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What does Functionalism Tell Us about Personal Identity?

abstract: Sydney Shoemaker argues that the functionalist theory of mind entails a psychological-continuity view of personal identity, as well as providing a defense of that view against a crucial objection. I show that his view has surprising consequences, e.g. that no organism could have mental properties and that a thing's mental properties fail to supervene even weakly on its microstructure and surroundings. I then argue that the view founders on "fission" cases and rules out our being material things. Functionalism tells us little if anything about personal identity.

1.

Most philosophers believe that our identity through time consists in some sort of psychological continuity. You are, necessarily, that future being who in some sense inherits his mental features from you: the one who has the mental features he has then in large part because you have the mental features you have now. And you are that past being whose mental features you have inherited. Though there is dispute about what sort of "inheritance" counts--about whether those features must be continuously physically realized, for instance--most agree that some sort of mental continuity is necessary or sufficient (or both) for us to persist.

So magnetic is this view that many feel entitled to assert it without argument. Such arguments as we find typically amount to little more than telling science-fiction stories and remarking that most of us (Western philosophy teachers and their students) are inclined to think that the character at the end of the story is identical with the character at the beginning of the story with whom he is psychologically continuous. We accept the psychological-continuity view merely because it strikes us as plausible. Of course, we can't argue for everything. Opponents of the view, however, have made a serious case against it (see §3 below).

As it happens, Sydney Shoemaker has been saying for many years that there is real theoretical support for the psychological-continuity view. [1] He claims that it follows from the functionalist theory of mind. In fact, he says, it follows from an account of mental properties that is considerably weaker and less contentious than functionalism. What is more, his argument offers what looks to be the only serious defense of the psychological-continuity view against a crucial objection.

Despite its obvious importance, this argument has received little attention--probably because its conclusion is so well entrenched that no one else thought it needed defending. Whatever the reason, I propose to examine the argument. I will show (in §4) that it has some extremely

surprising consequences: that no living organism could have mental properties; that no mental properties supervene even weakly on a thing's microstructure and surroundings; and more. I will then show that the argument founders on "fission" cases (§5) and that it appears to rule out our being material things (§6).

2.

The causal-powers argument, as I shall call it, is based on the idea that mental properties by nature make a difference to the causal powers of their bearers. Mental states--the particular, concrete states of having a mental property--have characteristic causal roles that dispose them to interact with other mental states to produce characteristic effects: behavior and further mental states. The point is familiar. Suppose you are hungry. That is to be in a state that, among other things, is typically caused by your having low blood sugar, and is likely to lead to your eating if you believe that there is food before you and have no competing goals. Functionalism makes the controversial claim that the entire nature of all mental properties consists in facts about the characteristic causes and effects they have when exemplified. But the causal-powers argument requires only that such causal powers be part of the nature of many mental properties, which few would dispute.

The link with personal identity comes from the thought that a mental state's typical causes and effects, and the other states it can combine with to have those effects, must all be states of the same being. Shoemaker writes:

What the functionalist view claims is that it is of the essence of a mental state to be caused in certain ways, and to produce, in conjunction with other mental states, certain effects (behavior or other mental states). But of course, it is in conjunction with other mental states of the same person that a mental state produces the effects it does; and its immediate effects, those the having of which is definitive of its being the mental state it is, will be states (or behavior) on the part of the very same person who had the mental state in question. (1984: 93)

The functional role of a mental state will consist in part in its generating appropriate successor states, and affecting future behaviour, usually in conjunction with other mental states. And those successor states, and that behaviour, will be on the part of the possessor of the mental state....Now, whatever else persons are, they are subjects of mental states. And as subjects of mental states, they had better have the persistence conditions that go with this. It had better be the case that when mental states generate their appropriate successor states, or their appropriate behavioural expressions, those successor states belong to the person who had the states that generated them, and those behaviours are on the part of that person. (1999a: 299f.)

That is, the nature of mental properties tells us not only that a given mental state must be disposed to combine in a certain way with other mental states to produce certain effects, but that it must be disposed to combine in this way only with states of the same subject, and produce those effects in that subject alone. Your being hungry must tend to cause you to eat if you believe there is food before you, unless you have some competing goal. You and only you. Other people's beliefs, goals, and actions don't come into it. This is part of a general causal theory of properties, and is supposed to apply to non-mental properties as well. The difference between being malleable and being elastic, for instance, has to do with what a thing to which a force has been applied--that very thing--would do if the force were removed. Since a mental state's characteristic causes and effects occur at different times, and since those causes and effects must belong to the same person as the state does, it follows that people (or persons) must have rather special persistence conditions.

Suppose, as Locke did and as Shoemaker does, that any particles that cohere together compose a material object called a mass of matter, which necessarily persists just as long as those same particles continue to cohere. The particles that compose you (supposing you are material) compose a mass of matter as well. That mass is not you, for unlike the mass you are made of different particles at different times: owing to metabolic turnover, you coincide with a different mass every fraction of a second. The existence of such objects is contentious; but let us grant it for the sake of illustration.

Could a mass of matter have a mental property? Could it, say, be hungry? Someone might say that it takes time to be hungry, and that the masses successively constituting one of us never last long enough. Nothing could be hungry for only a billionth of a second. But never mind that. Shoemaker has a more interesting reason for denying that the mass could be hungry. For a thing to be hungry is for it to be in a state that, among other things, is typically caused by its blood-sugar level, and nothing else's, and which tends to combine with its beliefs, and only its, to cause it to act accordingly. That couldn't be true of a mass of matter, even if it lasted long enough to be hungry. Any supposed hunger on the part of a mass would almost certainly be caused by the blood-sugar level of some other thing: an earlier mass, perhaps. And that state will almost certainly not combine with the mass's putative beliefs to cause it to act. By the time such effects come about, the mass will long since have passed away. The state will have those effects in other, later masses. So the mass is not in a state characterized by the causal role it plays in the mental life of that mass, and that mass alone. A mass, then, cannot be hungry. It cannot have any mental property at all. States of the mass's brain may realize or even be mental states; but they won't be its states. They must be states of something other than a mass, with different persistence conditions.

If so, then people, who by definition have mental properties, cannot have the persistence conditions of masses of matter. Our identity over time must consist in some sort of mental

continuity. For you to have a mental property, says Shoemaker, is at least in part for you to be in a state likely to combine with certain of your other states to cause you, and no one else, to believe, want, or do certain things later on. But that is to say that any being whose mental states later on are caused in the appropriate way by your current states must be you. And that is to say that some sort of mental continuity suffices for you to persist. Suppose your cerebrum is put into my head tomorrow. Then your current mental states will have their characteristic effects in the being who ends up with that organ, and not in the empty-headed thing left behind. The subject of those states--you--must therefore go along with its cerebrum. This is precisely what opponents of the psychological-continuity view deny.

That, as far as I can make out, is the causal-powers argument. Three comments are in order. First, Shoemaker takes himself to have shown that our persistence conditions involve mental continuity: that a thing can have mental properties only if mental continuity suffices for it to persist. You might think he has shown at most that our histories exhibit mental continuity: that a thing can have mental properties only if it is in fact mentally continuous with itself and with nothing else, whether or not this is essential to it. Suppose our persistence conditions have nothing to do with psychology. Suppose we persist by virtue of brute animal continuity. Never mind what this amounts to, as long as mental continuity could obtain without it. Then someone else could be uniquely mentally continuous, at some other time, with you as you are now. But suppose no one is. As a matter of contingent fact, the only being who is ever mentally continuous with you is you--that is, the one who is organically continuous with you. (It is of course only in science fiction that there is mental continuity without animal continuity.) Then your mental states will in fact be caused by previous states of you and only you, and will combine in their characteristic ways with other states of yours to produce future states in you alone, just as we should expect. Isn't that consistent with the premises of the causal-powers argument? If it is, the argument is compatible with our having wholly non-psychological identity conditions, and fails to support any sort of psychological-continuity view.

Here I think we can defend the argument. If only a history of mental continuity were needed for a thing to think, and not psychological identity conditions, then whether a thing could think now might depend on what happened later. An appropriately endowed being with brute animal identity conditions would have mental properties if and only if its brain were never in fact transplanted. A brain transplant in your future would prevent you from having any mental properties now. That is absurd. If anything, your having a mental property must constrain your history by constraining the conditions under which you could persist--your persistence conditions--which depends only on what is the case now. (This has the important implication that things have genuine de re modal properties. Many, including most "four-dimensionalists", will find this unacceptable.)

Second, Shoemaker suggests that the causal-powers argument is specifically about personal identity: "it is in conjunction with other mental states of the same person that a mental state

produces the effects it does." The argument's main premise, though, is about the nature of mental properties in general. So if anything, it must apply to whatever has mental properties. If dogs can have mental properties, then their identity too must consist in mental continuity. In fact Shoemaker's defense of the psychological-continuity view requires this (see the next section).

Finally, the argument shows at most that mental continuity is sufficient for us to persist. Any being existing at some other time that is then mentally continuous with you as you are now must be you. Is it also necessary? Must you now be mentally continuous with yourself as you are at every time when you exist? Suppose you lapse into a persistent vegetative state. The resulting being may be alive, in the biological sense that oysters are alive; but it would have no mental features. You could hardly be mentally continuous with such a thing. Does the causal-powers argument rule out your surviving this? Is it part of the nature of mental states that they must affect the entire future of their subjects in characteristic ways? That nothing could have mental properties at one time and lack them at another? It would seem not. But no matter. It would be important enough if the argument showed mental continuity to be sufficient for us to persist. That would refute the main rivals to the psychological-continuity view. And as we shall see, it would be enough to defend that view against an important objection.

3.

The objection I have in mind is this (see Carter 1989, Ayers 1990: 278-292, Snowdon 1990, Olson 1997: 94-123). Suppose your identity through time consists in mental continuity. Then you aren't identical with the human animal we point to when we point to you--the one that some philosophers call your body. That is because the identity of a human animal doesn't consist in mental continuity. The fact that each human animal starts out as an unthinking embryo and may end up as an unthinking vegetable shows that no sort of mental continuity is necessary for it to persist. The following case shows that no sort of mental continuity is sufficient.

Suppose we transplant your cerebrum into another head. Everyone agrees that the being who ends up with that organ, and he alone, will be mentally continuous with you. If mental continuity of any interesting sort suffices for you to persist, you would go along with your transplanted cerebrum, rather than staying behind with an empty head. What would happen to the human animal associated with you--the one you would be if you were an animal at all? Would it go along with its cerebrum? Would the surgeons pare that animal down to a small chunk of yellowish-pink tissue, move it across the room, and then supply it with a new head, trunk, and other parts? Surely not. A detached cerebrum is no more an animal than a detached liver is an animal. The empty-headed thing left behind is an animal. It may even remain alive, if the surgeons are careful to leave the lower brain intact. The empty-headed thing into which the cerebrum is transplanted is also an animal. It looks for all the world like there are two

human animals in the story. One of them loses its cerebrum and gets an empty head. The other has its empty head filled with your cerebrum. No animal moves from one head to another when the surgeons transplant your cerebrum. They merely transfer an organ from one animal to another. [2]

But the psychological-continuity view says that you would go along with your transplanted cerebrum. If your cerebrum were transplanted, you would leave "your" animal behind. And of course a thing can't leave itself behind. So you and the animal are not a thing and itself, but a thing and another thing. You are not identical with that animal--or, presumably, with any other animal. (Note: the conclusion is not merely that you are not essentially an animal. You are not even contingently an animal. Nothing in the transplant story starts out as an animal, becomes a mere organ for a while, then comes to be an organism once more. There is only one animal located where you are, and you are not it.)

This raises many questions. Perhaps the most awkward is this: Can't your human animal think? (Let an occurrence of any propositional attitude count as thinking.) Hasn't it a mental life just like yours? If so, that ought to make it a person. But then there would be people with non-psychological persistence conditions, contrary to the psychological-continuity view. People would come in two kinds: "animal" people, who are animals and have the persistence conditions of animals, and "psychological" people, who aren't animals and have psychological persistence conditions. There would be two such people, one of each kind, wherever we thought there was just one. There would be both an animal person and a psychological person numerically different from it sitting in your chair and reading this. How could you ever know which one you are? The animal person presumably thinks that it is a psychological person if you think that you are. But if it does it is mistaken. How do you know you aren't the one making the mistake? If you were the animal, you'd still think you were the psychological person. So for all you know you are the animal, and would stay behind in a cerebrum transplant.

It is no use denying that human animals are people. Assuming that those animals have mental lives like ours, there would then be non-people mentally just like people. At most half of the rational, self-conscious, morally responsible beings walking the earth would be people. Being a person, per se, would have no moral or practical importance. And you could never know whether you were a person.

So if human animals can think, there are rational, intelligent beings with non-psychological identity conditions. They ought to count as people. And for all we know, we are those animals, and so have non-psychological identity conditions ourselves. This would be a reductio ad absurdum of the psychological-continuity view.

Shoemaker calls this the "too-many-minds" problem. I shall call it the problem of the thinking animal, since the root of the trouble is that human animals seem to think just as we do. That makes it hard to believe that we are anything other than those animals. Yet our being

animals is inconsistent with the psychological-continuity view. If we are animals, most philosophical thinking about personal identity from Locke to the present is misconceived.

Those who think that our persistence has to do with psychology ought to worry about thinking animals. The most obvious way to solve the problem--short of accepting that we are animals and giving up the psychological-continuity view, of course--is to deny that human animals have the sorts of mental lives that we have. Despite appearances, those animals aren't rational or self-conscious. They don't count as people, and can't wonder what they are.

But that is very strange. The human animal associated with you--presumably there is such an animal--has the same brain and nervous system as you have. It would seem to be a perfect physical duplicate of you: it has all and only the physical properties that you have. At any rate you and it are made of the same particles arranged in the same way. It even has the same surroundings as you have, and the same history. (Someone might say that the animal came into being before you did. You were never an unthinking foetus. But you and the animal have the same education, social training, and evolutionary history.) What could prevent a being like that from thinking?

If your animal isn't thinking about philosophy as you read this, that is presumably because it can't. And if healthy, adult human animals can't think in the way that we can, it is hard to see how they could have any other mental properties. A being with mental abilities radically different from yours but physically and environmentally just like you would be no less mysterious than such a being with no mental properties at all. And if no human animal could have mental properties, no organism of any sort could. If any organism could ever think or experience, it would be a human organism.

So the proposal is that normal adult members of the species Homo sapiens are strictly speaking no more sentient or intelligent than trees. At most we can say that they "think" in the loose sense that each such animal is the body of a non-animal numerically different from it--a person--that thinks. And unless there could be animals with psychological persistence conditions, no animal of any sort could ever be sentient. At most we could say that dogs (supposing them to be organisms) are "sentient" in the loose sense of being the bodies of genuinely sentient non-dogs: canine non-organisms that stand to dogs as you and I stand to human animals.

If this is to be a solution to the thinking-animal problem and not just an incredible assertion, friends of the psychological-continuity view need to explain why no animal can think. The most promising way to do this would be to argue that no material thing of any sort could think. The psychological-continuity view would then rule out our being material things. That would be unwelcome news to its supporters. Anyone who says that we are material things but not animals faces the unenviable task of explaining why some material things can think but animals can't.

This is where the causal-powers argument comes in. It purports to explain why animals

can't think in a way that is consistent with materialism. Animals can't think because they have the wrong identity conditions. The very nature of mental properties entails that mental continuity must suffice for their bearers to persist. And that is not true of any animal, or at least no human animal. Organisms can't think for the same reason as Lockean masses can't. Any supposed mental state of an organism could have its characteristic effects not in that organism, but in another one, because its organ of thought could move to another organism. And that, says the causal-powers argument, means that no such states could be mental states. So the human animals so intimately associated with us cannot think or experience, and cannot wonder who or what they are, and are not people. There is no thinking-animal problem because there are no thinking animals. But there might still be thinking material things, as long as they have psychological persistence conditions.

Other solutions to the problem of the thinking animal have been proposed, but they are unsatisfactory. [3] This shows the great importance of Shoemaker's argument. The psychological-continuity view stands or falls with the claim that human animals can't think. If they can, then we are those animals, and thus have non-psychological identity conditions. If we aren't animals, that can only be because human animals can't think. And no other account even begins to explain why human animals can't think.

4.

The causal-powers argument implies that no organism can think. This is an astonishing conclusion, especially if we suppose, as Shoemaker does, that other material things can think. One would have thought that if any material thing could think, it would be an animal. What is more, the things that can think, on Shoemaker's view--you and I--are identical in their microstructure and surroundings from animals that can't. This means that none of a thing's mental properties supervene on its microstructure together with its spatio-temporal surroundings in even the very weak sense that things with the same microstructure and surroundings must be the same with respect to those mental properties. (Those who call themselves physicalists find this sort of psycho-physical supervenience far too weak.) There can be--indeed there are--microphysical duplicates, in identical surroundings, that differ as much in their mental properties as we do from trees. Having the right microstructure and surroundings does not even reliably cause a thing to have any mental properties: certain human animals have the same microstructure and surroundings as we have, yet never have any mental properties.

Now Shoemaker says that a person and the human animal coinciding with her, despite appearances, have different physical properties. That is because such properties fix the persistence conditions of their bearers, and people and animals have different persistence conditions (more on this later). But he denies that those physical properties supervene even weakly on a thing's microstructure (1999a: 301, 1999b: 503). Things made of identical

particles arranged in the same way in identical surroundings can and often do differ in their physical properties. Of course, whether any mental properties do weakly supervene on a thing's microstructure and surroundings is disputed. But functionalists typically say that they do. It would be surprising indeed if functionalism ruled it out.

The causal-powers argument has further surprising consequences. It would appear to rule out the possibility of immaterial thinking substances. Mental continuity seems insufficient for such a substance to persist. Most philosophers, anyway, agree with Locke and Kant that one such substance could be mentally continuous with another. If a thing can have mental properties only if mental continuity suffices for it to persist, then no such substance could have mental properties. At most an immaterial substance might somehow relate to an insubstantial thinking thing that could "move" from one such substance to another in something like the way that you or I can move from one human animal to another according to the psychological-continuity view.

Similar reasoning would show that no inorganic computer or robot--I mean the physical pieces of hardware that appear in science-fiction films--could think. Suppose there could be a thinking computer. Then one such machine could be mentally continuous with another. If the workings of a "brain-state-transfer machine" could create mental continuity between the person with my body and the person with your body, as Shoemaker is at least sometimes inclined to think [4], then surely the sort of data transfer that takes place in real life could create mental continuity between one computer and another, supposing there were any mentality there at all. Thus, even if a computer could produce thought, the subject of that thought would have to be something other than the computer itself: something that could literally move from one piece of hardware to another without any matter moving (a most dubious prospect).

That all of this should follow from the the functionalist theory of mind is especially surprising given that that view is supposed to be ontologically neutral. It may still be neutral in the sense of allowing mental states to be realized in different ways: by human brain states, Martian hydraulic states, and (perhaps) electronic digital states or non-physical states of immaterial substances. But if Shoemaker is right, functionalism severely restricts the metaphysical nature of the subjects of those states, as well as implying that there must be such subjects.

Nor could we avoid these consequences simply by rejecting functionalism. According to the causal-powers argument they follow equally from the far weaker claim that it is at least part of the nature of many mental properties to give their bearers characteristic causal powers. If so, anyone who believes that animals, immaterial substances, or robots could think must reject even that weak claim.

5.

Any argument purporting to derive so much from so little ought to make us suspicious.

The first thing to say is that the causal-powers argument seems unpersuasive on its face. We can accept that the nature of mental properties tells us something about how mental states must relate to sensory inputs, behavior, and other mental states. That is functionalism's main insight: mental states are characterized in terms of their causal relations to other things. But why must the characteristic causes and effects of a thing's mental states always be states of that thing, and no other? Why should anyone who isn't already a psychological-continuity theorist accept that? For someone to be hungry is at least in part for him to be in a state typically caused by someone's having low blood sugar, and apt to combine with someone's belief that there is food before him to cause someone to eat. Why must it be the same being all four times? Why couldn't my being hungry cause someone else to eat in the way that it ordinarily causes me to?

There is of course a perfectly good causal explanation of why one person's hunger is always in fact caused by his own low blood sugar and no one else's, and why it will always in fact combine only with his own beliefs to cause him alone to act. It is that those states and actions are realized in or caused by the brain, and that brains are never in fact transplanted from one person to another. But why must this be a necessary truth? It doesn't seem to follow from functionalism as most philosophers understand it. That theory has to do only with the way mental states relate to one another (and to sensory inputs and actions), not with the way they relate to their bearers.

But the trouble goes deeper. The causal-powers argument appears to assume the very point at issue, namely that thinking things must have psychological identity conditions. Further, it appears to imply that nothing could have both mental and physical properties. I will take these points in order.

The first problem arises because the argument seems to imply that mental continuity by itself suffices for us to persist. That is widely held to be false, for the familiar reason that mental continuity needn't hold one to one. Two beings could be mentally continuous, at some future time, with you as you are now. (Let the surgeons transplant each of your cerebral hemispheres into a different head.) And two things can't be numerically identical with one thing. So the causal-powers argument leads to contradiction.

Shoemaker and many others say that only "non-branching" mental continuity is enough for us to persist: you are identical with any past or future being who is then uniquely mentally continuous with you. But each of your fission offshoots would be in mental states related to yours in just the way that functionalism predicts (ignoring any side-effects of the operation). And the crucial premise of the causal-powers argument was that any mental states related in that way must belong to the same subject. It looks as if that premise must admit of exceptions. But that is to say that mental continuity is insufficient for personal identity. This undermines the entire argument. Why couldn't cerebrum transplants be another exception? In that case the causal-powers argument would neither support the psychological-continuity view nor provide any defense of that view against the thinking-animal problem.

Shoemaker apparently takes the argument to show that the subjects of mental properties persist by virtue of non-branching mental continuity, rather than the ordinary sort of mental continuity that can hold between one thing and two things. Your current mental states relate to those you were in yesterday in the right way, the way that guarantees identity. If one cerebral hemisphere were destroyed and the other half transplanted, the recipient's states would also relate to your current states in the right way. But your fission offshoots' mental states would relate to your current states in the wrong way. Or perhaps the argument shows simply that some sort of mental continuity, whether "ordinary" or "non-branching", suffices for us to persist. That would be enough to establish a version of the psychological-continuity view and to defend it against the thinking-animal problem.

But if the causal-powers argument shows anything, it would seem to be that ordinary mental continuity guarantees our survival. The idea, remember, was that mental states by nature tend to have certain sorts of causes and effects: your being hungry tends so combine with your beliefs about the presence of food to cause eating. States and actions related in this characteristic way must belong to the same subject. The current suggestion is that "this characteristic way" involves a non-branching restriction. But the nature of mental properties doesn't seem to include anything about branching. The usual examples certainly suggest no such thing. Couldn't one of your fission offshoots act on intentions you have now in the same sense as you can act on them? Couldn't a complex mental act start in one being and continue without interruption in each of two offshoots? Or if there is something inappropriate about the causal link in the fission case, why not in the brain-transplant case as well?

Someone might argue like this: The nature of a mental property implies that simultaneous mental states belong to the same subject only if they are disposed to interact so as to cause appropriate action, etc. (Shoemaker 1984: 94). That shows that there must be just one person before the fission operation, and two afterwards. Hence, that causal relation between successive mental states that makes them belong to the same subject cannot, on pain of contradiction, allow for branching; so it must be non-branching mental continuity. This reasoning moves from an intuitive premise about simultaneous states to a surprising conclusion about successive states. (With the possible exception of Shoemaker, no one finds it easy to believe that you survive if one future person inherits your mental features but not if two do. That is at best something we must accept reluctantly on theoretical grounds.) But why not do the opposite, and argue from the plausible premise that successive mental states belong to the same subject when there is ordinary mental continuity to the surprising conclusion that there are in fact two people before the operation (as "four-dimensionalists" do)? There may be reasons for preferring the first inference to the second. But it is hard to see how appealing to the concept of a mental property could settle the issue.

So it is unclear what the nature of mental properties implies about the identity of thinking beings. We need further assumptions to get from one to the other. In fact Shoemaker concedes

as much in stating his causal theory of properties (1979: 337). Properties, he says, are characterized in terms of the causal powers they give their bearers. But we can't give a complete account of what those causal powers are without making assumptions about what it takes for their bearers to persist. That is because a thing's having a given property has characteristic effects on other things as well. Your hunger might, by a roundabout way, cause me to eat, and your belief that there is food about might cause me to believe it too. So we can't say that any being whose states are caused in any way by your current mental states is you. It is only when the causal link is "appropriate". But the nature of the properties doesn't by itself tell us what sort of causation is appropriate. Shoemaker's assumption that cerebrum transplants give us appropriate causation may be plausible, but it gets no support from the causal-powers argument. It is consistent with the argument's premises as they stand that your mental states may have their appropriate effects only where a single organism is present throughout. But "mental continuity" of that sort suffices for a human animal to persist. So the argument doesn't rule out animal thought, or support the sort of psychological-continuity view that Shoemaker and others want to establish.

Even if there is an internal connection between the nature of properties and the identity conditions of their bearers, we can't start with an account of the former and derive an account of the latter. We have to work out both together. In order to know what causal powers mental properties give their bearers, we need to assume something about what it takes for those things to persist. The psychological-continuity view doesn't follow from functionalism alone, but only from functionalism together with an assumption about personal identity: the assumption that the persistence of thinking beings has something to do with psychology, for instance. But that is of course no argument that could give anyone who didn't already accept the psychological-continuity view a reason to do so.

6.

I turn now to my claim that the causal-powers argument rules out materialism. The argument is based on the idea that mental properties necessarily give their bearers certain causal powers that fix their identity conditions, or at least what suffices for them to persist. If this is true of mental properties, we should expect it to hold for other properties as well (or at least for properties of a certain sort: those that are intrinsic and qualitative, perhaps).

The causal-powers argument is supposed to show that anything with mental properties must have psychological persistence conditions. That suggests that anything with non-mental properties of the appropriate sort must have the persistence conditions that those non-mental properties impose on their bearers. But it is hard to see how any non-mental property could impose psychological persistence conditions on its bearers. If a non-mental property entails any persistence conditions, they won't involve psychology. And nothing can have both psychological and non-psychological persistence conditions. Not, anyway, unless those

conditions are somehow compatible; and it is hard to see how they could be.

Take mass. If the story for mass is like the one for mental properties, then for a thing to have a given mass it must be in a state apt to combine with other states of it to produce appropriate successor states in it. A thing's mass must be disposed to combine with a force applied to that thing to cause a proportionate change in its velocity, for instance. But of course (as Shoemaker would say) it is in conjunction with other physical states of the same thing that a thing's mass produces the effects it does, and its immediate effects, those the having of which is definitive of its being the physical state it is, will be states (or behavior) on the part of the very same thing that had the mass in question. So if you have mass, your mass must cause you and only you to change your velocity in proportion to the forces acting on you. Anything whose later physical states are caused in the appropriate way by your current mass must be you. Massive things must persist by virtue of what we might call dynamic continuity.

It is evident that dynamic continuity could obtain without mental continuity. Suppose we apply a force to you that is strong enough to destroy your cerebrum but not strong enough to scatter your remains to the four winds. Then the thing that is dynamically continuous with you--the one whose velocity changes in proportion to the force applied--will be a human vegetable or corpse that is mentally discontinuous with you. Shoemaker's brain-state transfer story suggests likewise that mental continuity could obtain without dynamic continuity. Hence, your identity over time couldn't consist both in mental continuity and in dynamic continuity--else you would both survive (due to dynamic continuity) and perish (due to lack of mental continuity) if your cerebrum were destroyed.

Now although Shoemaker and many others take mental continuity to be both necessary and sufficient for one to persist, the causal-powers argument implies only that it is sufficient. And it is of course easier for two sufficient conditions for something to be compatible than it is for two conditions that are both necessary and sufficient. Could both mental and dynamic continuity suffice for us to persist?

It seems not. Suppose your total brain state is transferred to another brain via Shoemaker's fantastic machine (erasing your original brain in the process). Then the transfer recipient will be at least in some sense mentally continuous with you, and the drooling idiot left behind will be dynamically continuous. If both conditions were sufficient for your identity, you would be identical with two different beings, which you can't be. Now psychological-continuity theorists disagree about whether the sort of mental continuity that you get in brain-state transfer suffices for us to persist, or whether that continuity needs to be continuously physically realized. Suppose, then, that your brain is transplanted. The one who gets that organ, and he alone, will be mentally continuous with you by anyone's lights. Which being will be dynamically continuous with you? The one who gets your brain? The empty-headed corpse left behind? The scattered object--supposing there is such a thing--made up of the transplanted brain and the empty-headed corpse? I don't know. Perhaps all three. One thing, though, is clear: the one

who gets your brain won't be uniquely dynamically continuous with you as you were before the operation. So if mental continuity of any sort suffices for you to persist, you would go along with your transplanted brain. If dynamic continuity suffices, you would stay behind with an empty head, or become a scattered object, or perhaps cease to exist because that continuity branches. Mental and dynamic continuity couldn't both suffice for a thing to persist.

If this is right, then the theory of properties behind the causal-powers argument implies that nothing with mental properties could have mass. You, who undeniably have mental properties, could not have mass because you have the wrong identity conditions for it. And what goes for mass would seem to go for velocity, shape, temperature, and other physical properties. Nothing could have both mental and physical properties. I take this to be an unacceptable result.

One might try to avoid this trouble by denying that all properties of the relevant sort determine the persistence conditions of their bearers. But that would undermine the case for supposing that mental properties do so. [5] Or someone might accept that both mental and physical properties determine the persistence conditions of their bearers, but argue we have erred in working out what those conditions are. Despite appearances, they are in fact compatible. But we used the same recipe in both cases. That would suggest that Shoemaker is mistaken about what mental properties imply for the identity conditions of thinking things. Either move would lead to the collapse of the causal-powers argument.

In fact Shoemaker's theory of properties seems to imply that no two things with different persistence conditions could have any genuine property in common, or at any rate no two things for whose persistence different and incompatible conditions suffice. Cats and planets would seem to have different and incompatible persistence conditions. If a thing's genuine properties determine its persistence conditions, then no cat could share any such property with any planet. Otherwise a thing's having that property would require it to have both the persistence conditions of cats and the persistence conditions of planets, which I take to be impossible. One would have thought, however, that some properties were common to all material objects: being spatially extended, having a surface, and being made of matter, for instance. How else could they all be material objects? That suggests that Shoemaker's theory of properties is even more problematic than I have been letting on. But I won't press this more general point.

7.

The causal-powers argument fails. What can we conclude from this?

Perhaps the nature of mental properties implies nothing about the identity conditions of their bearers. If functionalism or something like it is true, that nature may tell us how mental states must relate to one another and to sensory inputs and actions. But it implies nothing about how they must relate to their bearers, except perhaps that they must have bearers. Functionalism

would tell us nothing about personal identity.

Alternatively, we might concede that the nature of mental properties constrains the identity conditions of their bearers without fully determining them, as Shoemaker thinks it must (1979: 335). Here is a way of filling this out. Some versions of functionalism, especially those according to which a mental state's characteristic role is determined by our ordinary, "folk" concepts, are meant to be idealizations rather than strict laws. Mental states don't always combine with other states to produce the sorts of effects the theory predicts. People can be irrational. They don't always believe what follows from their beliefs, or pursue the goals they value most. Amnesia, fugues, hypnosis, and other conditions found in textbooks of abnormal psychology are further exceptions to the rule. Mental states would then be those that (among other things, perhaps) have roughly the causal roles the theory predicts. If Shoemaker is right to say that the causes and effects those roles specify must be states of the same being as the one in the original state, then something approximating mental continuity, functionally defined, would then suffice for thinking things to persist.

We could then look round to see whether anything fits the theory: whether there are any beings in states that behave, by and large, as the functionalist theory predicts. Organisms are the obvious candidates. Many animals are in states that have, barring irrationality, psychiatric conditions, and science fiction, just those causes and effects characteristic of mental states. And we have reasons independent of the philosophy of mind to suppose that there are such things as organisms. We could then conclude, as philosophers of mind typically do, that organisms are the bearers of mental properties. And we could say this while respecting Shoemaker's claim that there might be things that can't think simply by virtue of having the wrong identity conditions--masses of matter, for instance.

The constraints that the nature of mental properties puts on the persistence conditions of their bearers would have to be loose enough to avoid troubles with "branching" and to be compatible with those imposed by the nature of physical properties like mass. And of course they would also be loose enough to permit animals to have mental properties. The causal-powers argument would not then fail utterly. Functionalism would tell us something about personal identity. But it would fall short of establishing the psychological-continuity view.

There is a complication. I suggested that certain animals are the things that approximate most closely to the functionalist ideal, and are close enough to count as thinkers. What if there are things that come even closer? What if there are things that persist by virtue of strict psychological continuity--psychological continuers, we might call them? What if each human being (fetuses and vegetables aside) shares its matter with a psychological continuer? Would the causal-powers argument then suggest that those beings, rather than animals, were the bearers of mental properties, thus supporting the psychological-continuity view?

The existence of psychological continuers is contentious--at least as contentious as the existence of Lockean masses of matter. As I see it, to concede the existence of psychological

continuers is to accept the psychological-continuity view. No one ever thought that there are psychological continuers, but we aren't those things. In any case, the existence of psychological continuers wouldn't by itself prevent the human animals coinciding with them from thinking. If those animals are close enough to the functionalist ideal to be thinkers in the absence of psychological continuers, it is hard to see how they could be unable to think in their presence. In that case we should be stuck once more with "too many minds".

If the causal-powers argument fails to support the psychological-continuity view, as I think I have shown, then it is also no help in defending that view against the thinking-animal problem. If the argument solved the problem, then it would establish the psychological-continuity view, or at least the part the view that says that mental continuity suffices for us to persist. The two projects stand or fall together. Shoemaker's solution to the thinking-animal problem turns on the claim that thinkers must have psychological identity conditions, which animals lack. This would of course also establish the psychological-continuity view. If the causal-powers argument is inconclusive, that is because it fails to show why mental continuity must suffice for a thinking thing, such as a person, to persist. But in that case it fails equally to explain why human animals can't think, and hence fails to solve the thinking-animal problem.

I conclude that functionalism offers no support for a psychological-continuity view of personal identity. [6]

Notes

1. 1979: 340, 1984: 92-97, 1997, 1999a, 1999b. Davis (1998) endorses the argument with qualifications.
2. Anyone who has any doubts about this should see Olson 1997: 114-119.
3. Noonan (1998) accepts that animals can think, but claims that a human animal's first-person thoughts and utterances refer not to itself, but to the person it shares its brain with. (Animals aren't people because they have the wrong identity conditions.) So when your animal says, "I am a person", it doesn't say falsely that it is a person, but truly that you are, and so isn't mistaken about which thing it is. You can know that you are a person and not an animal because you know that you are what you refer to when you say 'I', that 'I' refers exclusively to people, and that animals aren't people. Of course, this still implies that there is a rational being other than you sitting in your chair and reading this, and makes personhood a trivial property. I believe that it faces more serious problems as well: see my "Thinking Animals and the Reference of 'I'" (in preparation). Baker (2000) says that the problem goes away once we recognize that your animal "constitutes" you. But it is a mystery to me how this solves anything: see Olson 2001a and 2001b.
4. In brain-state transfer, the total informational state of one brain is recorded (thereby "erasing" that brain) and then imposed on another brain (thereby erasing its previous contents): see Shoemaker 1984: 108ff. His doubts about whether this would move us from one head to another are in Shoemaker 1997: 298ff.
5. Shoemaker accepts that people and animals can share "thin" physical properties, which determine a thing's persistence conditions only in conjunction with its kind (1999a: 302f.). But then they can share "thin" mental properties too. And insofar as no animal can have genuine, "thick" mental properties, no person can have genuine, "thick" physical properties. So distinguishing thick from thin is no help here.
6. I thank Joel Katzav, Hugh Mellor, Adam Morton, Sydney Shoemaker, and two anonymous referees for comments on earlier drafts.

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