind despite playing an important role in making thought possible, animalism needs a way to say why parts of an organism's environment or some life-support machine are not parts of an organism despite their important roles in making life possible. While Olson (1997: 135) claims the life-support machine fails to be part of the organism in virtue of its not being 'caught up in' the organism's metabolism, this does not explain direct involvement in life. Instead, this calls for an account of direct involvement in metabolism: if an organism depends on some machine to continue living, then that organism's metabolic processes cannot continue without that machine, and thus the machine is caught up in the organism's metabolism in some sense.

Perhaps it possible to make sense of direct involvement in life or metabolism, but it is unclear where Olson stands on this. Olson (1997: 137) claims that a life is a well-individuated event, and that "there is usually a definite answer to the question whether a given particle is or is not caught up in a particular life." Furthermore, in the course of objecting that there is no way to make sense of direct involvement in thought, Olson (2007: 93) says that "if there is a nonarbitrary way of saying which things are involved in a human being's thinking, it is likely to be that they are all and only the parts of the organism," in virtue of the organism's having a "nonarbitrary boundary." This suggests Olson may think there is some way to make sense of direct involvement in life or metabolism. However, Olson (2008: 42) elsewhere states that organisms have "fuzzy boundaries" in that some particles "are neither definitely parts of it nor definitely not parts of it." There, he follows van Inwagen (1990: 217–218), who compares being caught up in an organism's life to "being rich or being tall," saying that each is "a matter of degree, and is in that sense a vague condition." Giving the example of a carbon atom whose parts get made use of by Alice, who consumes some sugar containing the carbon atom, van Inwagen tells us there are no right answers to the questions of when those simples first came to be caught up in the life of Alice or when they first came to be parts of

her. If animalists must accept vague parthood, saying particles are involved in a life to varying degrees, then there may be no way for them to make sense of direct involvement in life.

If animalists cannot make sense of direct involvement in life—whether in virtue of their accepting vague parthood or for some other reason—then animalism faces an objection concerning direct involvement which parallels Olson's. If having no account of direct involvement is a problem for the embodied mind account, then it is a problem for animalism as well, and thus Olson's objection gives no reason to prefer the latter.

If, however, it is somehow possible to make sense of direct involvement in life, then perhaps there is hope for direct involvement in thought as well. After all, Olson (2007: 92) says the problem with direct involvement has nothing to do with thinking in particular, comparing the notion of direct involvement in thought to the notion of direct involvement in making knives or in walking.

We have now seen why, *qua* sparsism, embodied mind sparsism is more reasonable than the animalist alternative. But why should endorsers of the embodied mind account or brain view consider endorsing sparsism? One reason is that, like animalists, endorsers of the embodied mind account must be wary of taking stances that entail too many thinkers. Just as the existence of brains or cerebra (or various other portions of an organism that include the cerebrum) poses a problem of too many thinkers for animalism, the existence of large parts of a brain or cerebrum pose a problem of too many thinkers for the embodied mind account or brain view. This line of reasoning applies no matter what sort of composite objects we are. Consider all the simples that compose you. If, among those, just one simple *S* were to vanish from existence, surely you would continue to exist and maintain the capacity for thought even in that first moment when your other parts had not changed in response to the loss of *S*. Thus, proponents of the embodied mind account or brain view ought not to endorse the existence of an object that consists of all of you minus *S*. What account of composition entails there are physical minds, but not large undetached parts of minds? Embodied mind sparsism is one such account, and it appears no others have been defended yet.

Sparsism has further advantages for the embodied mind account. In the next few sections, I consider some objections that are raised against the embodied mind account and similar views, with the aim of showing that embodied mind sparsism can avoid such objections.

3 Brains that are not persons

Olson (2007: 85, 2014b: 41) and Hershenov (2008: 5) each object that we cannot be brains since brains exist at times both before there are any mental properties present, as in early gestation, as well as after the person has died. The embodied mind account might seem to imply, for example, that if some person's brain is preserved in a jar after death, then that person is preserved in a jar. But clearly no person is there in the jar. If the brain still exists when or where the person does not, then the brain and the person are not identical.

Discussing this objection, Campbell and McMahan (2010: 289) use the term “functional brain” for the brain (or just the cerebrum) when its parts give rise to thought, and “mere brain” for the brain when it does not, treating the two as distinct entities. They claim the person is the functional brain and that the mere brain comes into existence when the person goes out of existence. Their stance is that what gets preserved in the jar of formaldehyde is a mere brain.

Olson (2014b: 43–45) objects to the distinction between the functional brain and the mere brain on the ground that the same sort of reasoning would lead us to distinguish the *waking brain* and the *sleeping brain*, taking them to be distinct entities that differ only in their modal properties. This is because he takes the functional brain and mere brain to coincide, considering the mere brain to exist both before, during, and after its parts give rise to thought, and the functional brain to exist only when those parts give rise to thought. As he goes on to argue, and as Hershenov (2008: 5) argues as well, their coinciding would imply too many thinkers: the mere brain would have the same thoughts and experiences as the functional brain, since the two are made of the same parts at the same time.

It may seem these objections do not apply, since Campbell and McMahan (2010: 290) deny that the functional brain and the mere brain ever spatially or temporally coincide. Unfortunately for Campbell and McMahan’s account, avoiding that troublesome coincidence of the functioning and mere brains may be difficult given their commitment to the existence of each. What account of composition would entail that the objects that had been the parts of the functional brain would begin to compose a new thing (a mere brain) in virtue of ceasing to stand in the relations in virtue of which they composed the functional brain, or that they cease to compose something (a mere brain) when they begin giving rise to thought? It seems a mere brain would persist at least as long as its parts were arranged brainwise, but they are arranged brainwise while composing the functional brain. Thus, the objection about coincidence raised by Olson and Hershenov may not be so easy to avoid for Campbell and McMahan.

That sort of objection is no threat to embodied mind sparsism. This account’s solution differs from Campbell and McMahan’s by taking an eliminativist stance toward mere brains, saying that when the person (the functional brain) ceases to exist, this leaves only particles arranged brainwise. In this solution, there are no two entities differing only in their modal properties, for there is no mere brain. Campbell and McMahan present this sort of reply as another tenable solution to the problem of brains that are not persons, but reject it since they find the eliminativist stance toward mere brains to be too extreme. Such stances are of course common to and entailed by sparsism, and thus I do not share their concern. Embodied mind sparsism is only committed to the occurrence of composition in cases where some simples together give rise to the capacity for consciousness. This leaves no reason to suppose the parts of the mind compose anything either before they give rise to that capacity or after they cease to do so. It thus seems that whether or not Olson’s objection to the sort of reply Campbell and McMahan prefer holds up, it presents no problem for embodied mind sparsism.

Without some account of why the parts of mere brains do not compose them until the functional brain ceases to exist, the alternative is to say the mere brain exists

even before death, spatially coincident with the functional brain during the person's life. Again, this entails too many thinkers. Avoiding such concerns gives embodied mind sparsism's solution an advantage over Campbell and McMahan's, and is a further reason why accounts such as theirs or Parfit's (2012) similar approach would be improved by being merged with sparsism.

4 Inorganic part replacement

Various accounts of personal identity maintain that one's persistence conditions are determined in some way by one's continued capacity for consciousness. Some take this to imply one could survive a process of gradual inorganic part replacement so long as one's thought processes are not interrupted. The embodied mind account agrees that one's persistence depends on one's continued capacity for consciousness. If this implies one can become inorganic, and if becoming inorganic means one is no longer an embodied mind, then the embodied mind account may be in trouble. Olson (2007: 84–87, 2014b: 41) and Hershenov (2008: endnote 4) each argue that if we can become inorganic, then we cannot be brains. They reason that the process of inorganic part replacement would eventually leave nothing that counts as a brain. If the person can exist when the brain does not, the person is not the brain. Hershenov adds more to this objection, saying that before the organic brain would be destroyed via inorganic part replacement, it would exist completely coincident with the person. As discussed above concerning the mere brain, this sort of complete coincidence entails too many thinkers.

This objection can be met since embodied mind sparsism has no reason to consider embodied minds (persons, thinkers) as essentially organic. If a mind is composed by its parts in virtue of their interacting such that they give rise to the capacity for thought, then any object that comes to contribute in the right way to giving rise to those thoughts becomes part of that mind. One and the same embodied mind undergoes the change from organic to inorganic in this process, being partially organic and partially inorganic throughout most of it.

Here too there is no concern about there being two distinct, coincident thinkers. Embodied mind sparsism denies the existence of the mere brain, being committed to endorsing the existence of no composite other than the embodied mind. Since embodied minds are not essentially organic, embodied mind sparsism endorses no essentially organic composites. Embodied mind sparsism can thus avoid the objections from Olson and Hershenov concerning inorganic part replacement, while accommodating the intuition that one might survive becoming inorganic.

5 New brain, same person?

Olson (2014b: 41) has us imagine another sort of gradual part replacement, in which chunks of one's brain are replaced by the corresponding chunks of another brain. "If these parts were large enough," Olson argues, "the result would seem to be not your original brain with new parts, but a new and numerically different brain." Olson

thinks most would deny that the person had gone out of existence, even though that person's original brain had gone out of existence. If you can survive when or where your brain does not, then you are not identical with your brain.

Embodied mind sparsism has a similar reply here as was given concerning inorganic part replacement in the previous objection. Let A be the mind (person) receiving the new parts, and let B be the one from which they are taken. If thought is continuous in A throughout the scenario, then it must be the case that the former parts of B come to contribute to giving rise to those thought processes. If objects compose when giving rise to the capacity for thought, then the former parts of B become parts of A if and only if they come to contribute to giving rise to the capacity for thought found in A. If the new parts do not come to contribute to the capacity for thought, then the loss of the old parts will eventually result in the loss of that capacity. This would thus end A's existence by reducing A in size until there is not enough of A left to realize consciousness, leaving either a different mind (made of the former parts of B) or no mind at all. But if the former parts of B come to contribute to giving rise to A's capacity for thought (as in Olson's scenario), then embodied mind sparsism implies they become parts of A. In that case, the process of part replacement does not end A's existence, for A would simply be getting new parts. Coming at this another way, we might say that if the person is the embodied mind, then the person's gaining new parts just is the embodied mind's gaining new parts, and therefore neither can survive a process that ends the other's existence.

Animalist sparsists would presumably give a similar description when it comes to organisms gaining new parts: Some particles arranged kidneywise, for example, can be transplanted from one organism to another. They begin as parts of one organism, then cease to be parts of anything, and finally become parts of another organism. Once they come to be caught up in one set of life processes, they are parts of the organism whose life processes those are, regardless of whether they were once parts of some other organism. The parallel could be said of minds: once some particles come to be caught up in contributing to some set of thought processes, they are parts of the thinkers whose thoughts those are, regardless of whether they were once parts of some other thinker.

6 Animals or embodied minds?

While this is not the place for a full discussion of the debate between animalism and the embodied mind account, a brief overview of some reasons to prefer the latter to the former may help motivate this discussion. First, when it comes to familiar thought experiments about brain or cerebrum transplants, many find it intuitive to think one could survive a brain or cerebrum transplant such that one goes with one's transplanted brain or cerebrum. If the organism stays behind in a vegetative state while the person goes where the cerebrum goes, then the person is not identical with the organism. Animalists instead say you would be the organism in a vegetative state while someone else gets your cerebrum (or particles arranged cerebrumwise).

A second reason some might doubt we are organisms is that a human organism can go on living in a persistent vegetative state without a functioning cerebrum (and

thus without the capacity for thought). Some—for example, those who endorse a higher-brain definition of death—find it intuitive to think a person has ceased to exist once that person's cerebrum has irreversibly ceased functioning, or irreversibly lost the capacity for consciousness. If the person can cease to exist while the associated organism continues to live, then the person is not identical with the organism.

Another reason to prefer the embodied mind account to animalism is that it provides a better analysis of possible cases of two sorts of conjoined twinning. First, consider a case of dicephalic twinning, in which the outward appearance might be described as one body with two heads. It may seem there is just one human organism in a case of this sort, or at least that there could be if there were enough overlap. But so long as there are two cerebra producing two sets of thoughts as distinct and non-integrated as yours and mine, it certainly seems there would be two persons. Whatever determines the number of human organisms—the number of brainstems, perhaps—need not be duplicated in the twinning process, and a second cerebrum would seem to entail a second organism no more than an extra arm or leg would. Cerebra may be significant when it comes to counting persons, but why would two cerebra entail two human organisms?

In addition to a second cerebrum being insufficient reason to think there is a second organism, the stance that there must be two organisms in such cases would make it hard for animalists to deal with another sort of twinning case. Hershenov (2005a, b: 35fn., 2013) points out that if animalists take the stance that human organisms are individuated by brainstems, then they must say there are two human organisms in a different sort of conjoined twinning case, one which seems to involve just one person. Describing an actual case of cephalothoracopagus conjoined twinning in which the only relevant area of overlap was the cerebrum, and which resulted in a terminated pregnancy, Hershenov reasons that if development had continued and the cerebrum had functioned properly, then it would be able to produce thoughts like yours or mine. In that case, since there would be just one stream of thoughts realized in one cerebrum, it seems there would be exactly one person. However, animalism entails instead that since each of the human organisms is appropriately related to a functioning cerebrum, each is a human person. That has the strange implication that there could be two distinct persons thinking just one set of thoughts realized in just one cerebrum.

Even for animalists who do not endorse the brainstem criterion, it will be difficult to deny there could be two organisms in this case of very little overlap while also arguing there must always be two organisms in dicephalic twinning, in which there is a great deal more overlap. To put it another way, it would be difficult to deny there could be just one organism in the dicephalic twinning case while also arguing there must be just one organism when the only overlap is at the cerebrum. It thus seems that animalism has strange implications for the number of persons in at least one of these cases. Olson (2014a) seems prepared to embrace animalism's implausible implications for both cases, and Hershenov (2004) presents arguments intended to show that animalism's implications for dicephalic twinning may not seem so strange when compared to some other scenarios. While this is not the place for a reply, perhaps it will suffice to say that, other things being equal, an account of

what we are that does not require radical revision to the way we count persons is preferable to one that does.

The presence of two functioning cerebra, each giving rise to a different set of thoughts, is surely an important part of the reason we think there are two persons in the dicephalic twinning case. The embodied mind account provides a better analysis of the case: there are indeed two persons there, as explained by the two functioning cerebra, since each of those persons just is one of the functioning cerebra. The embodied mind account also entails the intuitively correct number of persons in the case of two organisms sharing a cerebrum: the one functioning cerebrum is one embodied mind, and thus one person. In addition to the issues surrounding transplant scenarios and persistent vegetative states, consideration of the two sorts of conjoined twinning discussed here give reason to prefer the embodied mind account to animalism.

Again, the preceding discussion is not intended to decisively settle the debate between the embodied mind account and animalism. My hope is just that I have shown there are good reasons for doubting animalism and that the embodied mind account does well with the sort of scenarios that are troublesome for animalism.

7 Sparsism and substances

7.1 Substance and function

Earlier it was argued that, in the context of sparsism, embodied mind sparsism makes more sense than animalist sparsism. But if we must adopt some form of sparsism that implies there may be only one type of composite object—either just minds or just organisms—then some might think we should choose the approach for which that kind of composite is a substantial kind. Furthermore, some may argue that organisms seem more like substances than do minds. For example, Olson (1997: 31–37) argues that kinds like *thinker* or *person* are merely functional kinds, rather than substantial kinds. This is because being a thinker or person is a matter of having some capacity, such as the capacity for thought, and the same could be said of embodied minds. Olson compares being a thinker to being a locomotor: adding a motor to a pre-existing boat does not create a new boat, but instead gives that boat a new capacity. Olson says the same is true of an organism which gains the capacity for thought: the organism becomes a thinker, but no new entity comes into existence. According to Olson, being defined by some capacity makes *thinker* and *person* functional kinds, and thus poor candidates for being substantial kinds. He reasons that a being a thing's substantial kind is supposed to give us the best answer to the question, 'What is it?' But saying something is a thinker, mind, or person does not tell us *what it is*, but instead tells us *what it does*. He adds also that since what appear to be very different kinds of things—such as a human person and conscious robot, for example—can both be thinkers, *thinker* fails to be their substantial kind.

I borrow a reply here from Nichols (2010), who shows that Olson's approach here fails to relevantly distinguish *organism* from *thinker* or *person*. First, he argues that *organism* is also a functional kind. He points out that even Olson (1997:130)

provides a functional definition for ‘organism,’ saying the essential traits of an organism are its “life giving” features: “metabolism, teleology, organized complexity—and whatever further properties necessarily go along with them, such as self-directed growth and development, an internal genetic plan, low internal entropy, and perhaps the capacity for evolution by natural selection.” Clearly some of these are capacities, such as the capacity to metabolize or to grow, the capacity to resist entropy, and clearly the capacity for evolution by natural selection is a capacity. If part of what makes something an organism is having certain capacities, then *organism* is a functional kind for the same reason as *thinker*. Nichols adds that the animalist cannot avoid this result by saying we are of a more specific kind than *organism*, such as *animal*. To be an animal is to be a certain type of organism, and so a correct definition of ‘animal’ inherits the functional aspects of the definition of ‘organism,’ and the same is true of the even more specific *human animal*. But having argued that *organism* is a functional kind, Nichols does not further argue that *organism* thus fails to be a substance concept. Instead, he rejects Olson’s use of the distinction between *what it is* and *what it does*, taking the stance that that saying *what it does* may sometimes be the best way of saying *what it is*.

Nichols (2010: 267) also responds to Olson’s other reason for thinking functional kinds fail to be substantial kinds, which is that a functional kind like *thinker* can include what may appear to be vastly different kinds of things. While an inorganic, robotic thinker might seem to be a fundamentally different sort of thing than a human thinker, organisms also come in greatly different forms: for example, trees, dogs, and bacteria. There are even greater differences to consider if we take into account merely possible organisms, which are fair to consider here if we are taking into account merely possible types of thinkers, such as conscious robots. In light of the reply from Nichols, it seems Olson’s objection fails to present any distinction between *organism* and *mind* or *thinker* that is relevant to the question of which might be substantial kinds.

7.2 Substance and independence

Some might instead argue that organisms are better candidates than minds for being substances in virtue of the contrast between an organism’s capacity to exist independently and a mind’s dependence upon the rest of the organism to continue thinking and existing. An organism can sustain itself, but a mind cannot. A brain removed from a body will not do much on its own, at least not for very long.

Perhaps these concerns can be mitigated. First, while the embodied mind is dependent upon the rest of the organism in many ways, there is no reason to think that all mental processes would cease *immediately* if the rest of the organism suddenly vanished. Second, intuitions about transplant thought experiments typically align with the notion that one would survive as the person with one’s mind in new body. If this is correct, then the rest of the organism seems analogous to a form of life support or ‘power source’ for the mind, or perhaps simply an environment in which the mind can survive. Furthermore, organisms also depend on external assistance in continuing to exist, relying on their environments for various things needed to continue living, and in some cases relying on some sort of life

support machine to continue living. Just as an embodied mind would not continue to think—for very long, at least—without the rest of the organism or a suitable replacement, the organism would not continue to live very long if, say, the sun ceased to exist, or if the life support machine was unplugged.

7.3 Substance and the manifestation of essential properties

Some might object that thinking is the wrong sort of capacity to be the essential feature of a substantial kind, in virtue of the fact that thinkers do not always think. After all, surely a thing always has the essential feature, or defining trait, of its kind. While thinkers exist without thinking, an organism is alive throughout its existence, and thus, living may seem a better candidate than thinking for being the defining trait of a substantial kind.

However, it may be possible for an organism to exist without manifesting the traits that would lead one to count it as an organism. For example, a human organism could have some or all of its life processes stop without ceasing to exist, as might happen if its cardiopulmonary processes ceased temporarily or if it were cryogenically frozen. Whether to count the organism as living or dead at this time is a tricky matter, but in either case it is not exhibiting the sort of features at that time that typically lead us to describe something as an organism. It is not metabolizing or growing, for example. Thus, if kinds like *thinker* and *mind* fall short of being substantial kinds due to the fact that thinkers do not always think, then *organism* may fall short for a similar reason.

Furthermore, embodied mind sparsism does not say we are essentially thinkers in the sense that we are essentially *thinking*, but rather in the sense that we essentially have the *capacity* for thought. You retain your capacity for thought even when you are not making use of that capacity, and thus we need not say you cease to exist when you stop thinking for a time (during dreamless sleep, for example). This approach avoids other problems as well, for some might be concerned that embodied mind sparsism implies that a coma victim has ceased to exist, rather than existing and having an interest in regaining consciousness. If you continue to exist as long as you keep your *capacity* for consciousness, then there is no need to say a coma must end one's existence. But some might object that embodied mind sparsism is inconsistent here, for, while it seems to rule out the existence of mindless fetuses, there is a sense in which the mindless fetus could be said to have the capacity for consciousness. Embodied mind sparsism thus needs an account of why the mindless fetus does not exist, but the unconscious person does.

The important distinction here is that between (a) lacking a capacity and (b) having a capacity but being unable to exercise it. For example, there are those who lack the capacity to stand. While I am not standing now, I have the capacity to stand, and would retain it even if I were temporarily prevented from exercising it by a large person sitting on top of me. Similarly, a great basketball player retains the capacity to play well even when an injury prevents the player from exercising that capacity. If someone slips into a coma but retains her capacity for consciousness, then embodied mind sparsism entails she still exists. But as discussed earlier, embodied mind sparsism fits well with a higher brain criterion of death, for it

implies one ceases to exist if one has lost the capacity for consciousness, which would likely result from sufficient damage to one's cerebrum.

8 Sparsism and science

Other reasons one might think animalist sparsism is the better sparsism may concern the relation between ontology and science. For example, some might argue it makes more sense to suppose there were organisms lacking mental properties before evolution gradually led to organisms with increasing levels of mental complexity. But according to embodied mind sparsism, no mindless organisms have ever existed. Another example concerns pregnancy: some might argue it makes more sense to suppose something exists that is first mindless and later develops mental features, but embodied mind sparsism implies there is no mindless thing that develops those features.

While such concerns may give reason to question whether sparsism in general is correct, they should not convince one to choose animalist sparsism over embodied mind sparsism. Each approach entails there are no stars or planets, but instead only particles arranged starwise and particles arranged planetwise. Similarly, each entails there are no mountains, but only particles arranged mountainwise. If sparsism can be reconciled with astronomy and geology, then there is no reason to think the same is not true of biology. Our biological features, after all, play no significant role in sparsism. If one thinks such reconciliation with science is impossible, then one may have reason to doubt that any sort of sparsism is true. But, again, here we are considering reasons one might choose animalist sparsism over embodied mind sparsism, rather than reasons one might reject sparsism entirely.

Finally, since Merricks does not endorse mindless organisms, these same objections might be raised to his approach. Of course, one could argue that this is reason to prefer van Inwagen's sparsism, according to which both minded and mindless organisms exist. However, as discussed above in Sect. 2, van Inwagen's motivation for endorsing organisms that can think—their having irreducible mental features—makes his endorsement of mindless ones seem arbitrary, while Merricks's agnostic approach to mindless organisms is more principled.

9 Commissurotomy and the capacity for consciousness

Given that one's capacity for consciousness is what determines one's persistence conditions for embodied mind sparsism, some might object that this view has false implications for commissurotomy cases. The strange results of commissurotomy are familiar in discussions of personal identity, and so I will not go into great detail here. In short, commissurotomy is a medical procedure in which the corpus callosum is severed. Since the corpus callosum is the main connection between the two cerebral hemispheres, the result is that certain 'information' cannot make it from either hemisphere to the other. If a typical person sees a bird with just one eye while seeing a dog with just her other eye, she experiences them *together* in a sense

which we do not find in commissurotomy patients. She could write down with either hand, “I saw a dog and a bird,” to describe her experience.

Things can be very different for a commissurotomy patient. With each hemisphere getting visual input that is inaccessible to the other, the commissurotomy patient could write, “I saw a dog,” with one hand, and if both hemispheres have linguistic capacities, she could also write, “I saw a bird,” with the other. It thus seems that if asked whether she had seen a dog, a bird, or both, one hand might write, “I saw a dog, but not a bird,” while the other might write, “I saw a bird, but not a dog.” When experiments produce such results, it may be tempting to think the different statements written by each hand are expressions of different experiences and beliefs by two different thinkers sharing a body, as is the case in dicephalic twinning. However, since effects of commissurotomy do not usually show up in the everyday life of the patient, most would say that commissurotomy does not result in two persons sharing a body. This leads some to instead say the commissurotomy patient is one person with two ‘centers’ or ‘streams’ of consciousness, while the typical person has but one. McMahan (2006: 47) agrees with this description, making use of it in arguing that we are not immaterial souls.⁶ This leaves McMahan, and perhaps the embodied mind account in general, vulnerable to the sort of objection made by Koch (2009: 96):

But if McMahan considers the cerebral commissurotomy as giving rise to “two separate centers of consciousness,” and if a center of consciousness constitutes a person for McMahan, then it seems that he has to confront the unwelcome implications of “two persons existing where there were formerly one.”

We can reformulate the objection as follows:

- (1) If the embodied mind account is correct, the presence of two centers of consciousness implies the presence of two distinct persons.
- (2) Commissurotomy results in one person with two distinct centers of consciousness.
- (3) Thus, the embodied mind account is incorrect.

A reply must either claim that premise (1) misrepresents the embodied mind account or that premise (2) misrepresents commissurotomy. My strategy here is to grant premise (1) and call into question the accuracy of premise (2). I argue below that despite the strange results of commissurotomy, there is just one unified consciousness in commissurotomy patients. But before proceeding with that reply, it may be useful to consider McMahan’s approach to commissurotomy.

McMahan (2002: 38) may at times seem to reject (2), for he describes commissurotomy patients as having “sufficient unity of consciousness...to make it

⁶ Arguing that souls (if there are such things) must be individuated by centers of consciousness, McMahan objects that the two centers of consciousness present after commissurotomy would entail two souls, and thus two persons, where there is actually just one person. So, while he thinks that the soul view must count persons by counting centers of consciousness, he apparently does not think the same is true of the embodied mind account.

unreasonable to believe that there are actually two persons present.” He contrasts this with cases of dicephalic twinning, in which “there are clearly two separate and independent mental lives in progress,” and also says that dicephalic twins have “two separate centers of consciousness, each with its own private sensory pathways and each capable of independent thought, emotion, expression, and movement.” Judging from this, it may appear McMahan agrees with (1) and rejects (2). But we have already seen that McMahan agrees with (2). While (1) seems to reflect McMahan’s reasoning about dicephalic twinning, perhaps he could deny (1), saying it is something other than the number of centers of consciousness which determines the number of persons. This might allow him to consistently maintain there are two persons in dicephalic twinning *and* that the commissurotomy patient is one person with two centers of consciousness. Indeed, for McMahan, the commissurotomy patient’s “sufficient unity of consciousness” has not to do with the number of centers of consciousness, but instead with other features. This is made clear by McMahan’s (2002: 38) suggestion that commissurotomy *could* result in two persons sharing a body if the procedure “was performed at birth and that each hemisphere was then for many years presented with different stimuli,” in which case the result might be “the existence of two different minds, each with a different set of experiences, dispositions, beliefs, memories, and so on.” This allows McMahan to consistently endorse (2) while describing any actual case of dicephalic twinning as featuring two persons. However, this approach is problematic, for it implies that dicephalic twinning would result in just one person if the psychological contents of the twins’ brains were similar enough to one another. McMahan’s approach here is thus a poor fit for the embodied mind account, which both accounts for our existence and individuates us in terms of our psychological *capacities*, but not in terms of our psychological *contents*.⁷

A better approach for the embodied mind account might be to make use of something like Schechter’s (2013) distinction between two senses of ‘unity of consciousness,’ which she employs in arguing that the presence of two streams of consciousness is consistent with there being just one unified mind or consciousness of which the two streams are aspects. The sense of ‘unity of consciousness’ in which commissurotomy produces disunity is the sense which Schechter (2013: 198) calls *conscious singularity*, which she describes as “referring to the possession of a single stream of consciousness,” and adding that “streams of consciousness are constructed out of those conscious phenomena that bear the co-consciousness relation to each other.” What does she mean by *co-conscious*? Consider the example from earlier, in which one can see a dog with just one eye and a bird with just the other: for the typical person, the experience of the dog is co-conscious with the experience of the bird, while for the commissurotomy patient these are not co-conscious.

In addition to the sense of unity of consciousness that Schechter associates with the co-consciousness, she says there is another important sense of unity of consciousness. This other sense what Schechter (2013: 200) calls *coherence unity*:

⁷ See Oyowe (2013) for further discussion of this point.

On this understanding, when we attribute to someone a unified consciousness, we are attributing semantic coherence to the contents of her consciousness, and...that these contents bear such a relationship to the rest of her mental faculties that she is afforded from them the opportunity for rational thought and unified agency.

This is the sense in which Schechter considers commissurotomy patients to retain unity of consciousness. While they have some experiences that cannot be co-conscious with certain other experiences, Schechter maintains they still have unified consciousness in the sense of coherence unity. In support of her stance that one need not be co-conscious of two mental events in order for each of them to play a role in one's unified consciousness, one important point Schechter (2013: 205) makes is that "since *non-conscious* phenomena can contribute to and perhaps even participate in a unified consciousness, there may be some phenomena that belong to a unified consciousness for which the question, 'But are they also *co-conscious*?' will not even arise." But of course, one might wonder how this unity is possible once the corpus callosum is severed.

It may help here to consider other cases in which there is unity of consciousness without a corpus callosum. Those born without a corpus callosum, as well as those who have commissurotomy while young, often lack the strange traits we find in those who have undergone commissurotomy in adulthood.⁸ It has been suggested that these individuals develop other connections between their cerebral hemispheres.⁹ This is relevant is because it suggests that there are, or at least can be, significant connections between the hemispheres that lie outside the corpus callosum. It is not far-fetched to suppose that similar, though perhaps much less developed, connections exist in the brains of adult split brain patients.

We need not merely speculate that such connections are possible. Trevarthen and Sperry (1973: 569) suggest that not all aspects of visual perception are divided by commissurotomy, for "ambient vision remains undivided after hemisphere deconnection, in spite of the complete separation of focal visual perceptions at the vertical meridian caused in these same subjects by the operation." Similarly, Sperry (1984: 669–670) suggests "there is no unqualified 'yes' or 'no' answer" to "the question of whether there exists a right/left division of conscious experience" after commissurotomy. He explains that there are two important ways in which consciousness remains undivided. One is that each hemisphere contains "bilateral wiring systems that ensure the representation of both left and right components of experience." The other, Sperry says, can be demonstrated by "tests for self and social awareness...in which mental-emotional ambience or semantic surround generated in one hemisphere promptly spreads also to the second hemisphere." This would seem to provide support for an approach similar to Schechter's, which accounts for some disunity between hemispheres while maintaining there is but one unified

⁸ See Lepore et al. (1994: 159) and Lassonde et al. (1995: 236).

⁹ For example, see Treffert and Christiansen (2005) and Tovar-Moll et al. (2014). Gazzaniga (2000: 1295) also attributes the lack of disconnection in those with callosal agenesis to "massive brain reorganization."

consciousness, one mind. Taking a similar approach, the embodied mind account can accommodate the stance that no actual commissurotomy has resulted in two persons, while still holding that a true division of one mind into two could indeed result in two persons sharing a body in a manner that is analogous to dicephalic twinning.

10 Conclusion

Sparsists such as van Inwagen and Merricks provide arguments against the existence of most alleged composites, but find us to be ineliminable composites in virtue of our having irreducible mental features. They then argue that since we are composites of kind *F*, the only composites are those of kind *F*. This much of their stances is shared by embodied mind sparsism, which departs at this point by disagreeing about what kind *F* is. As an account of composition, embodied mind sparsism can thus be supported by arguments paralleling those for animalist sparsism, and the role of mental features in those arguments makes the former the more reasonable conclusion. As an approach to personal identity, embodied mind sparsism avoids problems faced by similar approaches that do not enjoy the advantages of a sparse ontology.

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