

The Problem of People and Their Matter

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Abstract: If I am a material thing, there would seem to be such an entity as the matter now making me up. In that case the matter and I must be either one thing or two. This creates an awkward dilemma. If we're one thing, then I have existed for billions of years and I am human only momentarily. But if we're two, then my matter would seem to be a second person. Dean Zimmerman and others take the repugnance of these alternatives to show that I'm not a material thing, but rather an immaterial one. This paper explores a way of avoiding the dilemma without giving up materialism: there is no such entity as the matter making me up, but only a lot of particles.

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1. Dualism and Materialism in Theology

Are we material or immaterial? Are we made entirely of matter—of carbon, oxygen, hydrogen, and so on, like rocks and trees? Or are we not made of matter, but only in some way “attached” to a material body? This is a central question in both metaphysics and theology. Several widely held religious doctrines fit better with our being immaterial—let's call this “dualism”—than with our being material—“materialism”.

The most obvious such doctrine is the belief in life after death. One day our vital functions will cease and our physical remains will disperse until there are only randomly scattered atoms. It's hard to see how any material thing that you or I might be could continue existing when that happens, or be resurrected at a later date. We may as well suppose that a manuscript that was burnt to ashes might nevertheless continue existing, or be miraculously restored (van Inwagen 1978). Not even God could bring that about: at most he could create an exact replica of the manuscript. What commonly happens to a material thing after it dies does not seem compatible with its continuing to exist. If we ourselves continue existing after we die, whether immediately or after an interval—or if this is even metaphysically possible—then we cannot be material things. At any

rate, those wanting to combine materialism with the doctrine of life after death have their work cut out for them.¹

Or consider the doctrine of divine incarnation: that God became a human being. A theistic god—in his normal, nonhuman condition—is an immaterial thing. If we too are immaterial, then a god could become human by simply coming to have a human body: by acquiring the ability to interact with a particular human organism in the way that you and I do (to move its limbs at will, to perceive by means of its sense organs, and so on).

Difficulties would of course remain. Does God's omnipotence not *already* enable him to interact in that way with a human organism, even in his normal condition? And for him to become one particular human being, he would need to be able to interact in that way with only one organism, which looks incompatible with his omnipotence. In fact these difficulties arise *only* for dualists. Materialists say that to be human is not to stand in a special causal relation to a human organism, but rather to *be* such an organism.² That avoids the problems: God is not already human because he is not an organism, and he could never be numerically identical with more than one organism.

But materialism creates a different problem for divine incarnation: it implies that for God to become human is for a wholly immaterial thing to become wholly material, and that looks impossible. When atoms arrange themselves into an organism in the course of embryonic development, they come to make up a material thing that did not previously exist. They don't come to make up a thing that *did* previously exist but in an immaterial form. What happens in biological reproduction can create an organism out of previously existing atoms, but it can't transform an immaterial thing into a material one. So it seems, anyway.

The dualist's worries about incarnation are technical puzzles that might yield to a bit of finesse: there ought to be *some* sense in which God would be able to interact with just one human organism when (and only when) he is incarnated, even if in another sense he can always interact with every material thing. But the materialist's worry is not a technical puzzle. The obstacle to a wholly immaterial thing's becoming wholly material or vice versa is not something that can be overcome with a bit of finesse. Combining the doctrine of divine incarnation with materialism may not be entirely hopeless (Merricks 2007), but it looks a lot harder than combining it with dualism.

So it's unsurprising that those committed to these doctrines should seek to defend them by giving independent arguments for dualism. We all know the

¹ Merricks (2009), van Inwagen (1978), and Zimmerman (1999) illustrate the lengths they have to go to.

² Some materialists say that to be human is not to *be* an organism, but to be "constituted by" one (see §4). That too avoids the problems, as God is not constituted by an organism in his normal condition and nothing can be constituted by two organisms at once.

“standard” arguments for it—those given by Descartes and Leibniz, for example. But there are newer arguments of a very different sort, based on the ontology of material things.³ I want to discuss one proposed by Dean Zimmerman (2003, 2008), based in part on work by Roderick Chisholm (1976, ch. 3). It has to do with how people, if they were material things, would relate to their matter. Because it can be applied to all ordinary material things and not just ourselves, I’ll call it the *thing-and-matter argument*. I’ll present it as an argument for dualism, though it can equally be seen simply as a puzzle for materialism.

2. The Thing-and-Matter Argument

Here’s the argument. Suppose that you and I are material things. In that case I’m made entirely of matter. There is some matter that now makes me up. Some other matter makes *you* up, and still other matter makes up the Rosetta stone. I mean matter in the physicists’ sense: something with physical properties like temperature, density, momentum, charge, and atomic or subatomic structure. I’m not talking about Aristotelian “prime matter”.

So if I’m a material thing, there is some particular matter that I’m made of. This seems to imply that there is such a thing as that matter. It may not be a “thing” in any substantive sense of the word. Someone might even want to say that my matter exists but is *not* a thing.⁴ I myself prefer to use the word ‘thing’ as a completely general count noun, so that everything is a thing and a non-thing is a contradiction in terms. But never mind: the claim can just as easily be put by saying that if there is matter making me up, there is such an *entity* or *item* as that matter.

If there *is* such a thing (or entity or item) as my current matter, we can ask how I relate to it. Are we identical or distinct—one thing or two? Are the terms ‘Olson’ and ‘Olson’s matter’ two names for the same thing, or does each refer to a different thing? Let’s take these options in turn.

Suppose first that we’re one thing: that I simply am my matter, and my matter is me. The trouble with this is that the matter now making me up has what looks like a very different history from mine. It has existed for billions of years. For most of that time it was spread across the local region of the galaxy. More recently it became confined to the earth. A few years ago some of it began to take on human form, but this process was not completed until just now. And it won’t remain in human form for long: due to metabolic turnover, it’s already beginning to disperse again. If I *am* that matter, then I myself have existed for billions of

³ Two of them having some affinity with Zimmerman’s are discussed in Olson and Segal 2024.

⁴ Chappell (1973, 683–85) and Markosian (2004, 409) say this. But as they don’t say what it is to be a thing as opposed to a non-thing, I can only guess what their claim amounts to.

years. I have only just now become human, and am already beginning to disperse. I was never a child. That's hard to believe.

And the author of the next sentence, being made of and thus identical to different matter from mine, must be someone else, even if he's very similar to me. What looks like just one philosopher remaining human for many years is really a rapid succession of different entities, each of which is human only momentarily. That too is hard to believe.

Though a number of people say that *nonsentient* material things are identical to their matter and thus have weird histories of this sort (a point I'll return to in the next section), I don't know of anyone who thinks that *we* are. Surely I'm made of different matter at different times. Most of the matter that made me up a year ago no longer belongs to me. Isn't that the obvious and sensible view?

But a thing made of different matter at different times cannot be identical with its matter, because nothing can be numerically identical with different things at different times. Call the matter now making me up '*x*' and the matter that made me up a year ago '*y*'. If I were identical with my matter, *x* would now be me. And in that case whatever is now true of me would have to be true of *x* as well. But if I'm now *x* (because *x* is my current matter), then a year ago I must have been *y* (as *y* was my matter then). Yet *x* was never *y*: at every time when they exist, they're different matter, made of different atoms and having different locations. So I was *y* a year ago, but *x* was not. Something is now true of me that is not now true of *x*, namely having been *y* a year ago—contrary to the supposition that I am now *x*.

If I were identical with my matter, then, I would have to be made of the same matter throughout my existence, which is more or less impossible to believe. That suggests that I'm *not* identical with my matter: it's one thing and I'm another. But that's not easy for a materialist to believe either. If there is such a thing as my current matter, it's a material thing. It's not *made of* matter, exactly—rather, it *is* some matter. It's not an ordinary material thing like a rock or a tree. But it's no less material for all that. It's certainly not an *immaterial* thing—a set-theoretic construct or a collection of sense-data. It has physical properties: mass, temperature, density, electric charge, atomic structure, and so on. In fact it has the same physical properties that I now have. (Remember that we're assuming for the sake of argument that I'm a material thing.) My matter is physically indistinguishable from me for as long as it remains my matter, even if that's only for a moment.

Now it's widely held that a thing's mental properties "weakly supervene" on its physical properties: things cannot be physically identical but psychologically different. Physical duplicates must be mental duplicates as well. Things' mental properties cannot "float free" from their physical properties. If this is right, then my current matter must now be conscious and intelligent just as I am. If being a

person amounts to having certain mental properties—to being, for example, “a thinking intelligent being, that has reason and reflection, and can consider itself as itself, the same thinking thing, in different times and places”, as Locke put it (1975, 335)—then my current matter must be a person: a second philosopher in addition to me.

That would be trouble. I could reasonably wonder which of these two people *I* am—the one who is human for many years or the one who is human only momentarily. The “matter person” may believe that he was human a year ago, for all the same reasons that I believe this about myself, but he’s mistaken. How do I know that *I*’m not the one making that mistake? The view that we’re material things distinct from our matter threatens nearly everything we thought we knew about our own past and future.

Or maybe my current matter is not now conscious or intelligent, contrary to the weak-supervenience claim. That would make it a “zombie” in the philosophers’ sense: a thing physically and behaviorally identical to a person but not conscious (Olson 2018). Although some philosophers accept the logical possibility of zombies, this would entail their actual existence: there would be as many as there are conscious human beings. And *why* would my current matter not be conscious or intelligent? Zombie enthusiasts say that there *could* be an unconscious being physically just like I am because the laws connecting the physical and the mental could be different: the fact that my current physical properties ensure that I’m conscious is due only to a contingent law. But that can’t explain why my current matter is not conscious right now, as it’s subject to that law.⁵

So the thing-and-matter argument says that if we’re material things, we must be either identical with or distinct from our matter, neither of which any sensible materialist will want to accept. The solution is to give up materialism. To summarize:

1. If I am a material thing, I’m made of matter.
2. If I’m made of matter, there is such a thing as my current matter.
3. If there is such a thing as my current matter, I am either identical with or distinct from it.
4. I am not identical with my current matter.
5. If I am a material thing, I am not distinct from my current matter.
6. Thus, I am not a material thing.

⁵ The only answer I know of is given by Shoemaker (2012). I don’t know whether he has any followers.

And if I'm not a material thing, I must be an immaterial thing.⁶

3. What the Argument Doesn't Show

Here are two brief comments on this argument.⁷

First, even if it supports dualism, it does nothing to solve the puzzle of how material things relate to their matter. The puzzle arises because material things appear to change their matter. Even rocks, which seem unchanging, are constantly engaged in weathering—chemical reactions with the matter in their surroundings. That's what gives them a crust or "skin" visibly different from their interior. And they lose matter by erosion. If each rock or tree were identical with its matter, it would have existed for billions of years and would be a rock or tree only very briefly, and what looks like a single persisting rock would really be a rapid succession of different ones. Yet if it were distinct from its matter, what looks at any given time like one rock would really be two, one having the sort of history that a geologist would ascribe to it and the other having spent most of its existence in widely scattered form. It's not easy even for a dualist to accept either of these things. But we can't avoid the dilemma by taking rocks and trees to be immaterial.

Those dualists who give the thing-and-matter argument say that all material things are identical with their matter. (To say otherwise would undermine premise 5.) But that's not very plausible. And if we have to accept it, why not say the same about ourselves? What's special about *us*?

Maybe it's better to accept startling claims about the metaphysics of rocks and trees than about ourselves. It's not just that it's psychologically easier—that we care more about people and would be more upset to learn that our own nature is not what we thought it was than to learn this about trees. Nor is it merely that we're more confident in our beliefs about ourselves than in our beliefs about other things. Those are just foibles of human psychology. They don't provide any *evidence* for the thesis that our metaphysical nature is radically different from that of trees. The claim has to be that our metaphysical beliefs about ourselves are epistemically superior to those about other things. But why suppose that?

Second comment: However compelling the thing-and-matter argument may be, we may wonder whether it actually provides any support for dualism. Consider the biological organism that dualists call my body. For all the argument

⁶ Assuming that I exist at all, anyway—a point I'll briefly return to in §9. Some say that we're partly material and partly immaterial, composed of both a body and an immaterial thinking substance. I think this is confused (Olson 2007, 168–171), but the difference between these two dualist views has no bearing on the thing-and-matter argument.

⁷ Points very like these are discussed at greater length in Olson and Segal (2024, sections 3.5, 6.2, and 6.3 on the first comment, 3.7, 3.11, and 6.5 on the second).

says, that organism is conscious and intelligent: it's a person in the usual sense of the term. And if it is, the consequences that the argument invites us to avoid by endorsing dualism will reappear in a similar but no less troubling form. My body must be either identical with its matter or distinct from it. In the first case, my body is really a succession of many different people. And in the second case, this paper has three authors: the organism, its matter, and an immaterial substance (or two, if the matter is a zombie).

Dualists may reply that this is nothing to do with us: *we're* not biological organisms. But even if this were so, how could we ever know it? If I take myself to be immaterial, won't my body take itself to be immaterial as well, for the same reasons? How, then, could I know that I'm not my body, or one of the other material thinkers writing this? Dualism merely adds an immaterial thinker to the troubling sequence of material ones, without providing any evidence for the belief that it's me. Far from avoiding the materialist's problems, it only adds to them all the further problems facing dualism.

Dualists will of course reject all this on the grounds that no material thing is ever conscious or intelligent. But where does *that* claim come from? It doesn't follow from our being immaterial. And it gets no support from the thing-and-matter argument, which simply presupposes it. Yet it's one of the main points at issue in the debate between dualism and materialism, and no one who was not already a convinced dualist would accept it. Those wanting to argue for dualism will need to look elsewhere for evidence that material things can't think. But any such evidence would directly support the claim that we're immaterial, because *we* can certainly think—leaving no need for the thing-and-matter argument. The argument may pose a problem for materialism, but it doesn't provide the dualist with any solution to that problem.

I'll return to this point at the end of the paper.

4. Constitution and Stage-sharing

Something like the thing-and-matter argument is often discussed without any suggestion that it might support dualism. Materialists typically infer from it that the matter of an ordinary material thing is something distinct from it, contrary to 5. My matter is a second material thing physically just like me. It won't remain so for long—it's already starting to disperse while I stay in one piece—but right now there is no physical property that one of us has and the other lacks.

How, then, does an ordinary material thing relate to this second entity? There are two popular answers. One is that the ordinary thing is "constituted by" its matter: it stands to its matter as a clay statue stands to a lump of clay, as a dollar bill stands to a piece of paper, or as a sock stands to a length of yarn (Baker 2000; Johnston 1992; Simons 1987, ch. 6; Thomson 1998). "Constitution" here is not

simply the relation between matter and things made of it, whatever that may be, but something that entails these principles:

- It is asymmetric and irreflexive: two things cannot constitute each other, and nothing can constitute itself.
- It entails spatial coincidence and physical indiscernibility: if one thing constitutes another at a given time, they have the same spatial location and the same intrinsic physical properties at that time.
- It entails material coincidence: if one thing constitutes another, they're composed of the same elementary particles. (Composition, unlike constitution, is a parthood relation: some things, the *xs*, compose *y* =_{df} each of the *xs* is a part of *y*, none of the *xs* share a part, and every part of *y* shares a part with one or more of the *xs*.)
- A thing can constitute, or be constituted by, different things at different times. I'm constituted by different matter at different times, and my current matter may one day constitute something other than me.
- There can be "whole-life constitution": one thing can constitute another for as long as either of them exists.
- For one thing to constitute another is not for them to share a temporal part.

None of this implies that there is such a thing as the matter making up an ordinary thing, and this is not the most commonly cited example of constitution. But no "constitutionalist" who accepts the existence of both a tree and its matter will deny that the matter constitutes the tree.

The other common account of how material things relate to their matter is "stage-sharing." It says that all persisting things are composed of temporal parts. A temporal part of a thing is a part that takes up all of that thing, so to speak, for as long as the part exists. Although my wisdom teeth are only temporarily parts of me—from my teenage years till my early twenties—they're not temporal parts, because they don't take up all of me while they exist: they don't extend all the way out to my skin. But if there is such a thing as my adolescence—not merely a part of my life, but a material thing—then it's a temporal part of me. My temporal parts are just like me for as long as they exist: they walk and talk and do philosophy. I exist at different periods of time by having different temporal parts, each located at just one of those periods, much as I'm located in different places by having different spatial parts—hands and feet, for example—each located at just one of those places.

How, then, do I relate to my current matter? It's not a temporal part of me, or I of it. Each of us has temporal parts that are not parts of the other. My current matter has temporal parts located a billion years in the past, which are not parts of me because I'm not that old. And I myself have temporal parts located a year

ago that are made of different matter and are thus not parts of my current matter. But my current matter and I *share* a temporal part. A more-or-less momentary temporal part of something is a “stage” of it. My current stage—the one that exists now—is also the current stage of the matter now making me up. A year ago that matter and I overlapped a little (spatially, that is: a small proportion of the atoms making me up now were parts of me then). Yesterday we overlapped a great deal, and right now we overlap exactly—but only for a moment. Our exactly overlapping consists in the fact that my current stage—the temporal part of me that exists only now—is also the current stage of that matter. I extend across time for a few decades, and my current matter extends for billions of years, though most of its temporal parts are dispersed across a vast region of space. The two of us briefly coincide by sharing a stage, like two roads that cross and thereby share a spatial part.

Both constitutionalism and the ontology of temporal parts are contentious metaphysical theories, and I won’t discuss whether materialists (or dualists, for that matter) are better off with one or the other. I’ll make just one point. Both views say that my current matter is now physically indistinguishable from me, yet numerically distinct. Unless it’s a zombie, it will presumably be psychologically identical to me as well, making it a person on any of the usual definitions of that term—a second person in addition to me. As we’ve seen, that raises the question of how I could know which of these people I am—the one who has been a person for many years or the one who is a person only momentarily. Neither constitutionalism nor the stage-sharing view by itself offers any answer to this question.⁸

6. The Particle View

I want to propose a different response to the thing-and-matter argument: I am made of matter, but contrary to the argument’s second premise there is no such thing or entity as the matter making me up (van Inwagen 1990, Merricks 2001). How could that be? If I’m made of matter, there must be some matter making me up. How, then, could there not be such a thing as that matter? As Zimmerman puts it,

Given the obvious fact that there is matter in the universe, in this room, in my body, how can [anyone] deny that there is such a thing as the matter constituting my body now, something that was once scattered, and will soon be again? (2003, 508)

⁸ The best answer I know of is given by Noonan (2010); see also Olson (2007, 37–39), Zimmerman (2003, 502f).

I say that my matter is not a thing. Nor is it a non-thing: again, I use ‘thing’ as an all-inclusive count noun. My matter is not *one* thing, but many. It’s a lot of particles. And those particles don’t compose anything besides me: they’re all parts of me, but there is nothing else that they’re all parts of. In particular, they don’t compose a thing that is always composed of those particles.⁹ The phrase ‘my current matter’ refers not in the singular to any one thing, but in the plural to many things—like ‘the Doctors of the Church’ and not like ‘Saint Augustine’. And the same holds for a rock or a tree: its matter is not one thing but only many particles.

This is not a fact about the *meaning* of our talk of matter. Our use of it does not imply that its reference is either plural or singular, or even that matter is particulate: for all the dictionary tells us, matter might be homogeneous, so that portions of it are always divisible into smaller portions of the same sort, as Aristotle thought. ‘Matter’ differs in this way from ‘sand’ or ‘snow’, which by definition apply to something that comes in discrete quantities. ‘This matter’, ‘my current matter’, and other such phrases are grammatically singular: we can say, “The matter in the sun’s core is denser than any terrestrial matter”, but not, “The matter in the sun’s core *are* denser than...”. Grammar forces us to refer to matter in these cases as ‘it’ and not as ‘they’. This is what gives Zimmerman’s reasoning its apparent force. It may seem that for x to exist—any x —is simply for there to be such a thing as x —some one thing. Thus we get the claim that if there is matter now making me up, there must be such a thing or entity as that matter. But this is so only if ‘ x ’ or ‘the matter now making me up’ refers in the singular. For the Doctors of the Church to exist is not for there to be such a *thing* as the Doctors, but such *things*. The fact that terms referring to matter in English and many other languages are grammatically singular can sometimes make it awkward to speak of matter in the plural, but the ontology of the material world is not determined by contingent features of language.

Call this the *particle view*. Another way of putting it is that there are no “masses of matter.” It’s often said that for any matter whatever, there is such a thing as the mass or portion or quantity of that matter (Cartwright 1970; Lowe 1998, 72f.; Simons 1987, 153–162; Thomson 1998). It necessarily exists whenever and wherever the matter exists, and only then and there. That’s because it *is* that matter. Zimmerman’s reasoning suggests that this is a platitude, but it’s in fact a substantive and disputable claim. I think masses of matter are a metaphysician’s invention that we’re better off without. (With the exception of individual elementary particles. They count as masses in this sense, but I deny that there are any other masses.)

⁹ Again, some particles *compose* a thing just if each of the particles is a part of it, none of the particles share a part, and every part of the thing shares a part with one or more of the particles.

The particle view implies that I'm distinct from my matter—and more generally, that every ordinary material thing is distinct from the matter making it up at any moment. But this doesn't mean that there is something distinct from me yet physically just like me. My matter is only a lot of particles, each of which is physically very different from me. The nonidentity of a material thing and its matter does not imply the existence of a second conscious being in addition to me, or of a zombie coinciding with me. It's just a special case of the nonidentity of a thing and its parts.

7. The Decomposition Problem

I'll discuss three objections to the particle view. Here's the first (Zimmerman 1995, 93–104). I've said that matter is only particles. But what particles? Atoms (of carbon, oxygen, and so on)? Elementary particles? Or something else? If the particle view is true, this question must have an answer: there must be particles of some sort or other that our talk of matter refers to. What are they?

The natural answer is the elementary particles of physics: the basic units of matter, which cannot be further divided. That quarks and electrons are elementary in this sense is well confirmed by experiment; but even if they're not, it's a safe bet that material things are composed of *some* elementary particles. There is no matter that can be physically divided into smaller and smaller bits without limit.

Why suppose that matter is elementary particles and not bigger or smaller things? Well, bigger things like atoms can be destroyed, by rearranging the particles making them up, without destroying any matter: you can have the same matter at two different times without having the same atoms. And even if destroying an atom really did destroy some of its matter by converting it into radiation, you could destroy all my atoms without destroying all my matter. Because something is true of my atoms that is not true of my matter, my atoms cannot *be* my matter. And the reason why matter cannot be things smaller than elementary particles is that there *are* no smaller things. Elementary particles have no parts, separable or not: they are “mereological simples”. So if matter is just particles, it must be elementary particles, because there are none smaller, and any larger ones have properties that are incompatible with their being a thing's matter.

Some metaphysicians deny that quarks and electrons are mereologically simple: they say that anything with nonzero spatial extension must have parts, even if it's physically impossible to separate them (Hudson 2007). Simples would have to be unextended. In that case the particle view would imply that matter is unextended simples rather than elementary particles.

What if there *are* no simples, and every material thing is composed of smaller parts? David Lewis called stuff not composed of simples “atomless gunk”.¹⁰ If matter were atomless gunk, it could not be simple particles. Things of many different sizes would then be equally good candidates for being the matter of ordinary objects. I suppose that would make it indeterminate which things our talk of matter referred to. It would refer ambiguously to atoms (in the chemical sense), to elementary particles, and perhaps to other tiny things too, much as the term ‘the northern regions’ refers not to a unique set of regions of definite size, but ambiguously to different sets of various-sized regions. But that doesn’t look especially troubling for the particle view.

8. The Argument from Infinite Malleability

Zimmerman (2003, 511f.) employs the concept of atomless gunk to give a second objection to the particle view. There could, he says, be atomless gunk that was physically divisible into smaller and smaller particles forever. And any particle of this matter would consist of parts that could be rearranged so as to compose a material thing of any kind—a tiny tree or dog, for example. These tiny creatures would of course not be composed of atoms or quarks and electrons, but they’d be composed of things just like atoms, quarks, and electrons only arbitrarily smaller.

Now imagine an ordinary object made of such “infinitely malleable” matter. The particle view implies that its matter would have to consist of certain particles. But if you and I are material things, any of those particles could have its parts rearranged so as to create a material person just like you or me only smaller (by some thirty orders of magnitude if the particle is a quark or electron). If this happened, Zimmerman argues, the tiny person could not *be* the particle from which she was fashioned, because she would not have existed before its parts were rearranged: she would not have been an ordinary particle for billions of years before suddenly acquiring human form. But neither would we want to say that the particle still existed, as a material thing distinct from the tiny person and coinciding with her: that would make it either a second person or a zombie. To avoid those unattractive consequences, friends of the particle view will have to say that the particle would cease to exist when it’s made into a person. Yet it’s part of the story that the person is made of the same matter as the particle was: the matter is only rearranged when she is created. So the matter that gets made into a person is preserved, but the particle is not. It follows that the matter is distinct from the particle. More generally, a thing’s matter could not be particles

¹⁰ Lewis (1991, 20). Lewis did not suggest that it actually exists.

of any sort, because the matter can survive changes that the particles cannot survive.

In other words: if a thing's matter were nothing but particles—*any* particles—then destroying one of them would have to destroy some of the matter. Yet the story shows that any such particle could be destroyed without destroying any matter. Whatever particles a thing's matter might be, they could be destroyed without destroying that matter. Or at least this is so if the matter is infinitely malleable. A thing's matter must therefore be something other than particles, contrary to the particle view. Any matter must be not just particles, but a mass of matter composed of particles.

What should we make of this ingenious argument? Well, it's a wild story, and I wouldn't put any money on its being possible. Zimmerman argues for its possibility on the grounds that we can imagine or conceive it without seeing any inconsistency. But this shows at best that it's not *transparently* impossible: it's not like a round square or a liquid motorcycle. Yet we know that many things are impossible in nontransparent ways. In whatever sense we can imagine infinitely malleable matter, we can imagine iron that floats on water (Seddon 1972), discovering the largest prime number, giving a finite set of axioms from which all the truths of arithmetic can be derived, and many other things that have been shown to be impossible. Infinitely malleable matter would require fundamental physical laws radically different from the actual laws. Given how little we know about those laws, any confidence that this could be the case would be irresponsible. In such regions imagination is a poor guide to possibility.

And even if Zimmerman's story really were possible, this would show at most that *infinitely malleable* matter could not be just particles. It would do nothing to undermine the particle view, because *real* matter—the matter we're actually made of—is not infinitely malleable.

Zimmerman seems to think that if real matter is just particles, all possible matter must be: the claim that matter is nothing but particles must be necessarily true if true at all. So if there are possible worlds where matter is infinitely malleable and thus not just particles, it's impossible for any matter to be just particles.

But why could the particle view not be true in worlds like ours and false in others? Many metaphysical claims are said to be contingent: most philosophers of mind, for example, think that dualism is contingently false. The most common arguments against it are based on the observed dependence of the mental on the physical and on principles about causal interaction. Dualists don't object to these arguments on the grounds that their premises are merely contingent. If the physics of matter varies across worlds as much as Zimmerman assumes, why shouldn't the same go for its metaphysical nature—whether it's just particles or whether it consists of arbitrary masses? His argument is based on two modal

claims: that the physics of matter could be radically different, and that its metaphysics could not be. However doubtful those claims are individually, their conjunction is certainly more so.

9. Composition and Metaphysical Vagueness

A third objection to the particle view is that it leads to “metaphysical vagueness”: indeterminacy in the things themselves and not just in our description of them.

Suppose I am cremated and my ashes are scattered at sea. Afterwards I no longer exist and my particles—those making me up at the end of my life—no longer compose me. Do they compose *anything* at that time—some randomly scattered object? Is there something they’re all parts of, and all the parts of which share a part with one or more of those particles? If there is, we’d expect those particles to have composed a randomly scattered object a million years ago as well. More generally, we’d expect *any* particles, no matter what their nature or arrangement, to compose something: if any particles ever failed to compose anything, my particles would following my cremation. And if any particles whatever must always compose something, we would expect them always to compose the *same* thing: if things’ nature and arrangement makes no difference to *whether* they compose something, how could it make a difference to *which* thing they compose (van Inwagen 1990, 77; Olson 2007, 229f.)? Any particles whatever will compose something that exists for as long as those particles exist. That thing will be just the sort of mass of matter whose existence the particle view denies.

So taking my particles to continue composing something after my cremation looks inconsistent with the particle view. That view suggests that when my particles stop composing me, they stop composing anything at all. Something about their anthropomorphic arrangement during my life makes them compose a bigger thing, while their arbitrary arrangement at other times prevents them from doing so. Things compose something just if they meet a certain condition—one that sometimes holds and sometimes doesn’t.

That may sound sensible enough. We can all think of cases where certain particles seem not to compose anything (think of all those in my left foot together with those in the rings of Saturn). And this appears to be due to a difference in their nature and arrangement, even if it’s hard to specify the condition that makes for composition. The trouble is that whatever that condition is, it’s likely to admit of borderline cases. There will be particles that don’t definitely meet it, yet don’t definitely fail to meet it either, and thus “sort of” compose something and sort of don’t.

Again, according to the particle view, my particles stop composing something at some time following my death. But there doesn’t seem to be a precise instant when this happens. There will be a time when the particles neither definitely

compose something nor definitely don't, because they're a borderline case of meeting the condition for composition. And again, if they compose anything at all during this period, they compose me. It follows that I don't instantaneously stop existing: there is a time when I neither definitely exist nor definitely don't exist. Vagueness of composition leads to vagueness of existence.

The particle view seems to imply, then, that I could be in a condition intermediate between existence and nonexistence.¹¹ But the very idea of a condition intermediate between existence and nonexistence is profoundly mysterious. We know what it is to be in a condition intermediate between being tall and not being tall: to be sort of tall and sort of not tall. The rules for the word 'tall' don't specify a precise minimum height that a tall person has to have. But to be in any condition at all, you need to exist. To say that a certain thing is thus and so presupposes that there *is* such a thing.

So it doesn't seem possible for something to sort of exist and sort of not exist: for there to be a borderline case of existence. But if there can't be borderline existence, there can't be borderline composition. Any things whatever must either definitely compose something (at a given time) or definitely not compose something. That's hard to combine with the particle view. Someone could try to argue that composition sometimes occurs and sometimes doesn't, yet the condition under which it occurs is completely precise so that borderline cases are impossible. It would follow that no matter how I come to an end, there will always be a precise instant when I cease to exist, and likewise for all other material things (Merricks 2001, 124–130). But that's hard to believe.¹²

If composition cannot be vague, there appear to be two possibilities. One is that composition is universal or unrestricted: any things whatever, no matter what their nature and arrangement, compose something. My current particles now compose something, and so do all my particles except an arbitrary electron on my periphery. For any matter whatever, the elementary particles that it consists of compose something. There are vastly more material things than we might have expected.¹³ But as we've seen, this fits badly with the particle view,

¹¹ Some deny this, saying that the vagueness about when I end is due to imprecision in the rules for applying the word 'I' or 'Olson'. There are many equally good candidates for their reference, with different end dates, just as many regions are equally good candidates for being the north of England. But as this appears to require either constitutionalism or the ontology of temporal parts, it's no help in defending the particle view. Nor is it always available. Particles could be arranged in the way described without ever definitely composing anything: God could create, *ex nihilo*, atoms arranged just as mine are when it's indeterminate whether I still exist. In that case there would be no other candidates for being me.

¹² The best defence of metaphysical vagueness that I know of is van Inwagen (1990, §§17–19).

¹³ This is the standard argument for unrestricted composition: see Lewis (1986, 212f.; Sider 2001, 121–132). Segal uses it to argue for dualism: for a summary of the argument see Olson and Segal (2024, §3.2).

as it entails the existence of arbitrary masses of matter.

The other possibility is that there is no composition at all: “mereological nihilism” (van Inwagen 1990, 72f.; Sider 2013). Things never compose anything bigger, no matter what their nature or arrangement. Nothing is ever a part of anything. There are only mereological simples. Combined with materialism, this implies that we ourselves do not exist: though we may be immaterial things without parts, we’re certainly not *material* simples.¹⁴ That’s compatible with the view that matter is only particles—in fact it seems to entail it—but it too is hard to believe.

This is the most serious objection to the particle view.

10. Good News for Dualists?

Dualists may find it easier to avoid metaphysical vagueness. They can accept nihilism without denying their own existence, by saying that we’re immaterial simples, or accept unrestricted composition without taking it to imply that there are far more people than we thought—that there is someone else just like me only smaller by one electron. The problems to do with the ontology of material things that have been my main concern would be less troubling if we ourselves were immaterial. Dualists needn’t worry about whether *we* are identical with our matter or distinct from it, because on their view we’re not made of matter at all. This gives them an advantage, of sorts, over materialists.

Now as I noted in §3, this assumes that material things cannot think. Otherwise—setting aside nihilism, anyway—there will again be too many people, and we could never tell whether we ourselves were the dualists’ tidy immaterial thinkers or some of the messy material ones that their opponents have to worry about. And how do we know that material things can’t think? It doesn’t follow from the thing-and-matter argument. And if we did know it, we could infer straightaway that we’re immaterial without needing to argue about things and their matter.

But the thing-and-matter argument might offer indirect support for the claim that material things cannot think. The argument shows that it’s difficult for a materialist to give a satisfying account of our metaphysical nature. If we’re material things, one of these claims must be true:

1. We are identical with our matter, and what looks like a single persisting person is really a rapid succession of many different ones.

¹⁴ This appears to be Lowe’s view (Lowe 2001), though I don’t think it’s coherent (Olson 2022). In any event, he doesn’t endorse nihilism.

2. We are each distinct from our matter and coincide with different thinkers at different times.
3. We are each distinct from our matter and that matter is a zombie.
4. Our matter is only particles and there is metaphysical vagueness.

If you don't like these options—an understandable preference—the alternative is to suppose that we're immaterial. And as this has no attraction without the further claim that material things can never think, you'll need to endorse that as well. The thing-and-matter argument may support the claim that material things cannot think insofar as it's part of the package offering the best alternative to materialism.¹⁵

Now none of this tells us anything about *why* material things cannot think. The thing-and-matter argument gives no hint of an explanation for this, even if it provides a reason to accept it. And it must surely *have* an explanation, if indeed it's true: there would need to be some account of how being made of matter prevents a thing from being conscious. Until we have at least the beginning of such an account, dualism will remain mysterious. Reflection on the relation between material things and their matter can at best give us reason to think that such an account must exist.

Even if the thing-and-matter argument is utterly convincing, it cannot win the day for dualism. It can only be part of a larger case. But it's more troubling for materialists than for dualists.¹⁶

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¹⁵ This contradicts what I said in Olson and Segal (2024).

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