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Persons, animals, and identity

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Abstract The paper is concerned with how neo-Lockean accounts of personal identity should respond to the challenge of animalist accounts. Neo-Lockean accounts that hold that persons can change bodies via brain transplants or cerebrum transplants are committed to the prima facie counterintuitive denial that a person is an (biologically individuated) animal. This counterintuitiveness can be defused by holding that a person is biological animal (on neo-Lockean views) if the "is" is the "is" of constitution rather than the "is" of identity, and that a person is identical with an animal in a sense of "animal" different from that which requires the persistence conditions of animals to be biological. Another challenge is the "too many minds problem": if persons and their coincident biological animals share the same physical properties, and mental properties supervene on physical properties, the biological animal will share the mental properties of the person, and so should itself be a person. The response to this invokes a distinction between "thin" properties, which are shared by coincident entities, and "thick" properties which are not so shared. Mental properties, and their physical realizers, are thick, not thin, so are not properties persons share with their bodies or biological animals. The paper rebuts the objection that neo-Lockean accounts cannot explain how persons can have physical properties. To meet a further problem it is argued that the biological properties of persons and those of biological animals are different because of differences in their causal profiles.

Keywords Neo-Lockean view · Animalism · Coincident entities · Persistence conditions · Psychological continuity · Brain/cerebrum transplant · "is" of identity · "is" of constitution · Thin property · Thick property · Too many minds problem · Microphysical states of affairs · Biological animal

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It has been said that the history of western philosophy is a series of footnotes to Plato. Whatever truth there may be in this, there is surely much more truth in the claim that the history of the topic of personal identity has been a series of footnotes to Locke. To oversimplify more than a bit, there are two major strands to that history. One is a series of accounts of personal identity inspired by Locke's discussion, which in recent years have been versions of the view that personal identity consists in psychological continuity. The other is a series of accounts whose interest lies mainly in their being rejections of Lockean and neo-Lockean views. The earliest accounts in the latter strand, those of Bishop Butler and Thomas Reid, held personal identity to consist in the identity of an immaterial soul substance. More recent versions hold it to consist in the identity of a human body or a human organism. I think that no one would have bothered to put forward these views, or defend them at any length, if the Lockean and neo-Lockean views had not been on the scene. Without the Lockean competition, the claims of Butler and Reid would have seemed old news back then, and the same is true now of bodily and animalist accounts.

I want to begin by talking about one shadow Locke's discussion has cast over subsequent discussion of the topic. In Locke's famous example, the soul of a prince is transferred to the body of a cobbler, carrying with it the prince's "consciousness" and memories of his life. Locke says that the cobbler-body person would then be the *same person* as the prince—and that of course is an expression of the "transplant intuition" that has been at the heart of the case for memory continuity and psychological continuity accounts of personal identity. But Locke also says that the cobbler-body person would not be the *same man* as the prince. And that poses a bit of a problem. If both the prince and the cobbler-body person are persons, and both are men, how can they be the same person and not the same man?

Some have seen this case as supporting the idea of relative identity—the idea that things are not identical *simpliciter*, but only under a sortal concept, and that things can be identical under one sortal concept, e.g., *person*, and non-identical under another, e.g., *man*. I share the consensus view that the notion that identity is relative in this way is not defensible, and I would prefer not to foist this notion on Locke. The only alternative to this seems to be the view that we have here coincident entities. Where the prince was before the transfer there were both a person and a man, sharing the same matter, and after the transfer the cobbler-body person likewise shared his matter with a man; and the pre-transfer person is the same as the post-transfer person while the pre-transfer man is not the same as the post-transfer man.

I think that Locke's view does need coincident entities, and that neo-Lockean views need them as well. But men do not seem a good candidate for being entities distinct from but coincident with persons. Surely, if the cobbler-body man is the same person as the prince, he is, *contra* Locke, also the same man. Still, there is non-identity as well as identity in this case, and if we are to avoid relative identity there must be some entity coincident with the pre-transfer prince that is non-identical with some entity coincident with the post transfer cobbler-body person. Neo-Lockeans have generally seen no difficulty in specifying what the entities coincident with persons are. They are happy to say that each person is coincident with a human body, and that the person and his or her body are non-identical because they have different persistence conditions. But as recent discussion has brought to light, an account that recognizes only

Lockean persons and human bodies as relevant entities here leaves something out. Where a person is there is surely a human animal, or human organism. It is at least questionable whether this is identical with the person's body. But on the face of it, the persistence conditions of human animals do not allow them to switch bodies by way of Lockean soul transfers, or by way of the brain transplants or cerebrum transplants that have figured in more recent discussions. This is perhaps what underlies Locke's denial that the cobbler-body person is the same man as the prince—for Locke was clearly thinking of men as having the persistence conditions of animals. At any rate, if the Lockean or neo-Lockean thinks that the persistence conditions of persons do permit them to switch bodies, she seems committed to holding that persons are not identical with, but only coincident with, the human animals with which they share their matter.

Denying that persons are identical with human animals is perhaps not quite as quite as counterintuitive as denying that they—or at least the males among them—are men. But it is prima facie counterintuitive. The claim that we are "rational animals" goes back, I believe, to Aristotle, and we can scarcely be rational animals if we are not animals. And it is standard both in biology and in ordinary discourse to equate persons with human beings and to take human beings to be a species of animals.

This brings us to the crux of the current debate over personal identity—or rather, the part of the debate that concerns the metaphysics of personal identity rather than the issue, made prominent by the work of Derek Parfit, of what "matters" in personal identity and what constitutes the kind of survival we should care about. What is now the dominant position in the anti-Lockean tradition on this issue is "animalism," which holds that persons—or at any rate persons of our sort—are human animals, and that the persistence conditions of persons are biological rather than psychological. This view has been held by a number of writers, but has been most forcefully and eloquently defended by Eric Olson, in his book *The Human Animal* and in other writings.[1] This view presents a powerful challenge to neo-Lockean views. The metaphysical issue of personal identity boils down to the issue of whether this challenge succeeds.

I should emphasize that this is not a special case of the issue between materialist and dualists accounts of mind. Animalism of course goes comfortably with a materialist view. But so does the neo-Lockean view. Contemporary neo-Lockeans have followed Locke in framing their view in a way that is neutral between materialism and dualism and compatible with both, but most of them are in fact materialists. It is entirely compatible with their view, and held by most of them, that the mental states of affairs that they hold to constitute personal identity are physically realized.

I have long been, and remain, a neo-Lockean. What I want to do in the remainder of this paper is do what I can to meet the animalist challenge to neo-Lockean views.

Let me begin by saying how I conceive of the psychological continuity that, according to the neo-Lockean view, constitutes personal identity. I have long been struck by the fact that the notion of personal identity enters intimately into the characterization of the functional roles of mental states. To take the stock example, the state of believing that it is raining is partly characterized as a state that in combination with certain

[1] Olson (1997).

desires and other beliefs leads to taking an umbrella when one goes out. But this means that it is a state that when combined with other states *of the same person* leads to certain behavior on the part of *that same person*. Other parts of the functional role of a belief have to do not with what behavior it contributes to producing but with what subsequent mental states it contributes to producing, e.g., as the result of reasoning. And again the subsequent mental states will be states of *the same person*. When mental states play their functional roles they generate successor states in the same subject, which in playing *their* functional roles produce what are successor states for them, and so on. This generates a series of mental states and accompanying behaviors that is characterized by the fact that it consists in the playing out of the functional roles of the states involved in it. This will include the generation of memories, with the result that the series exhibits memory continuity. It will include the preservation of beliefs, desires, preferences, character traits, etc., it being part of the functional role of such states that ceteris paribus they are self-perpetuating. And it will include the changes in beliefs and other attitudes that result from reasoning and experience. In short, the series will exhibit all of the sorts of psychological connectedness and continuity that have been thought to constitute the persistence of mental subjects. So I suggest that this psychological continuity is best thought of as the playing out over time of the functional roles of the various mental states persons are subject to.

Of course, if we make use of the notion of personal identity to characterize these functional roles, it will seem circular to define psychological continuity in terms of them and then define personal identity in terms of psychological continuity. But this circularity is of a piece with one that arises when we try to define mental states in terms of their functional roles—specifying the functional role of the belief that it is raining mentions what happens when it is combined with the desire to keep dry, but when it comes to specifying the functional role of that desire we have to mention what happens when it is combined with that belief. The seeming circularity here can be avoided by giving a "package deal" definition that simultaneously defines a number of states in terms of their relations to one another—this can employ the well known Ramsey-Lewis technique for giving theoretical definitions. And this approach can serve as a way of finessing the circularity that concerns us here. Throw into the package not only the mental states one wants to define functionally but also the relations of synchronic and diachronic unity—i.e., the relation that unites different states of the same person at the same time and the relation that unites different states of the same person at different times. The Ramsey-Lewis account will then generate non-circular definitions of these relations along with non-circular definitions of the individual mental states. And the unity relations can then be used to define personal identity.[2]

It is a consequence of this approach that there is an internal relation between the nature of mental states, or mental properties, and the persistence conditions of the subjects that possess them. And I do not think that it is only in the case of mental properties that we find this. We find it in the case of dispositional properties like being elastic. Something is elastic just in case it, that same thing, will change shape when certain forces are applied, and then revert to its original shape when the forces are

[2] This approach is developed in my 1984 and my 1997.

removed—it is constitutive of something's being elastic that its future career will go a certain way under certain conditions, and this puts constraints on what can count as the future career of a thing that is elastic. Similar points apply to other dispositional properties, and they apply as well to the properties in which these properties are realized.

Supposing that mental states are realized in the cerebrum, and that the playing out of their functional roles is constituted by a series of neural events in the cerebrum involving their physical realizers, it follows from the account I have sketched that if a cerebrum is transplanted from one body to another, without its internal operations being disrupted, and if it is connected appropriately to the new body, there will be a psychologically continuous series connecting the mental life of the cerebrum donor and that of the cerebrum recipient, and the recipient will be the same person as the donor. It is of course an empirical question whether in fact a cerebrum transplant would result in such psychological continuity; among other things, it is an empirical question to what extent mental states are realized in the cerebrum. The neo-Lockean view is not committed to any claim about this empirical issue—it is committed only to the conditional claim that *if* transplanting a cerebrum would result in such psychological continuity, then the cerebrum recipient and the cerebrum donor would be the same.

I have followed Eric Olson here in speaking of a *cerebrum* transplant rather than a *brain* transplant. Olson points out that the lower brain is the biological control center for the human body, and that it is compatible with his animalist view that the transplant of a *whole* brain, and not just the cerebrum, would take the person to the new body, not because this would yield psychological continuity between donor and recipient but because it would yield biological continuity carried by the brainstem. His view is that if only the cerebrum is transplanted, and this does result in psychological continuity between donor and recipient, the *person* stays behind as a human vegetable. Olson thinks that a person could not survive the replacement of his brainstem, even if the rest of the brain and body remained intact, and there were perfect psychological continuity. This seems to me extraordinarily implausible, and I do not see why he is not committed to the even more implausible claim that if just the brainstem were transplanted the person would go with it. But I will assume that the animalist view could be formulated so as not to have these consequences.

It is time to begin considering how the neo-Lockean view can either avoid or show to be acceptable the counterintuitive consequence that persons, of our sort, are not animals. A related counterintuitive consequence, much stressed by Olson, is that animals cannot think—more generally, cannot have the mental states distinctive of persons. There are two levels to the counterintuitiveness of the latter consequence. First, it seems just outrageous to deny that any animals can think; this is closely associated with the outrageousness of the denial that we are animals. Second, it seems that if each of us is coincident with a human animal and shares its matter, then we must share its physical properties; but assuming physicalism, mental states supervene on physical ones, and that should mean that if I and my coincident human animal share all the same physical properties then we share all the same mental properties. To make matters worse, if the animal shares my mental properties it ought to count as a person; that would mean that there are two persons where there is supposed to be only one,

and it of course would undercut the motivation for distinguishing persons from human animals. This is what I have elsewhere called the "Too Many Minds Problem."[3]

Let's first ask whether the neo-Lockean view is committed to the denial that we are animals. I think that Olson has a compelling case for saying that this is so, on one natural understanding of "animal." There is a natural understanding of "animal" on which a human animal begins as a fetus, and on which a human animal could survive as a human vegetable, albeit with the help of a life-support system, if its cerebrum died or were removed. Call this the biological sense of "animal." There are animals in the biological sense, and each of us is coincident with one. And plainly they can persist without psychological continuity—they do so in the fetal stage, where there is no psychology at all, and they could do so in the case of the human vegetable. If we are beings whose persistence consists in psychological continuity, we are not identical with the biological animals coincident with us.

Doe it follow that we are not animals? Consider the sentence "He is an animal" said about someone, put aside the derogatory implicature that would normally go with saying this, and consider how the neo-Lockean might defend the claim that this is true despite the fact that the referent of "he" is not identical with the biological animal it is coincident with. There are two words in that sentence that might be held to be ambiguous—"is" and "animal." One approach would be to focus on "is," and distinguish between the "is" of identity and the "is" of constitution. The neo-Lockean could then claim that the "is" in that sentence is the "is" of constitution, and that the sentence is true because the person is constituted by a biological animal he is not identical with. The statement would then be on a par with sentences like "The tree is just a collection of molecules organized in a certain way," which are true when the "is" is the "is" of constitution, but not when it is the "is" of identity.

The other approach would be to focus on "animal," and claim that this has a permissible sense in which it does not mean "biological animal." Here again we could make use of the notion of constitution. A possible sense of "animal" counts something as an animal, in this sense, if it is constituted by a biological animal. This sense would make our sentence "He is an animal" true, even if the "is" is the "is" of identity. On the neo-Lockean view, persons are animals in this sense. Is it plausible that "animal" is used in this way by ordinary folk when they speak of humans as a kind of animals? This would not be plausible if it meant that ordinary folk have in mind the definition of being an animal in terms of being constituted by a biological animal. But it also is not plausible that ordinary folk, in using "animal," have in mind anything that would serve as a definition of biological animal. The question is whether ordinary folk can be interpreted as talking about animals in this sense when they say that persons are animals. I think it is far from clear that they cannot be. At any rate, this is the interpretation that the principle of charity would dictate if the case for the neo-Lockean view is compelling. And accepting this interpretation would of course allow us to say that animals can think and have whatever mental states persons have.

But of course allowing that persons are animals in this sense does not release the neo-Lockean from the obligation to accept that persons are coincident with non-persons.

[3] See Shoemaker (1999).

For it remains true, on the neo-Lockean view, that persons are coincident with their bodies and with biological animals that are not identical with them. So we still have to face the too many minds problem.

It should be noted that on the face of it animalists like Olson also have to face a too many minds problem. If, as Olson thinks, a person's existence ends with death—because the biological continuity which constitutes his persistence ceases then—and if my body will continue to exist as a corpse after death, then neither I nor my biological animal are identical with my body. Yet there is as much a case for saying that right now I and my body share the same physical properties as there is for saying that right now I and my biological animal share the same physical properties. And if sharing the same physical properties entails sharing the same mental properties, we get the undesired result that my body shares my mental properties. So we have too many minds even if I am identical with my biological animal. Olson tries to avoid this consequence by denying that there is any good sense in which there is a single thing, my body, that exists now and shares my physical properties and will, or at least may, continue to exist for a while after my death. I find this very implausible, but will not pursue the matter further here.

To avoid the too many minds problem one must, at least if one is a physicalist, deny that coincident entities must share all of the same physical properties. And I think that we have already seen an independent reason for doing this. I pointed out earlier that there seems to be an internal relation between the nature of mental properties and the persistence conditions of the subjects of these properties, and that in the case of some other properties there is also an internal relation between the nature of the properties and the persistence conditions of their possessors. Coincident entities will be entities that have different persistence conditions. And it goes with this that coincident entities will differ in some of their properties. I say that a property is *thick* if its nature is such that there is such an internal relation, and *thin* if it can be shared by things having different persistence conditions and so can be shared by coincident entities. The thickness is thickness of causal role—the causal role of a thick property includes its being such as to generate certain successor states in its possessor under certain circumstances, and it is this that ties it to certain persistence conditions.

Perhaps thickness can vary in degree. It may be that where the persistence conditions of two sorts of entities are similar but not identical, there will be some properties that things of these sorts share which cannot belong to things of sorts with very different persistence conditions, and that these properties will count as less thick than properties that can only belong to creatures of one or the other of the two sorts, but more thick than properties that can be more widely shared. But for now I will work with the dichotomy of thick versus thin.

Microstructural properties of objects are thin. And so are properties that are entailed by these—shape, size, mass, electric charge, etc. It is a consequence of the view I am advancing that mental properties, being thick, do not supervene on such properties as these. This does not mean that the distribution of such properties in the world does not determine the distribution of mental properties in the world. My body's having the thin physical properties it has determines that there is *something* here, made of the stuff my body is made of, that has the mental properties I have. But that something is not my body; it is me, a person. Likewise, my biological animal's having the thin

physical properties it has determines that there is something here that has the mental properties I have—but that something is not the biological animal but rather the person it constitutes.

What goes for supervenience also goes for realization. The mental properties of a person are not realized in the thin physical properties of the person, since these are shared by the biological animal and the body. What we don't have here is what we might call *same subject realization*, where the realized property and the realizer belong to the same thing. Likewise, we don't have *same subject supervenience*. One can define other notions of realization and supervenience such that the thin physical properties do form a realization base and supervenience base for the instantiation of mental properties and other thick properties.[4]

But this doesn't mean that there are no physical properties that same subject realize mental properties. What this requires are physical properties that are themselves thick properties. Let's suppose that mental states are realized in the cerebrum, and that someone's cerebrum's being in a certain state, call it X, realizes a certain mental state. It is of course the person, not the cerebrum, that is the subject of the mental state. As a first approximation, one might say that the physical realizer of that state is *having a cerebrum in state X*. But there is a natural understanding of the predicate "has a cerebrum in state X" on which it is true not only of the person but of the person's body and biological animal, and so stands for a thin property. Something's having this property amounts to having a cerebrum in state X attached inside its skull. But for a person, having a cerebrum in state X is more than this. The cerebrum is the locus of the realization of a person's mental states, and it is the carrier of the person's psychological continuity over time. For a person to have a cerebrum in state X is for there to be a cerebrum in state X that plays that role for that person. It might not even be necessary that the cerebrum be attached inside a skull—perhaps it could be a cerebrum in a vat, or could be controlling the person's body, and receiving input from it, via a radio connection. We have here a thick property not shared by the body and human animal, which realizes the mental state. And this property seems clearly to be physical, despite the fact that mental concepts enter into its individuation.

But now we need to face the question of how it can be, if the persistence conditions of persons are psychological, that they can be subjects of physical as well as mental properties. Eric Olson has argued that on my version of the psychological view it is not possible for persons to have physical properties at all, and that the view is therefore incompatible with materialism. He thinks that my argument that the persistence of subjects of mental properties must consist in psychological continuity commits me to holding that the persistence of a subject having a certain mass must consist in "dynamical continuity," which apparently precludes sudden and drastic changes in mass. And then we get a contradiction if persons are subjects of both mental properties and mass properties—when the cerebrum is transplanted the psychological continuity criterion says that the person goes with the cerebrum while the dynamic continuity criterion says that the person continues on as a human vegetable.[5] But this argument ignores

[4] See Shoemaker (2001).

[5] See Olson (2004).

the fact that mass is a thin property. It is only in conjunction with some sortal property, individuated in part by persistence conditions, that having a certain mass has implications for the future of the thing that has it. A tree struck by lightning can survive the loss of more than half its mass, while a car struck by lightning cannot.

Still, I need to say something about how persons can have physical properties like mass. In a recent publication I said something about this that now seems to me mistaken.[6] I began with a claim that seems right: that there is an account of what it is for a person to "have" a body that can be accepted both by Cartesian dualists and by materialists. Roughly, this account says that a person has a certain body just in case the person is so related to that body that the person's volitional states directly produce in the body movements appropriate to their content, and the person's perceptual and proprioceptive states are directly produced by the body and its sense-organs and give information about it and its surroundings. I said, I think rightly, that a Cartesian can use this account to say what it is for a person to have such properties as height and weight; for a person to have a certain height or weight is for him or her to have, in the sense just explained, a body that has that height or weight. Where I went wrong was in suggesting that a materialist can give the same account of what it is for a person to have such properties. For the Cartesian, the height and weight of a person are relational properties, while the height and weight of the body are intrinsic properties; the person has the former by having a body that has the latter. This is of course incompatible with holding these are thin properties in my sense that are shared by the person and the body. It is the latter that a materialist should hold.

So what account can a materialist who is a neo-Lockean give of how it is possible for a person to have such properties, given that the properties persons are in the first instance subjects of are, on the neo-Lockean view, mental properties? I think we should start here by remembering that if materialism is true then all property instantiations are ultimately realized in microphysical states of affairs—states of affairs consisting in the most basic microentities, whatever they are, being propertied and related in certain ways. This will be true of instantiations of mental properties. I will assume that each mental property instantiation will have a minimal microphysical realization, a state of affairs that is metaphysically sufficient for it and contains no proper part that is metaphysically sufficient for it. This suggests a partial answer to the question of what it is for a physical particle to be a part of a person; as a first approximation, it is so if it is a component of a microphysical state of affairs that is a minimal realizer of one of the person's psychological states. It is further the case that psychological states are inseparably involved in intentional actions, and that these require microphysical states of affairs that constitute bodily movements. The microentities that are components of these states of affairs will also be parts of the person. The reason it is only a first approximation to the truth that the components of mental state realizers are parts of the person is that given externalism about intentional content some of the components of realizers of mental states will lie outside the body of the person and will be in no sense a part of him—as, for example, the realizers of my beliefs about the Eiffel Tower include microentities that make up the Eiffel tower. But if we consider all of

6 See Shoemaker (1999).

the microentities that are components of the states of affairs that realize the mental states and actions of a person at a time, there will be a significant subset of these that are so related to one another causally that they are disposed to move about the world as a relatively stable whole—though of course the makeup of this subset will change somewhat over time. These, and whatever other microentities are so related to them causally that they are disposed to move about the world with them, will make up the person—they will also, of course, make up the person's body and biological animal. Once it is fixed what microentities make up a person at a time, it will be fixed what the person's microstructural properties are at that time, and what his mass, height, and other thin properties are at that time.

But a problem remains. I said earlier that what I called the biological animal coincident with a person has biological persistence conditions. If I am right in holding that there is an internal relation between the nature of mental properties and the persistence conditions of their subjects, it would seem that it also ought to be true that there is an internal relation between the nature of biological properties and the persistence conditions of their possessors. If the psychological continuity that constitutes personal identity is the playing out over time of the functional nature of mental properties, it would seem that the biological continuity that constitutes the identity of animals, or at any rate biological animals, should be the playing out over time of the functional nature of biological properties. But if persons and biological animals share the same biological properties, it would seem that they should share the same persistence conditions, contrary to what I hold. And this poses a problem for me, for surely it is unacceptable to deny that a person is a creature with a biological nature and biological properties.

Earlier I claimed that a predicate of the form "has a cerebrum in condition X" can be used to ascribe different properties—one a property shared by the person with its body and biological animal, and one a property possessed only by the person. Suppose for the moment that Eric Olson is right in thinking that a human animal cannot survive the replacement of its brainstem. (He thinks this is likewise true of the person, but let's put that on the side.) And now consider a predicate of the form "has a brainstem in condition X." We might treat this analogously to "has a cerebrum in condition X." Understood one way, it ascribes a property that something has just in case there is a brainstem in condition X at the base of its skull. Understood in a different way, it ascribes a property something has just in case it has that property and its brainstem is essential to it in the way Olson thinks that brainstems are essential to human animals. The first property will be a biological property shared by persons and their biological animals. The second property will be a thick property possessed only by biological animals.

Now I in fact doubt whether brainstems are essential to human animals in the way Olson thinks they are. Suppose there is such a disease as cancer of the brainstem—for all I know, there is. If, to cope with this, medical science came up with a prosthetic brainstem that is functionally equivalent to natural ones, I think not only that I would survive the replacement of my brainstem by such a device, but that my biological animal would survive this as well. Nevertheless, I think that something along the lines this example was used to illustrate may be right. It may be that biological predicates that are applicable to biological animals are applicable as well to persons, but that

they have slightly different senses, and ascribe slightly different properties, in the two sorts of applications.

Both a person and her biological animal can have the property of having a certain disease, or the property of having an immunity to a certain disease. But if persons can in principle change bodies and biological animals can't, then there is a slight difference in the ways these biological properties can be lost in the two cases—the person, but not the biological animal, can lose the disease or immunity by changing bodies. Since the causal profile of a property will include the ways in which the property can be lost, the disease and immunity properties of the person will have slightly different causal profiles from the disease and immunity properties of the biological animal, and so, arguably, these will be different properties. Being immune to smallpox is not an essential property of either me or my biological animal, and normally what would lead to the loss of this immunity in one of us would lead to the loss of it in the other. But the transfer of my cerebrum to a different body (one whose former owner had never been vaccinated) might lead to my losing my immunity (assuming I go with the cerebrum) while my present biological animal, left behind as a human vegetable, would retain its immunity (for all the good that would do it). So immunity to smallpox in persons has a slightly different causal profile than immunity to smallpox in biological animals, and these are arguably slightly different properties.

I can perhaps clarify my position by contrasting it with that of Lynne Rudder Baker, whose book *Persons and Bodies* defends a different version of the view that persons are non-identical with, and are instead constituted by, their bodies. According to her, both physical properties like mass and shape and biological properties belong "nonderivatively" to bodies and "derivatively" to persons. And she thinks that mental properties, and properties like being a person, belong nonderivatively to persons and derivatively to bodies and biological animals. A good deal of what she says suggests that having a property derivatively is a matter of standing in a constitution relation to something that has that same property nonderivatively, and so is really having a relational property. I don't think that being related in some way to something else that has a property should count as having that property, and so would deny that having the relational property of constituting or being constituted by something having property F is way, even a derivative one, of having property F—though it might be a derivative way of satisfying the predicate "is F." In any case, my own view is that "thin" properties like mass and shape are had by persons and their bodies in exactly the same way, and the predicates that stand for them are satisfied in exactly the same way. The case is somewhat different in the case of biological properties, which I count as "thick." I would allow that the way in which a predicate standing for such a property is satisfied in a person is somewhat different than the way it is satisfied in the case of the person's body or biological animal. But this is not because one and the same property is possessed nonderivatively by the body or animal and derivatively by the person; it is because such predicates ascribe slightly different properties in the two sorts of application. Someone could hold that something similar is the case with mental predicates—that they apply nonderivatively to persons and derivatively to biological animals and bodies, ascribing somewhat different properties in these different applications. But this would play havoc with my solution to the too many minds problem, and seems to me to have nothing to recommend it.

I have argued that one can be a neo-Lockean, and hold that persons have psychological persistence conditions, and still hold that persons have all of the kinds of physical properties we take them to have. And that one can hold all this and be a materialist. I think this goes against something that is widely assumed in discussions of personal identity. It is assumed that if materialism is true the basic macroscopic continuants in the world must be things with physical and nonpsychological persistence conditions. Philosophers sympathetic to the idea that personal identity is in some way psychological sometimes suggest that what we should do is look for entities with physical persistence conditions whose careers can be counted on to exhibit, normally, a high degree of psychological continuity, and then identify persons with these. Thus it is suggested that we identify persons with brains, or with entities individuated by brains. To see that there is no need to find such entities to identify persons with, it helps again to reflect on the fact that if materialism is true all macroscopic facts are realized microphysically. At the microphysical level, the career of any macroscopic entity will consist in a series of microphysical states of affairs consisting of realizers of the properties instantiated in the persisting macroscopic entities at different times. What makes such a series the career of a persisting thing is that the states of affairs in it are related causally in the ways the property instantiations they realize should be if they are to make up the career of a thing having those properties. If the properties include mental ones, the holding of the appropriate causal relations will amount to psychological continuity. That is enough to give us a persisting thing whose existence is physically realized. There is no need to find in the career a kind of continuity, other than this, that gives the thing purely physical and nonpsychological persistence conditions.[7]

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[7] This is a slightly revised version of a talk I gave at a conference at New York University in December, 2004.