

CHAPTER 6

Concrete particulars II

persistence through time

- **Two theories of persistence - endurantism and perdurantism**
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Overview

There are two accounts of what it is for a concrete particular to persist through time: endurantism and perdurantism. The endurantist claims that for a concrete particular to persist through time is for it to exist wholly and completely at different times. The perdurantist, by contrast, denies that it is possible for numerically one and the same concrete particular to exist at different times. On this view, a concrete particular is an aggregate or whole made up of different temporal parts, each existing at its own time; and for a particular to persist from one time to another is for it to have different temporal parts existing at those different times.

Endurantist accounts of persistence are typically associated with a presentist account of time, where only what exists in the present is real; whereas perdurantism is typically associated with an eternalist conception of time. On this view, time is just another dimension on a par with the three spatial dimensions; and all times and their contents are equally real.

Since perdurantism appears to involve a rejection of our commonsense Picture of the world, perdurantists have felt the need to argue for their view. Their arguments typically focus on the concept of change. One important argument here is that a perdurantist, but not an endurantist account enables us to Provide a consistent characterization of a particular's change in its properties. Another is that perdurantism, but not endurantism can give a satisfactory account of one kind of change - change in parts. Endurantists challenge these arguments; and the interchange between endurantists and perdurantists on issues represents one of the central debates in current metaphysics.

Two theories of persistence — endurantism and perdurantism

In Chapter Three, we said that concrete particulars are entities with temporally bounded careers. They come into existence at a time; they pass out of existence at some later time; and they exist at all the times in between. Concrete particulars, then, are things that persist through time. I existed yesterday when I was putting the finishing touches to Chapter Five, and I exist today as I begin Chapter Six. The Loux of today is the same person as the Loux of yesterday. Claims of this sort claims in which we assert that an individual existing at one time is the same object as an individual existing at some other time, are called claims of *diachronic sameness*. Such claims are commonplace, and the assumption that they are often true underlies some of our most fundamental beliefs about ourselves and the world around us. Each of us views himself or herself as a conscious being with an experience of the world. But unless we believed that we are beings who persist through time, we could make little sense of the notion of experience; and unless we believed that the things around us likewise persist through time, we could make little sense of the idea that our experience is the experience of a world.

There are, of course, skeptics who deny that we are ever justified in these beliefs; but it is a testimony to the deeply entrenched nature of the belief in persistence through time that we never find the premises skeptics introduce in support of their claims to be as credible as the belief the claims are taken to undermine. But if we have little doubt that claims of diachronic sameness are often true, there remains the question of the content of those beliefs. Granted that objects do persist through time, what is involved in their so persisting? Metaphysicians offer us two different answers to this question. These answers project different and incompatible ontological structures onto the phenomenon of persistence through time. According to one answer, a concrete particular persists through time by *existing wholly and completely at each of several different times*. Philosophers who interpret persistence in this way have been called *endurantists*.¹ As they see things, the expressions 'the Loux of yesterday' and 'the Loux of today' pick out a single concrete particular, and the claim that the referent of the one expression is the same person as the referent of the other is an assertion of literal identity. Persistence through time, then, is construed as the numerical identity of a thing existing at one time with a thing existing at another time.

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Opposed to endurantism is what has been called the *perdurantist* analysis of persistence through time. On this view, assertions of diachronic sameness are not assertions of literal identity at all; and expressions like 'the Loux of yesterday' and 'the Loux of today' do not pick out what is numerically a single object. Such expressions refer to numerically different parts of a concrete particular. The expression 'the Loux of yesterday' picks out that part of me that existed yesterday and 'the Loux of today' picks out a different part of me, that part existing today. Perdurantists give different names to these parts. Sometimes they call *them* *phases* or *stages* of a concrete particular; more commonly, they speak of the *temporal slices* or *temporal parts* of a concrete particular. The core idea here is that a concrete particular is a kind of *aggregate* of its temporal parts. What exists at different times is not the concrete particular, but things related to it as parts to a whole. So my persisting from yesterday to today does not involve my existing whole and entire at different times. I manage to persist from the one day to the next by having parts that exist on each of those days.²

It should be clearer, then, what endurantists are claiming when they tell us that persistence through time involves a thing's existing wholly and completely at two different times. They are denying that concrete particulars have what perdurantists call temporal parts. As they see things, concrete particulars are three-dimensional beings, things spread out in the three spatial dimensions; and the only things that count as the parts of a concrete particular are its spatial parts, those parts that occupy some subregion of the whole space occupied by the whole concrete particular. On this view, then, I am a whole whose parts are things like my arms, my legs, and the physical particles composing them. But since endurantists restrict the notion of a part to things like these, they can say that at any time I exist, I exist wholly and completely; that is, I exist together with all those things that at that time count as my parts; and they claim that persistence through time is simply my so existing at different times.

Perdurantists, by contrast, take concrete particulars to be four-dimensional beings. Time, we are told, is simply another dimension on a par with the three spatial dimensions; it is another dimension in "which things are spread out. Accordingly, concrete particulars have not merely spatial extension; they also have temporal extension. They take up time as well as space. And just as a thing's having a particular spatial extension is a matter of its spatial parts occupying different places, so its having a particular temporal extension consists in its having different temporal parts occupying different times. And perdurantists insist that the term 'part' is univocal over spatial and temporal

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parts; that is, its spatial parts and its temporal parts are, in one and the same sense, parts of a concrete particular. Just as my hand is a part of me that has its own place, so the Loux of yesterday is a part of me that has its own time; and the Loux of yesterday is no more me than my hand is. Furthermore, the perdurantist denies that my temporal parts are any kind of abstract entity. A temporal part of me is not a set theoretical entity; it is not, say, an ordered pair consisting of me and a time. Like my spatial parts, my temporal parts are every bit as material every bit as concrete, every bit as particular as I am. My temporal parts are things that have properties in just the way my spatial parts do; and just as the spatial properties of the whole me are a function of the spatial properties of my spatial parts, so my temporal properties are a function of the temporal properties of my temporal parts. And just as at any time I am a spatial whole made up of all the things that are my spatial parts at that time, so I am a temporal whole made up of all my temporal parts. I am an aggregate of things like the Loux of yesterday, the Loux of today, and the Loux of tomorrow; and my persisting through time is simply a matter of there being things like these that count as parts of me; it is simply a matter of things like these being components of a single aggregate of temporal parts.

But perdurantists will typically not be content to see me as having as my temporal parts only things like the Loux of yesterday, the Loux of today, and the Loux of tomorrow. Each of these things is something that persists through time; and perdurantists insist that the persistence of any one of these things likewise consists in its having temporal parts that exist at different times. Thus, the Loux of yesterday lasts a whole day; its persisting through that stretch of time is a matter of its having temporal parts - the Loux of yesterday morning, the Loux of yesterday afternoon, and the Loux of last night - that exist at different times; and perdurantists tell us that these things are temporal parts not merely of one of my temporal parts (the Loux of yesterday), but of the whole me as well. Here, comparison with the spatial case is useful. My left hand is one of my spatial parts; but my left hand also has spatial parts - my four left fingers, my left thumb, and my left palm; and all of these are spatial parts of me no less than of that spatial part of me that is my left hand. In the same way, the temporal parts of any of my temporal parts are also temporal parts of me. But things like the Loux of yesterday morning are also temporally persisting entities, so they too have temporal parts that exist at different times; and once, again, these smaller parts are parts of the whole Loux. We can, of course, continue to divide these new temporal parts into smaller temporal parts. Do I, then, have a smallest temporal part? If I do, it would seem to be a slice of me that

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has no temporal extension whatsoever. Such a slice would be a merely instantaneous entity, a thing that exists at one and only one moment of time; it would be a slice of me that does not persist through time, a slice of me that is extended in only the three spatial dimensions. Interestingly, perdurantists are not united on this issue. Some take perdurantism to be committed to the existence of instantaneous slices of the relevant sort and enthusiastically endorse them; whereas, others express agnostic attitudes about them.' These latter perdurantists concede that there is nothing incoherent in the suggestion that there are such slices. The idea of an instantaneous three-dimensional slice, they grant, is no more problematic than the idea of a merely two-dimensional slice of a three-dimensional solid - a surface, say. Nonetheless, these perdurantists are anxious to claim that nothing in their analysis of persistence through time commits them to the existence of merely momentary slices. They tell us that it may well turn out that for any temporal part of a thing, there is a temporally smaller part.⁴

But however perdurantists come down on the issue of merely momentary slices of a thing like me, they will insist that I have many, many temporal parts; and they will insist that many of those parts *overlap*. Overlapping temporal parts are temporal parts that share a temporal part. There is the Loux of yesterday and the Loux of today, but there is also the Loux that exists from noon yesterday until noon today; and that temporal part of me has temporal parts in common with that part of me that is Loux yesterday as well as that part of me that is Loux today. Our ability to gerrymander temporal parts in this way might seem to suggest that there is no fact of the matter about what counts as a temporal part of a thing, that temporal parts exist only in the mind of the metaphysician who views a temporally extended object now in one way, now in another. Perdurantists, however, want to claim that this is to misinterpret the situation. They concede that there are infinitely many ways we can cut up a persisting thing like me, but they insist that the temporal parts identified by all these possible divisions are objectively there. Here, they remind us that we experience the same liberty in our use of the term 'spatial part.' My left index finger is a spatial part of me; but so are the top two-thirds of that finger, the bottom half of the finger, the middle one-third of the finger, and so on; and those parts are really and objectively there. They do not exist merely in the mind of theoreticians who mentally cut up the finger in all these ways. If they had only that sort of mental existence, I would not have a left index finger. And, perdurantists insist, the same is true in the case of my temporal parts.

So I have many temporal parts. Each of these parts has its time; but

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perdurantists deny that I, the whole Loux, exist at the times my temporal parts do. I am, so to speak, too large to exist at those times. I would not fit into them. Here, again, we are reminded of the spatial case. At any given time, each of my spatial parts has its proper place; but I, the whole Loux, do not at any time exist in the place my left hand, say, occupies. I am spatially too big to fit in that place. The same is true of the times occupied by my various temporal parts. We might of course, say that I exist today in the derivative sense that one of my temporal parts exists today, but in the strict and proper sense, only my temporal parts exist at times less than the full temporal extension of the whole Loux.

Two theories of time - presentism and eternalism

We began our discussion with a contrast between two accounts of temporal persistence, the endurantist and perdurantist accounts; but after a few scant remarks about endurantism, we have occupied ourselves almost exclusively with a discussion of perdurantism. The reason for this one-sided approach should be clear. The endurantist view initially strikes us as quite familiar. It is the sort of account that grows naturally out of our intuitive, prephilosophical understanding of persistence through time. Although we might not put it in just these terms, we think of ourselves and the things around us as objects that persist through time by existing wholly and completely at different times; we think that the Loux of today is related to the Loux of yesterday by literal identity. The perdurantist view, by contrast, strikes us as unfamiliar; and the metaphysical machinery it invokes requires detailed explanation. We have, I hope, given enough explanation to make the view clearer. The perdurantists' central claim, at any rate, should be clear. Familiar concrete particulars are aggregates of temporally smaller items; and their persistence through time consists in the existence of those temporally smaller items at different times.

A central difference between the two views, we have said, is that whereas endurantists take concrete particulars to be three-dimensional entities that exist at different times, perdurantists construe them as four-dimensional entities, or things spread out both temporally and spatially. This difference reflects opposing views about the nature of time. Typical endurantists are what we might call *presentists*.⁽⁵⁾ They believe that the use of the tenses is ontologically significant. As they see it, only what exists in the present really exists and only what is going on in the present is really going on. Endurantists deny that things that have already passed out of existence or things that have not

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yet begun to exist are real or exist in any way. They will concede, of course, that things that have passed out of existence *were* once real, *did* once exist; and they will grant that there *will be* things that do not now exist; but they will insist that these concessions do not imply that there exist things that do not now exist. For endurantists, then, the present tense and expressions like 'now' and 'the present' play a privileged role in our description of the world: they enable us to mark out what really exists and what is really going on.

Perdurantists, by contrast, deny that there is anything ontologically distinctive about the time I happen to call "now" or "the present," and they deny that there is anything metaphysically privileged about the use of the present tense. They take all times and their contents to have the same ontological status. All times, all the things existing at those times, and all the things that happen at those times are equally real; and they insist that the 'are' here is a tenseless form of the verb. On the perdurantists' view, time, as we put it earlier, is just a further dimension in which things are spread out; and every time, every object, and every event has its proper place in the spread. The spread is simply the temporal order of the world, and that order is fixed and stable. The order is given by the relations of *being earlier than*, *simultaneous with*, or *later than*. Every time is related to every other by one of these relations, and the same is true of the contents of the various times. But regardless of their place in the order, every time and every thing in time is fully real. Using tenseless language, we can express this fact perspicuously. We can say that both Bill Clinton and George Washington exist. Each exists, to be sure, in his own time, but each fully exists. Likewise, using tenseless language, we can say that both the Battle of Hastings and the Battle of Normandy occur. They occur, of course, at different times; but the occurrence of both is, in the tenseless sense, fully real. For obvious reasons, this sort of view can be called an *eternalist* account of time.

Eternalists, we have suggested, make much of tenseless language. Indeed, eternalists have traditionally wanted to claim that everything we say can, without loss of content, be expressed in a tenseless language. On this view, even the claim that a particular time is present can be expressed in a language that exhibits no built-in prejudice in favor of one time over another. These eternalists remind us that expressions like 'now' and 'the present' are indexicals. Indexicals, recall, are referring expressions whose reference on any occasion of utterance is determined by the context of that utterance. 'Now' is an indexical which, on any occasion of utterance, picks out the time at which that utterance occurs. Eternalists have generally taken this fact to show that

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when I refer to a time as "now" or "the present," I am not identifying it as some ontologically privileged moment; I am merely picking it out as the time at which my utterance occurs. But, then, when I tell my students that the sun is now shining, I am not attributing some special status to an event; I am merely dating the event by reference to another event. I am saying that it is an event that occurs at the same time as my utterance. And eternalists have typically insisted on a parallel treatment of talk about the past or future. To speak of an event as past or future is not to denigrate it, to deny it full-blown ontological status; it is merely to say that it occurs before or after a particular utterance - the very utterance by which I date it.

But while eternalists have traditionally thought that we can give tenseless translations for all tensed sentences, in the past few years some eternalists have begun to question this claim. They are willing to concede to the presentist that not every tensed sentence is synonymous with a tenseless sentence; nonetheless, they insist that we can always state the truth conditions for tensed sentences (the situations under which tensed sentences come out true) in purely tenseless terms; and they take this to show that there are no inherently tensed facts that make tensed sentences true. Accordingly, while disagreeing with the traditional eternalist's claim that all tensed language can be translated into tenseless language, these recent eternalists endorse the traditional eternalist's central metaphysical claim that the existence of tensed truths does not force us to think that the structure of the world itself is tensed. Tensed sentences may not be reducible to tenseless sentences, but the facts the former report are precisely the same tenseless facts reported by the latter.⁶

So endurantists are typically presentists and perdurantists, eternalists. While endurantists think that the use of the tenses expresses a fundamental fact about the structure of the world, perdurantists deny this; and whereas endurantists hold that only what now exists is genuinely real, the perdurantist is a democrat about the reality of times and their contents. The contrast between these two conceptions of time gives rise to a debate that is both interesting and important in its own right;⁷ but we have said enough about the two views to show how the differences separating endurantist and perdurantist accounts of persistence are anchored in opposing views about the nature of time. It is precisely because they deny reality to times and the contents of times outside the present that endurantists reject talk of temporal parts. It is plausible to think that it is impossible for a whole made up of parts to exist or be real unless all of its parts exist or are real. But if only what exists now is real, then it would seem that a concrete particular cannot

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have as its parts either things that formerly existed but do not now exist, or things that will exist but do not yet exist. If we are presentists, we appear to be committed to the claim that only things that currently exist can be parts of a currently existing concrete particular. Given that claim, it is easy to see, first, why endurantists refuse to recognize any but spatial parts and, second, why they insist on treating persistence through time as a matter of a three-dimensional object's being wholly present at different times.

So there is a connection between the endurantists' conception of time and their analysis of persistence. The same holds for perdurantism. As we have just seen, a doctrine of temporal parts appears to presuppose that all times and their contents are equally real. A thing cannot have parts that do not exist. It is also the case, however, that an eternalist theory of time very naturally leads to the view that persisting objects are aggregates of temporal parts. The claim that all times and their contents are equally real represents the proposal to treat time as a dimension on a par with the three spatial dimensions. Indeed, those who understand time in this way characteristically warn us against speaking of space *and* time. It is better, they tell us, to speak of *space-time*; for that way of speaking better expresses the unified four-dimensional spread that characterizes the world. In the same context, we are warned against speaking of persisting concrete particulars as things with spatial properties *and* temporal properties. They should, we are told, be thought of as things that occupy a particular region of spacetime. Each persisting concrete object, then, should be thought of as a "spacetime worm," a thing spread out in all four of the dimensions that give our world its characteristic structure and the things in it their characteristic shape or configuration. Now, on this view, the content of any subregion of the region of spacetime occupied by a whole persisting concrete particular is every bit as real as the whole particular itself. Accordingly, it *can* be thought of as a part of the whole particular; but since, on a view that assimilates temporal and spatial extension, the content of any such subregion is related to the whole concrete particular in just the way that my left hand at a time is related to me at that time, it *ought* to be regarded as a part of the whole persisting particular. What perdurantists sometimes call a phase or a stage of an object is, of course, the content of a subregion of this sort. It is not, then, surprising that perdurantists call a phase or stage of a thing a temporal part or that they take temporally extended things to be aggregates of temporal parts. These moves are natural developments of the eternalist idea that is just a further dimension in which things are spread out.⁸ a presentist conception of time seems to preclude a theory of

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temporal parts and provides a natural backdrop for an endurantist account of persistence; and not only does a doctrine of temporal parts seem to require the eternalist idea that all times are equally real, but the eternalist view of time, in turn, quite naturally leads to a theory that understands persistence in terms of temporal parts. The contrast between these two views about time and their accompanying accounts of persistence should remind the reader of a contrast we encountered in our discussion of modality. There, we met with the contrast between Lewis's possibilism and Plantinga's actualism. There are important analogies between the two pairs of views. Just as Lewis takes all possible worlds and their contents to be equally real, the perdurantist attributes the same ontological status to all times; and just as Plantinga refuses to recognize any objects not found in the actual world, the endurantist insists that only what exists now really exists. And Lewis's denial that the expression 'the actual world' picks out an ontologically privileged world is mirrored by the perdurantists' denial that there is anything metaphysically special about the time we refer to as "now" or "the present"; in both cases, the relevant expressions are treated as indexicals. Plantinga, by contrast, takes actuality to be an ontologically significant property exhibited by one and only one possible world; and endurantists make a parallel claim about the temporal concept of being present or occurring now.

There are further analogies between the two pairs of theories. Just as Lewis's democratic views on the ontological status of worlds seem to preclude a theory of transworld individuals, a theory in which a concrete individual existing in one possible world is literally identical with an individual in another possible world, the perdurantist conception of times as all equally real carries with it a repudiation of genuinely transtemporal individuals, individuals that exist, exist wholly and completely, at different times. And just as Lewis seeks to accommodate the prephilosophical intuition that things could have been otherwise for a given concrete particular by reference to numerically different, yet related entities from other worlds, perdurantists analyze the prephilosophical idea of persistence through time in terms of relations among the contents of different times. And although we never expressed his view in these terms, Lewis's conception of what we might call a *modal individual*, an individual for which all sorts of possibilities exist, is aggregative.⁹ Lewis's account suggests the view that the modal Bill Clinton, the Bill Clinton for which there exists a full range of possibilities, both realized and unrealized, is a kind of aggregate of Bill Clinton as he actually is and all of his counterparts in other possible worlds. Pretty obviously, this view is just the modal analogue of the

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perdurantist picture of the temporally persisting individual as an aggregate of its temporal parts.

And the reactions of Plantinga and endurantists to these accounts parallel each other exactly. In both cases, we have the denial that the relevant accounts conform to the prephilosophical intuitions they seek to reconstruct. Plantinga wants to insist that my modal beliefs about a given individual are beliefs about *that very individual* and nothing else, and endurantists claim that our belief about persistence through time is the belief that things remain literally identical through time. Furthermore, neither Plantinga nor the endurantists find the sort of identity they read into our prephilosophical views, transworld identity for Plantinga and transtemporal identity for the endurantists, in the least philosophically problematic. In particular, neither takes the relevant identity to require philosophical analysis or explanation in terms of other things. For Plantinga, the "modally loaded" individual, the individual for which all sorts of unrealized possibilities exist, is not something we need to "cook up" out of something else; it is given us at the beginning of the ontological enterprise. In the same way, endurantists take the idea of a thing that exists wholly and completely at different times to be ontologically basic. As they see it, it is just an unproblematically unanalyzable fact about familiar concrete particulars that they are things that can remain literally identical over time.

So there are important analogies in the connections between views about the nature of modality and time, on the one hand, and views about transworld identity and identity over time on the other. Whether the focus is the modal framework of possible worlds or the framework of times, if we accord full-blown reality to all the frames making up the framework, we seem committed to denying that an individual existing in one frame can be literally identical with items in any other frame, and we are forced to hold that the idea of an item that is stable across frames is the idea of something that is a kind of aggregate of numerically different items from different frames. But if we attribute special ontological status to just one frame in the framework and claim that its contents alone constitute what really exists, then we can accommodate the idea that an individual from that privileged frame can be literally identical with an individual from some other frame.

Now, it is certainly possible to treat the framework of possible worlds and the temporal framework in opposing ways. There are philosophers who are actualists about possible worlds while holding to an eternalist theory of time;¹⁰ and although I know of no philosopher who is a possibilist about the modal framework and a presentist about the

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temporal framework of our world or all worlds, such a combination of views does not, in any obvious way, seem incoherent. Nonetheless, the analogies between the two cases are striking; and it is noteworthy that while Lewis is both a possibilist about the modal framework and an eternalist about time, Plantinga endorses not only an actualist theory of possible worlds, but also a presentist account of time.¹¹

The ontology of perdurantism

We have so far characterized perdurantism as the view that familiar persisting concrete particulars are aggregates of their temporal parts-but while this way of characterizing the view enables us to bring out the contrast between a perdurantist and an endurantist account of temporal persistence, its emphasis on the case of familiar concrete particulars and their persistence through time conveys a misleading picture of the ontology that is typically associated with perdurantism. The account suggests that, from the perdurantist perspective, what we have is merely the familiar particulars of common sense and their temporal parts; but, in fact, perdurantists typically embrace a far more generous ontology. Perdurantists typically hold that the temporally "smaller" items of which the particulars of common sense are composed go together to constitute many more objects than we are prephilosophically accustomed to recognize.¹² While conceding that the whole Loux can be divided into things like the Loux of yesterday, the Loux of today, and the Loux of tomorrow, perdurantists will typically claim that each of these items enters into the constitution of things other than the whole Loux. They will insist, for example, that there is a thing (we can call it Athanasius) that has as its parts the following items: the Loux of yesterday; Big Ben from noon, January 15, 1914, to midnight, February 13, 1916; Wembley Stadium from 2 p.m. to 3 p.m., May 12, 1954; and the top two-thirds of the Sears Tower on Christmas Day, 1994. Perdurantists will typically claim that Athanasius is every bit as real as the whole Loux; they will claim that the Loux of yesterday is every bit as much a part of Athanasius as it is of the whole Loux; and they will insist that the Loux of yesterday enters into the constitution of a whole host of other things, many as apparently bizarre as Athanasius.

The idea that something that seems as weird as Athanasius should count as an object may strike us as puzzling; but, for perdurantists, the idea is perfectly natural. It represents merely more gerrymandering or the sort we earlier found them recommending for the temporal parts of familiar objects. Recall that perdurantists insisted that there are

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infinitely many ways of cutting up the whole Loux along the temporal dimension and that the results of all those divisions are equally real and equally temporal parts of the whole Loux. In defense of the claim that there are things like Athanasius, perdurantists will argue that just as we can think of a temporally extended object as divisible into infinitely many parts, so we can think of temporally smaller items as combinable in infinitely many ways; and they will claim that just as the relevant divisions all point to things that are objectively real, so the relevant combinations point to things that are parts of the furniture of the real world.

As perdurantists see things, there is a deep and unwarranted prejudice at work in the view that things like the Loux of yesterday are parts only of familiar objects like the whole Loux. They will deny that there is anything metaphysically sacrosanct about the move from the familiar objects of common sense to their temporal parts. Movement in that direction (we can call it ontological analysis) is, they will concede, legitimate; but they will insist that movement in the opposite direction (we can call it ontological synthesis) is equally legitimate. If what we have is merely the four-dimensional spread of the material world, then we can begin our account with familiar persisting objects and see them as things made up of temporally "smaller" things; but since the temporally "smaller" things are every bit as real as the temporally "larger" things, we can also begin with the former and see them as the materials out of which temporally "larger" items are constituted. And if, in the former case, there are infinitely many ways of cutting up an object into things that count as its parts, then, in the latter case, there would seem to be infinitely many ways of combining things to yield wholes. And perdurantists deny that the results of the infinitely many combinations are any more ideal, any more conceptual than the results of the infinitely many divisions. In both cases, the things are really and objectively out there in the four-dimensional spread that is the material world.

For perdurantists, then, what we have is simply the four-dimensional spread of matter. On this view, it is natural to think of a material object as nothing more than the content of a region of space-time that is filled with matter.¹³ Accordingly, for any filled region of spacetime, there is a material object. The region of spacetime occupied by Athanasius is a filled region, so Athanasius is a full-fledged material object. And perdurantists will deny that the fact that Athanasius' parts are spatiotemporally scattered calls into question its status as an object. They will point out that, if our best physical theory is true, things like trees, cats, and chairs are just swarms of particles with lots of space in

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between. We do not take the fact that at any time their parts are spatially scattered to be incompatible with their status as material objects. Since time is just a further dimension on a par with the three spatial dimensions, it would be incongruous to deny Athanasius status as a material object merely on the grounds that its parts are spatiotemporally scattered.

Perdurantists, then, will typically hold that any filled region of spacetime, no matter how gerrymandered, is a material object. Accordingly, they will insist that there are infinitely many more material objects than common sense recognizes. On their view, what distinguishes any one of these infinitely many material objects from any other is its location in spacetime. The spatiotemporal boundaries of a material object mark it out as the material object it is, and its occupying the precise region of spacetime it does is an essential property of a material object. Thus, it is essential to the Loux of yesterday that he exists from midnight, October 19, 1995, to midnight, October 20, 1995, and that he occupies at the different times in that twenty-four hour period precisely the regions of space that he does; and analogous points hold for our friend, Athanasius, and any other material object.

So perdurantists typically endorse claims that did not enter into our initial characterization of the view. As we initially explained it, perdurantism was the view that familiar concrete particulars persist through time by having temporal parts that exist at different times. Now, it would certainly be possible for a philosopher to accept this claim and deny that there are things like Athanasius. But the fact is that the four-dimensional picture of the world that underlies perdurantism so naturally gives rise to the view that the objects of common sense represent only some of the objects that are out there that few perdurantists would challenge the view. The standard perdurantist view is that any chunk of the four-dimensional spread of matter is as real as any other and that the familiar objects of common sense are the products of just one among many equally objective ways of cutting up that four-dimensional spread.

It is because they do embrace the more generous inventory of material objects we have been discussing that perdurantists regularly take it to be an important philosophical project to identify what is distinctive about those aggregates of temporal parts that are the familiar objects of common sense.¹⁴ What gives this task the philosophical urgency it has for perdurantists is the fact that common sense recognizes only a handful of the material objects perdurantists tell us there are; and perdurantists owe us an account of why this is so. They owe us an account, that is, of why we are prephilosophically accustomed to cut

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up the four-dimensional spread of matter into cats, trees, and chairs, but not into things like Athanasius. Our prephilosophical prejudices in favor of aggregates like the former point to features distinctive of those aggregates, and the perdurantists must tell us what those distinctive features are. Since perdurantists take all material objects to be nothing more than aggregates of temporal parts, they are committed to the idea that what is distinctive about the familiar particulars of common sense involves the relations that obtain among their temporal parts. Thus, perdurantists tell us that the temporal parts of objects we prephilosophically recognize enter into distinctive spatiotemporal relations, distinctive relations of similarity, and distinctive causal relations. Unlike the temporal parts of a *scattered object* like Athanasius, the temporal parts of a familiar particular enter into serial relations of spatiotemporal proximity: for every temporal part, x , of a familiar particular, there is another temporal part, y , of the same particular such that x is adjacent to y , and unless y is the first or last temporal part of the familiar particular, there is a third temporal part, z , of the same particular such that z is not a temporal part of x or y and y is adjacent to z . The result is that there is a spatiotemporal connectedness to the temporal parts of a familiar particular, and the familiar particular itself is something like a single continuous spacetime worm. Furthermore, the spatiotemporally adjacent parts of a familiar particular are very similar to each other, so that the whole particular is something whose overall qualitative character changes only gradually over time. And whereas the temporal parts of a thing like Athanasius are causally unrelated to each other, the temporal parts of a familiar object are causally responsible for the existence and character of the temporal parts that succeed them.

So for perdurantists, there are infinitely many ways of cutting up the four-dimensional spread that is the material world. No one of those ways of cutting it up is ontologically privileged. Every way one can cut up the filled regions of spacetime yields something that deserves the title 'material object.' What distinguishes the subset of material objects recognized by common sense is merely the relations that tie together their parts. Familiar objects are just aggregates whose temporal parts enter into the appropriate relations of spatiotemporal proximity, similarity, and causation; and for a familiar object to persist through time is merely for it to be an aggregate of temporal parts related in these ways.

Endurantists, by contrast, will claim that all of this is wrongheaded. Since they reject a four-dimensional picture of the world, they will deny that there are spatiotemporally *scattered objects* like Athanasius.

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Accordingly, they will find the perdurantist project of accommodating our prephilosophical "prejudice" in favor of things like cats, trees, and chairs gratuitous. They will insist that the only things that count as the parts of a material object are its spatial parts; and, denying that the notion of persistence through time can be analyzed in terms of other notions, they will insist that the idea of a thing that can endure or exist wholly and completely at different times is an ontologically fundamental concept.

Endurantist reactions to perdurantism are likely to remind us of the Aristotelian substance theorist's reactions to both the bundle theory and the substratum theory. Just as the substance theorist rejects the bundle and substratum theorists' talk of constituents and wholes, endurantists reject the perdurantists' talk of temporal parts and temporal aggregates; and the Aristotelian claim that the concept of a concrete particular is ontologically basic mirrors the endurantist denial that the notion of diachronic identity stands in need of any ontological I analysis. There are, to be sure, important differences between the issues that were the focus of Chapter Three and those occupying us in this 1 chapter. In the earlier context, we left time out of the picture. Our central concern there was the ontological structure of a concrete particular at a time, and questions about that issue are, in large measure, independent of questions about temporal persistence. Both endurantists and perdurantists would seem to be free to endorse any of the three theories about the ontological structure of a concrete particular at a time. Furthermore, the contrast in Chapter Three was between nonreductive and reductive accounts of concrete particulars. Both the bundle theorist and the substratum theorist seek to reduce concrete particulars to things of other ontologically more basic categories; but while perdurantists insist on an analysis of persistence through time, the analysis they provide does not result in a reductive account of concrete particulars.¹⁵ Although their analysis of persistence takes persisting concrete particulars to be aggregates of temporal parts, those parts are things of the same ontological category as the wholes they compose. They are, as was said earlier, every bit as concrete, every bit as material, every bit as particular as the persisting objects whose parts they are.

But while we must keep these facts in mind, we should not overlook the analogies between an Aristotelian substance theory and an endurantist account of temporal persistence. From an historical perspective, the analogies have been important. Although endurantists are not committed to endorsing an Aristotelian substance theory, the fact is that the two theories have typically gone hand in hand. It is not difficult to see why this is so. Both theories insist on taking the

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ontological framework expressed in our prephilosophical experience of the world seriously. Our prephilosophical conception of the world is one that cuts it up into things like trees, cats, and human beings. We believe that such things are fully real and not constructions out of things that are more real; and we believe that they are things that can exist wholly and completely at different times. Aristotelian substance theorists and endurantists both believe that, at bottom, this prephilosophical conception of the world does a good job of "cutting reality at its joints." Since a belief in the ontological irreducibility of familiar concrete particulars and a belief in their literal identity over time both seem to be implied by the prephilosophical conception of the world, it is not surprising that metaphysicians who have endorsed the one belief have endorsed the other as well.

An argument for perdurantism - change in properties

We have so far been concerned exclusively with the characterization of the endurantist and the perdurantist accounts of persistence through time. We have not yet tried to identify the reasons for endorsing one of these accounts over the other. The closing comments of the last section, however, suggest that an endurantist account might be appealing precisely because it comports so well with our prephilosophical understanding of claims of diachronic sameness.¹⁶ The claim that the Loux of yesterday is the same person as the Loux of today looks like nothing so much as a straightforward assertion of numerical identity; it appears to be precisely what endurantists tell us it is – the assertion that a thing existing at one time is numerically identical with a thing existing at another time. And most endurantists take this fact to be argument enough for their view. Accordingly, they are content to delineate their account of temporal persistence and to defend it against perdurantist attacks.

Perdurantists, by contrast, feel the need to argue for their view. Even if only implicitly, they concede that their interpretation of claims of diachronic sameness has the appearance of conflict with our prephilosophical understanding of temporal persistence; and they seek to show that despite the apparent fit between our ordinary beliefs about persistence and the endurantist account, we have no option but to endorse the perdurantist ontology of temporal parts. One line of argument here is that, however close to our prephilosophical conception of the world, the endurantist account fails to square with our scientific understanding of that world. The claim is that a four-dimensional picture of the world is implied by the physics of relativity theory. Since the idea that

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time is just another dimension on a par with the three spatial dimension leads so naturally to a theory of temporal parts, the claim is that the only way of accommodating our scientific beliefs about ourselves and the world around us is to embrace a perdurantist theory of persistence through time. This line of argument was once quite popular.¹⁷ It is not, however, the one we characteristically meet in recent writings of perdurantists. In part, I suspect, recent perdurantists are sensitive to the very real difficulty of extracting an ontological theory out of the mathematical formalisms of physics; but the more central reason recent perdurantists do not rest their case on facts about scientific theories is that they are anxious to show that our ordinary, prescientific beliefs about the world are not, in fact, at odds with the perdurantists' talk of temporal parts. They want to argue, that is, that endurantism only appears to comport better with our intuitive conception of temporal persistence. According to recent perdurantists, while it may seem that we incline toward an identity interpretation of claims of diachronic sameness, a closer inspection of our prephilosophical beliefs shows them to presuppose a perdurantist rather than an endurantist account.

Toward showing this, perdurantists focus on the phenomenon of change. They point out that change figures prominently in our beliefs about persistence through time. We believe not only that things persist through time, but also that they change over time. Accordingly, we believe that familiar objects persist through change. But that prephilosophical belief, perdurantists tell us, is not one that can be accommodated within the context of an endurantist account. On that account, persistence involves the identity of a thing existing at one time with that of a thing existing at another; but perdurantists insist that there are insuperable logical difficulties in the assumption that we have numerical identity where we have persistence through change. To do justice to the prephilosophical belief that familiar particulars persist through change, perdurantists argue, we must embrace a doctrine of temporal parts and hold that for a thing to persist through change is for it to have different temporal parts existing at different times.

In the works of recent perdurantists, however, the argument that change is problematic for endurantists takes two different forms. In the writings of some recent perdurantists, we meet with the general argument that change in any of the nonrelational properties associated with a familiar particular is incompatible with an endurantist account of temporal persistence.¹⁸ In other perdurantists, we find an argument with a more limited target; here, the aim is merely to show that one kind of change that can befall a familiar particular - change in its parts - is impossible on an endurantist account.¹⁹ Pretty clearly, if the more

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general argument succeeds, there is no need for the second, less general argument; for if change with respect to any of a thing's properties is impossible on an endurantist account of persistence, then change with respect to the thing's parts is as well. After all, for anything that might be a part of a familiar particular, there is a property that the familiar particular exemplifies just in case that thing is one of its parts. If, however, the generalized argument is, in any way, problematic, the more limited claim that persistence through a change in parts is incompatible with an endurantist account might, nonetheless, prove telling. In any case, let us look at the two arguments; and let us begin by examining the first and more general argument.

We believe, we said, that it is possible for familiar concrete particulars to undergo changes and to persist through those changes. Consider one case where this happens. Henry is a metaphysician whose hobby is surfing. As soon as classes end in the late spring, Henry flies off to Hawaii for a summer of surfing. Predictably, he quickly acquires a deep suntan. Then, in late August he returns to campus and begins work on a monumental treatise on the metaphysics of persistence through time. So engrossed is he in his work that he seldom leaves his office, and as September progresses, he loses his tan and becomes pale and sallow. If we call Henry as he was last summer Henry-in-the-summer and Henry as he is in the fall Henry-in-the-fall, then we can describe his situation by saying that Henry-in-the-summer is tan and Henry-in-the-fall is not tan. Now, if we are endurantists, we will say that Henry-in-the-summer is numerically identical with Henry-in-the-fall; but if we say that, then we are committed to the claim that Henry's persistence through the change in his skin color represents an exception to a principle we met in the last chapter, the Indiscernibility of Identicals. That principle, recall, tells us that necessarily, for any objects, *a* and *b*, if *a* is identical with *b*, then, for any property, *ϕ*, *ϕ* is a property of *a* if and only if *ϕ* is a property of *b*. It is a principle, we said, that virtually no philosopher wants to give up; but if we accept the endurantist account of persistence, then the admission that Henry persists from summer to fall forces us to give up the principle; for on that account, Henry-in-the-summer is identical with Henry-in-the-fall; and while the former is tan, the latter is not.

So endurantism seems able to accommodate our prephilosophical belief that Henry persists through the change only at the expense of rejecting the Indiscernibility of Identicals. Perdurantists, however, insist that their account enables us to preserve both the principle and the prephilosophical belief that Henry exists before, during, and after the change. On the perdurantist account, Henry-in-the-summer and

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Henry-in-the-fall are numerically different things, so there is nothing problematic in the fact that the former is tan and the latter not tan, but pale. But while insisting that Henry-in-the-summer and Henry-in-the-fall are numerically different, perdurantists hold that both are parts of a single aggregate of temporal parts related, in the appropriate ways, by spatiotemporal connectedness, similarity, and causation. Accordingly, we have a single being, the whole Henry, whose temporal extension spans both the summer and the fall; and the prephilosophical belief that he persists through the change is preserved. We have a single spacetime worm, different segments of which have different properties. Since the segments are different, there is no violation of the Indiscernibility of Identicals; and since they are both segments of a single interconnected worm, we have persistence.

Thus, perdurantists want to claim that, despite initial appearances to the contrary, it is their view and not that of endurantists that does the better job of preserving our prephilosophical intuitions. Endurantists will, of course, deny that their account of persistence through change conflicts with the Indiscernibility of Identicals. They will claim that the appearance of conflict stems from the perdurantist description of Henry's situation; and they will invite us to describe that situation not by speaking of a single property that Henry-in-the-summer has and Henry-in-the-fall lacks, but by saying that there are two different properties, that of *being tan in the summer* and that of *being tan in the fall*, such that Henry has the former and lacks the latter. They will propose, that is, that we describe Henry's situation by reference to *time-indexed properties*, insisting that when we do so, all conflict with the Indiscernibility of Identicals disappears. The perdurantists' rejoinder will, of course, be that the endurantists genuinely succeed in eliminating the conflict between their account of persistence and the Indiscernibility of Identicals only if they are prepared to insist that the *only* way of describing Henry's situation is by way of time-indexed properties; and the perdurantists will claim that the cost of the endurantists so insisting is too high. It entails that the only kind of properties Henry has are time-indexed properties; but if we accept that view, we are committed to the outrageous conclusion that it can never be true that Henry is (just, plain) tan or (just, plain) pale.

All of this should have a familiar ring to the reader of Chapter Five; for the perdurantist argument and the ensuing dialectic represent a kind of reprise of the argument and counter-argument surrounding David Lewis's attempt to show that there are no transworld individuals. I have already indicated that there is a close analogy between Lewis's views about modality and his views about time. It should come

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as no surprise to the reader, then, that the argument just set out is one taken directly from Lewis's writings.²⁰

Do endurantists have a reply to Lewis's argument? Does their appeal to time-indexed properties in their description of Henry's situation preclude their describing Henry's situation in terms of properties that are not time indexed? They, at any rate, will certainly deny that it does.²¹ They are, recall, presentists about time, so they will deny that we can provide a correct description of the world without appealing to a tensed form of language. Indeed, they will insist that the apparently tenseless idea of a thing's having a property at a time stands in need of analysis. They will likely tell us that to say that a thing, x , has a property, ϕ , at a time, t , is just to say that when t is (or was or will be) present, x has (or had or will have) P . Accordingly, they will tell us that if it is true both that Henry is tan in the summer and that Henry is not tan in the fall, then how things stand with Henry depends on what season it now is. If it is now summer, then it is true that Henry is now tan. It is, of course, true that Henry will not be tan in the fall; but that fact hardly entails that Henry is now both tan and not tan; nor does it entail that in the fall Henry will be both tan and not tan. Likewise, if it is now fall, then it is true that Henry is not currently tan. It is, to be sure, true that Henry was tan last summer; but, again, that does not entail either that he is now both tan and not tan or that he was both tan and not tan last summer. In short, endurantists will claim that if we keep our tenses straight, then we can see that Henry's situation involves no counter-example to the Indiscernibility of Identicals.

So the endurantists are not precluded from describing changing particulars by way of properties that are not time indexed. Indeed, their understanding of the nature of time makes that sort of description primary or basic; and when they invoke that sort of description, they have a characterization of changing particulars that is fully compatible with the Indiscernibility of Identicals. Their claim will be that where Lewis's argument that persistence through change presupposes the truth of perdurantism goes wrong is in its implicit assumption that an eternalist theory of time is correct. On an eternalist conception of time, the idea of a thing's having a property is a tense-less notion. Accordingly, the claim that a thing remains numerically the same object through a change in its properties is genuinely problematic for an eternalist. The only way of avoiding the problem is by reference to time-indexed properties; but on an eternalist account, time-indexed properties are unanalyzable. Accordingly, if we are eternalists about time, the claim that numerically one and the same

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object exists both before and after a change in its properties commits us either to the view that the Indiscernibility of Identicals is false or to the view that things cannot be correctly described by way of properties that are not time-indexed. Endurantists concede that the argument shows that one cannot be an eternalist about time and hold, at the same time, that familiar particulars remain numerically identical through change; but they point out that since they endorse a presentist conception of time, their interpretation of persistence through change as genuine numerical identity through change is not touched by Lewis's argument. Since they take talk about a thing's having a time-indexed property to be analyzable in terms of the tensed notion of having a property that is not time indexed, their willingness to describe a changing object by way of time-indexed properties does not preclude their describing that same object in terms of properties that are not time indexed. Indeed, the former kind of description presupposes the latter. And since when describing a changing object by way of properties that are not time indexed, endurantists insist that we be sensitive to tenses, they can make good the claim that numerical identity through change is fully compatible with the truth of the Indiscernibility of Identicals.

Like Lewis's argument against an endurantist account of persistence through change, the endurantist response to the argument should strike the reader as familiar. It is, after all, simply the temporal analogue of Plantinga's response to Lewis's argument against transworld individuals. At the global level, Plantinga can be understood as arguing that Lewis's attack on transworld identity goes wrong in assuming the truth of possibilism. While conceding that the idea of a transworld individual is problematic within the context of a possibilist ontology like Lewis's, Plantinga argues that transworld identity presents no problem for an actualist. He points out that within an actualist framework, the idea of a thing's having a world-indexed property is to be analyzed in terms of its having a property *simpliciter*; and he argues that when we characterize the situation of a transworld individual in strictly actualist terms (that is, in terms that make reference exclusively to the properties the thing actually has), we find that there is no conflict whatsoever between the existence of transworld individuals and the truth of the Indiscernibility of Identicals. Translate Plantinga's overall strategy and the tactical moves by which he executes that strategy into the temporal arena, and you have the endurantist response to Lewis's argument against identity through change.²²

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A second argument for perdurantism - change in parts

If, then, we accept the sort of account of time that endurantists endorse, we are not likely to find Lewis's argument against endurantism compelling. As I indicated, however, perdurantists sometimes defend their account of temporal persistence by arguing that there is one kind of change familiar objects characteristically undergo - change in their parts - that remains problematic for endurantists. Our best theory of the workings of nature tells us that I am constantly undergoing changes in my parts. I am constantly losing atoms and gaining new ones. We believe, however, that I persist through such changes; perdurantists claim that only their account of temporal persistence is compatible with this belief.

What kind of argument might one use in defense of this claim? Given the difficulties associated with the general perdurantist argument that persistence through any kind of change is problematic on an endurantist conception of temporal persistence, it had better not be an argument that merely applies Lewis's general argument to the case of change in parts. The kind of argument I have in mind is one which argues that a thing's remaining numerically identical through a change in its parts conflicts with a principle which tells us that if a thing, x , and a thing, y , are numerically identical, then every item that is a part of x is a part of y and vice versa. Such a principle is a close relative of the Indiscernibility of Identicals: whereas the Indiscernibility of Identicals tells us that numerical identity entails indiscernibility in properties, this principle tells us that numerical identity entails indiscernibility in parts. The difficulty with an argument based on this principle is not that the principle is false. Pretty clearly, it is not false. The difficulty is rather that endurantists will insist on interpreting the principle and its application to individual cases in precisely the same presentist terms in which they interpreted the Indiscernibility of Identicals and its application to individual cases; and they will argue that if we keep our tenses straight, we find that the principle presents no problem for the philosopher who thinks that familiar objects remain numerically identical through changes in their parts. Thus, if perdurantists allege that since the Loux of yesterday and the Loux of today are made up of different atoms, the principle in question entails that they cannot be numerically identical, endurantists will respond by denying that my changing my parts represents a counterexample to the principle that numerical identity entails indiscernibility in parts. They will deny that my change in atoms

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involves a single object's both having and failing to have a certain collection of objects as its parts. They will say that, whereas yesterday I *had* a certain collection of objects as my parts, today I *have* a different collection of objects as my parts.

So if perdurantists are to show that change in parts is genuinely problematic for endurantists, they need an argument that is not a mere variant on the argument we considered in the last section. An argument of the required sort is presented by Mark Heller.²³ His argument is both important and interesting. Unfortunately for us, Heller's argument is developed with an eye to the reader familiar with all the literature on temporal persistence. We can, however, bring out the difficulty Heller claims to find in endurantism if we consider an argument that, while inspired by his argument, differs from it in a number of ways. The reader is invited to consider Descartes as he was before a certain time, *t*. Prior to *t*, Descartes was fully intact; he had all the organic parts we associate with normal human beings. In particular, he had a left hand. To refer to Descartes as he was before *t*, let us use the expression 'Descartes-before-*t*.' So we have Descartes-before-*t*; but if Descartes existed before *t*, then so did something else. We can call that thing Descartes-Minus. Descartes-Minus is that thing that is all of Descartes except his left hand. To refer to Descartes-Minus as it existed before *t*, let us use the expression 'Descartes-Minus-before-*t*.' At *t*, Descartes undergoes an unfortunate experience; his left hand is amputated. To refer to Descartes as he was after the amputation, we can use the expression 'Descartes-after-*t*.' Now, we all believe that things can survive the loss of some of their parts. More particularly, we believe that a human being can survive the amputation of his or her left hand. If, however, we are endurantists, we will interpret this survival as a case of strict numerical identity. Accordingly, we will hold that

- (1) Descartes-before-*t* is numerically identical with Descartes-after-*t*.

But Descartes is not the only thing to survive the amputation. Descartes-Minus does as well. Descartes-Minus is still there after the amputation; Descartes' left hand is, of course, no longer attached to Descartes-Minus, but that fact can hardly be relevant to Descartes-Minus' survival. Just as a book on a shelf survives the removal of the book adjacent to it, Descartes-Minus exists after the amputation. Now, if we are endurantists, we will interpret Descartes-Minus' survival, once again, as a case of numerical identity. If we use the term 'Descartes-Minus-after-*t*' to refer to Descartes-Minus as it exists after

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the amputation, then we can say that endurantists will endorse the truth of

- (2) Descartes-Minus-after- t is numerically identical with Descartes-Minus-before- t .

So we have Descartes-after- t and Descartes-Minus-after- t . But how are they related? Well, they occupy precisely the same region of space, they are composed of precisely the same cells, precisely the same molecules, precisely the same atoms, precisely the same electrons, and so on. They are part for part identical; and anything I do to one, I do to the other. But to say these things is just to say that they are one and the same thing, not two different things. Accordingly,

- (3) Descartes-after- t is numerically identical with Descartes-Minus-after- t

is true.

So if we are endurantists, we are committed to the truth of each of (1), (2), and (3). All three are statements of numerical identity. Numerical identity, however, has a number of important logical properties. It is *reflexive*: for every object, x , x is numerically identical with x . It is also *symmetrical*: if an object, x is numerically identical with an object, y , then y , in turn, is numerically identical with x . Finally, and for our purposes most significantly, numerical identity is *transitive*: if a thing, x , is numerically identical with a thing, y , and y , in turn, is numerically identical with a thing, z , then x is numerically identical with z . But given the transitivity of numerical identity, the truth of (1), (2), and (3) entails the truth of

- (4) Descartes-before- t is numerically identical with Descartes-Minus-before- t .

Clearly, if it is true that Descartes-after- t is identical with Descartes-before- t , that Descartes-Minus-after- t is identical with Descartes-Minus-before- t , and that Descartes-after- t is identical with Descartes-Minus-after- t , then it is true that Descartes-before- t is identical with Descartes-Minus-before- t .

Thus, endurantists are committed to the truth of (4). The problem is we know that (4) is false. Numerical identity is not merely reflexive, symmetrical, and transitive; it involves property-indiscernibility as well. The Indiscernibility of Identicals is, after all, true: numerical

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identity entails indiscernibility in properties. But Descartes-before-*t* and Descartes-Minus-before-*t* are not indiscernible in their properties. One of them had a left hand; the other did not. One of them had a greater mass than the other. They had different shapes; they occupied different regions of space. The Indiscernibility of Identicals, then, tells us that

- (5) Descartes-before-*t* is not numerically identical with Descartes-Minus-before-*t*.

And endurantists can hardly deny this; but, then, they are committed to a pair of contradictory propositions - (4) and (5).

So the endurantists' account of what is involved in Descartes' loss of his left hand seems to land them in a contradiction; and while the Descartes example is attractive because of its very graphic depiction of the loss of a part, the argument we have presented pretty obviously generalizes to all cases where a familiar object loses a part. Descartes-Minus, after all, could have been all of Descartes except a single electron that Descartes chances to lose at *t*; the result would have been the same. On the endurantist account of persistence, Descartes' survival of the loss of that single electron would have involved precisely the same sort of contradiction we have found to accompany his survival of the loss of his left hand.²⁴

But perdurantists will claim that if endurantists cannot provide a consistent account of a thing's ability to survive the loss of one of its parts, they can. On the perdurantists' account of persistence, Descartes' survival of the loss of his left hand does not presuppose the truth of either (1) or (2). As perdurantists see things, Descartes is an aggregate of temporal parts; and his persistence over time is a matter of his having different temporal parts existing at different times. Descartes-*before-t* and Descartes-*after-t* are just such temporal parts. On the perdurantists' view, then, Descartes' making it through the amputation does not involve the numerical identity of Descartes-before-*t* and Descartes-after-*t*; it involves their standing in the weaker relation or being parts of a single continuous spacetime worm. And the perdurantists propose that we treat the persistence of Descartes-Minus in the same way, so that even if Descartes-Minus-before-*t* and Descartes-Minus-after-*t* do not differ in their parts, they are numerically different temporal parts of the aggregate that is Descartes-Minus. The perdurantists will claim that the two aggregates, Descartes and Descartes-Minus, are related in an interesting way, a way that gets reflected in the truth of (3). They are aggregates that, while different, share a part; they

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are overlapping aggregates. Their temporal parts before t are numerically different; but there is a single thing that is their temporal part after t - the thing we alternately called Descartes-after- t and Descartes-Minus-after- t . Descartes and Descartes-Minus, then, are spacetime worms that merge after t . Overall, they occupy different regions of spacetime, but after t their parts occupy one and the same region of spacetime.

So perdurantists reject (1) and (2) and thereby avoid the contradiction our modified version of Heller's argument attributes to the endurantists. But is the argument right in its contention that endurantists are committed to endorsing both (4) and (5)? More particularly, is the argument right in supposing that endurantists are committed to the truth of the problematic (4)? Only if it is right in supposing that endurantists are committed to the truth of each of (1)-(3). The fact is, however, that every endurantist I know of rejects at least one of these claims as we have formulated them.

Some endurantists simply deny that objects can remain identical through a change in their parts.²⁵ They hold to what has been called the doctrine of *mereological essentialism*, the view that whatever parts a thing has, it has essentially or necessarily. These endurantists take persistence through time to involve the numerical identity of a thing existing at one time with a thing existing at another; and while they concede that it is possible for things to remain identical through many kinds of change, they deny that it is possible for a thing to survive the loss of any of its parts. Such philosophers, then, would respond to our argument by denying the assumption that constitutes its starting point.

But if they do that, how are they going to explain our very strong inclination to believe that, despite the loss of some of its atoms, the desk I am writing on is the same desk I wrote on ten minutes ago? For philosophers who endorse endurantism, the response that the inclination is simply misguided, that the belief to which it gives rise is simply false is not an attractive option. After all, they endorse endurantism precisely because they think it comports so well with our prephilosophical beliefs about persistence. It would be incongruous for them to go on and claim that most of those beliefs are, in fact, false. A more promising strategy is that proposed by the most prominent recent defender of mereological essentialism, Roderick Chisholm.²⁶ Chisholm wants to claim that there are two quite different senses in which a thing, a , can be said to be the same as a thing, b . There is the "strict and philosophical" sense of 'same' and the "loose and popular" sense. In the "strict and philosophical" sense, 'same' expresses

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numerical identity; and Chisholm tells us that it is this sense of 'same' that is operative in the mereological essentialist's claim that it is impossible for a thing to remain the same through a change in its parts. Chisholm insists, however, that this claim is fully compatible with the belief that the table I am now writing on is the same table I wrote on ten minutes ago; for that belief invokes the "loose and popular" notion of sameness, a notion whose application does not require identity of parts.

As Chisholm sees it, there are primary entities. These are things in the "strict and philosophical" sense; it is impossible for any one of them to survive the loss of a part. Our concepts of familiar material objects like desks and chairs, however, are not concepts of primary entities, but concepts of successions or chains of primary entities. Associated with any such concept are criteria that tell us when we have, in the "loose and popular" sense, one and the same desk, one and the same chair, and so on. What the criteria identify are the sorts of relations that must obtain among the primary entities in a chain for that chain to constitute what we, in ordinary language, call one and the same desk or one and the same chair. So things like desks and chairs have the status of objects only in virtue of the conventions underlying our use of terms like 'desk' and 'chair.' They are objects only in the "loose and popular" sense, but that status is sufficient to accommodate our prephilosophical belief that desks and chairs are things that remain the same despite changes in their parts.

But Chisholm wants to deny that all our ordinary kind concepts are concepts of what are, only in the "loose and popular" sense, objects. Our concept of a human person, he argues, cannot be such a concept. Our mental lives exhibit a unity of consciousness they would not have if each of us were nothing but a string of numerically different entities. To account for the unity of our conscious experience, we must construe persons as things whose persistence through time is a matter of numerical identity or sameness in the "strict and philosophical" sense. Accordingly, we must suppose that each of us is, throughout the whole course of his or her life, a single primary entity. But since the thing I call my body, this assemblage of flesh and bones, is constantly undergoing changes in its parts, it follows that I am something different from my body. My body is an object only in the "loose and popular" sense; but I am an object in the "strict and philosophical" sense.

But if I am not this organic body, what am I? One possibility would seem to be that I am a nonphysical thing, a spiritual or immaterial substance, a thing that has no parts that it could lose. While he concedes this possibility, Chisholm wants to claim that his views about the

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identity of persons are consistent with a materialist account that identifies a human person with a physical object.²⁸ Indeed, he suggests that a person might be a microscopic object located somewhere in the brain. All that mereological essentialism requires is that the object in question be one that has whatever parts it does throughout the whole lifetime of the person it is.

Given this account, it is easy to see how Chisholm would respond to our argument about Descartes. He would claim that the truth value of

(1)Descartes-after- t is numerically identical with Descartes-before- t

depends on the referential force of 'Descartes-after- t ' and 'Descartes-before- t .' If we understand them as expressions picking out the human person who is Descartes, then (1) is true; for since Descartes is not identical with the organic body that loses its left hand, the amputation does not threaten his identity. But Chisholm would claim that if we construe these expressions in this way, then

(3) Descartes-after- t is numerically identical with Descartes-Minus-after t

comes out false; for whatever Descartes-Minus-after- t is, it is a complex material object, something that is an object only in the "loose and popular" sense, and the human person that is Descartes is identical with no such thing. And Chisholm would claim that if we interpret 'Descartes-after- t ' in such a way that (3) comes out true, then (1) comes out false. If, that is, we construe the expression as referring to the organic body emerging from the amputation, then if 'Descartes-after- t ' is understood in this way, then whether we take 'Descartes-before- t ' to refer to the human person who is Descartes or to the organic body that enters the operating room, (1) comes out false. The organic body that emerges from the amputation is something different from the human person, Descartes; but since it has fewer parts than the organic body that enters the operating room, it is not identical with that body either. So Chisholm would say that however we interpret the referring expressions at work in (1), we do not get the result that all of (1), (2), and (3) are true; accordingly, he would conclude, our argument fails to show that endurantists are committed to the truth of the problematic (4).

Chisholm's version of mereological essentialism, then, provides the endurantist with a strategy for avoiding commitment to (4). A theory

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of numerical identity we meet in the writings of Peter Geach does as well²⁹ Geach wants to deny that there is a single notion of numerical identity that applies to everything We have so far been supposing that there is, we have been treating identity as a single relation which every object bears to itself Geach, however, claims that sentences of the form '*a* is the same as *b*' lack a complete sense or meaning To give such sentences a complete meaning, we need an answer to the question 'Same what?' And Geach claims that an answer to that question always requires the appeal to a kind-term or a count-noun like 'human being', 'dog', or 'desk' For Geach, every such answer points to a unique identity relation Thus, there is the relation of being the same human being as, the relation of being the same dog as, the relation of being the same desk as So Geach holds that there are many different identity relations What is distinctive about his view is the idea that it is possible for a thing, *a*, and a thing, *b*, to enter into the identity relation determined by one kind-concept, but to fail to enter into the identity relation determined by another kind-concept even though the latter kind-concept applies to both *a* and *b* The following is the sort of case Geach has in mind Suppose that a single man holds two public offices, he is mayor of Loogootee, Indiana, and president of the Chickasaw County Board Then, it will be true that the mayor of Loogootee is *the same person as* the president of the Chickasaw County Board, but it will be false that the mayor is *the same official personage as* the president of the County Board Now, since Geach thinks it is possible for a thing, *a*, and a thing, *b*, to agree with respect to one identity concept, but to differ with respect to another, he argues that the transitivity of identity holds only where we have a single identity concept at work Thus, an argument that a thing, *a*, enters into an identity relation with a thing, *c*, because *a* enters into an identity relation with a thing, *b*, and *b*, in turn, enters into an identity relation with *c* requires that we have a single identity relation in all three cases.

But how is the fact that the transitivity of identity holds only where we have a single identity relation relevant to our argument about Descartes⁵ Well, that argument uses the transitivity of identity to derive the problematic (4) (the claim that Descartes-before-*t* is identical with Descartes-Minus-before-*t*) from the three identity claims we have called (1), (2), and (3) But if we endorse Geach's views about identity, we will insist that, as they stand, each of these three claims is incomplete in meaning To give the claims a complete meaning, we must identify a particular identity relation for each claim, and Geach's claim about the transitivity of identity tells us that we will be able to infer (4) from (1)-(3) only if there is a single identity relation at work

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in all three claims It is, however, far from clear that we have one and the same identity relation in (1), (2), and (3)

Claim (1) tells us that Descartes-after- t is the same as Descartes-before- t Same what? Presumably, *the same human being* Claim (2), on the other hand, tells us that Descartes-Mmus-after t is the same as Descartes-Minus-before- t Same what? Presumably, *the same dump of matter* or the same collection of cells, molecules, atoms, or whatever Now, it is not implausible to think that (3) comes out true whether we understand it to ascribe the relation of being the same human being or the same collection of cells Accordingly, we will succeed in deriving (4) from (1)-(3) by the transitivity of identity only if one of these two identity relations can be truly ascribed to the items mentioned in both (1) and (2) Unfortunately, neither relation holds in both cases It is not true that Descartes-Mmus-after- t is the same human being as Descartes-Mmus-before- t Descartes-Mmus-before- t is not a human being at all, but only a fragment of a human being Before the amputation, there is just one human being, and he has a left hand But neither is it true that Descartes-after- t is the same collections of cells as Descartes-before- t ; If it is appropriate to call these things collections of cells, then we have no option but to call them different collections of cells After all, the latter has many more cells than the former

So if endurantists endorse Geach's views about identity, they can deny that (4) follows from (1)-(3) Another way of responding to the argument is simply to deny that (3) is true This response involves none of the technicalities associated with the responses of the mereological essentialist or Geach It derives from the simple insight that since Descartes-after- t and Descartes-Minus-after- t have different histories, they cannot be identical Descartes-after- t is a thing that once had a left hand, Descartes-Mmus-after t is not Descartes-after- t is a thing that once occupied regions of space never occupied by the thing that is Descartes-Mmus-after- t He is a thing that had a shape the latter never had, and so on But how can they be different if, after t they occupy precisely the same region of space? Defenders of the response we are now considering answer that there is nothing problematic in the idea that there can be numerically different, yet spatially coincident objects. (30) In fact, they tell us, the spatial coincidence of distinct things is a phenomenon we meet repeatedly The clump of matter making up or constituting a familiar object is something different from the object it makes up, nonetheless, the clump of matter that makes up an object at any time occupies, at that time, precisely the same region of space the object does.

Thus, if endurantists endorse the idea of spatially coincident, yet

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numerically different objects, they can deny that (3) is true and thereby, avoid commitment to the problematic (4). A final strategy open to endurantists is simply to deny that there is such a thing as Descartes-Minus. This is the strategy recommended by Peter Van Inwagen.³¹ In fact, it was Van Inwagen who first told us the story of Descartes' amputation. In Van Inwagen's hands, the Descartes-Minus argument is used not, as it is in Heller's subsequent work, to support a perdurantist account of persistence through change in parts, but as a *reductio* of the view that there are what Van Inwagen calls "arbitrary undetached parts" - things like all of Descartes except his left hand. As Van Inwagen develops the argument, the assumption that there is such a thing as Descartes-Minus leads to the contradiction we meet in (4) and (5), the contradiction involved in holding that Descartes-before-t is both numerically identical with and numerically distinct from Descartes-Minus-before-t. In the argument we have conjured out of the Descartes case, the effect of denying, as Van Inwagen does, that there is such a thing as Descartes-Minus, is to render (2) false; for since the claim at work in (2) is that Descartes-Minus-before-t is identical with what remains of Descartes after the amputation, its truth presupposes that, before the amputation, there really was such a thing as that part of Descartes that was all of Descartes except his left hand.

The upshot of the discussions of the past few pages should be clear. Endurantists have a whole host of strategies for avoiding the contradiction our modified version of Heller's argument claims to find in an endurantist account of change in parts. Perdurantists will likely respond, as Heller does, that all the available strategies are counterintuitive.³² They will attack Chisholm's account of persons, claiming that human beings are not Cartesian spirits or bizarre microscopic entities, but familiar flesh-and-blood entities of the sort we now find seated at this desk writing a book on metaphysics. They will argue that Geach's account of identity runs counter to an insight central to the very enterprise of logic - that there is a single, universally applicable concept of identity that is characterized by the properties of reflexivity, symmetry, transitivity, and indiscernibility in properties. They will claim that the doctrine of spatially coincident objects foists upon us a bloated ontology that calls into question our prephilosophical practice of identifying and individuating material objects by reference to their spatial location at a time. And they will contend that Van Inwagen's denial that there are arbitrary undetached parts flies in the face of the obvious fact that if we have Descartes here in front of us, we have so much of Descartes as does not include his left hand here in front of us as well.

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Endurantists, in turn, will argue that their chosen response is not counter-intuitive, but they will also take the offensive, arguing that it is the perdurantists' views that are genuinely counter-intuitive. The claim will not simply be that temporal parts play no role in our prephilosophical thinking about the world. Endurantists will argue, for example, that the perdurantist claim that the spatiotemporal boundaries of a familiar particular are essential to it runs counter to intuitions we all share. We all believe, for example, that it was possible for Winston Churchill to have lived a day longer than he actually did; and we all believe that each of us could, at any time, have been in a place other than the place we actually were in at that time. Endurantists point out that perdurantists are committed to holding that these beliefs are all false.³³

The perdurantists will, of course, be ready with a response to these charges; and they will have further counter-changes of their own; and we can expect the endurantists, in turn, to take up those counter-changes. Like the other debates we have considered, the controversy over temporal persistence has a real staying power. Metaphysicians, it seems, have a difficult time reaching consensus.

Notes

- 1 We owe the labels 'endurantism' and 'perdurantism' to David Lewis. In Lewis (1986), he uses 'persist' as a term that is neutral between the two theories, and 'endure' and 'perdure' are used to express the different ways the two theories understand persisting through time.
- 2 Endurantism is the standard view, the view that flows out of our prephilosophical understanding of persistence, perdurantism is typically presented as a counter to the standard or natural view. Since it is the "received" view, endurantism is not often presented as a theory needing elaboration, it is perdurantists who take the pains to lay out their view in detail. For perdurantist accounts, see Williams (1951), Quine - "Identity, ostension, and hypostasis," in Quine (1954) - Lewis (1976) and Lewis (1986 202-5), Armstrong (1980), and Heller (1990). The ensuing account of perdurantism is a kind of "weighted average" of the views expressed in their writings. In the face of all these attempts at characterizing the perdurantist approach, endurantists have responded by attempting to spell out the standard view. The best such account I know of is found in Merricks (1994).
- 3 See, for example, Heller (1990 6).
- 4 An intriguing question is whether we can suppose that a temporally extended object like me is an aggregate made up exclusively of instantaneous slices. One might think not. Here, it is tempting to argue that

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just as we cannot construe three-dimensional solids as made up, exclusively of their two-dimensional slices (on the grounds that no matter how many two-dimensional slices one "stacks up," one will never produce a three-dimensional object), so one cannot get a four-dimensional object out of merely three-dimensional parts.

- 5 For attempts to provide an endurantist account that is not presentist, see Haslanger (1989) and Johnston (1987). My own suspicion is that such accounts are not likely to succeed and that endurantism *entails* presentism; but as a concession to these attempts at developing nonpresentist versions of endurantism, here and elsewhere I qualify or weaken my claims about the connection between the two views.
- 6 The contrast between these two versions of eternalism is frequently marked by speaking of the "new" and "old" tenseless theories of time. For an important version of the new theory, see Mellor (1981). For the contrast between the two versions of eternalism, see the essays in Oaklander and Smith (1994).
- 7 See any of the anthologies on the nature of time for discussion of issues central to this debate. Besides the Oaklander and Smith anthology, two such anthologies are Gale (1967) and LePoidevin and MacBeath (1993).
- 8 But not all eternalists defend the doctrine of temporal parts. See, for example, Mellor (1981).
- 9 Lewis concedes this in Lewis (1986: 203).
- 10 David Armstrong is one example. See Armstrong (1980 and 1989b).
- 11 I do not know of any place where Plantinga indicates this in print; but in conversation, he has expressed his allegiance to an endurantist account of persistence.
- 12 See, for example, Heller (1990: 49-51).
- 13 Ibid.
- 14 See Armstrong (1980: 67-8) and Lewis (1976: 55-6).
- 15 See Lewis (1976: 77).
- 16 See Merricks (1994).
- 17 See, for example, Grunbaum (1967) and Putnam (1967).
- 18 See Armstrong (1980: 68) and Lewis (1986: 202-5).
- 19 See Heller (1990: 2-4 and 19-20).
- 20 Lewis (1986: 202-5). Note that if we accept this argument and hold that there can be such a thing as *continuous change* (change such that at no two times during the change is it the case that the changing object has the same color, the same shape, or whatever), then we are committed to the existence of temporal parts with zero extension on the temporal axis. Dean Zimmerman pointed this out to me.
- 21 For a detailed endurantist reply to this argument, see Merricks (1994).
- 22 In the Merricks paper, the analogy between the modal case and the temporal case is emphasized.
- 23 See Heller (1990: 2-4 and 19-20).

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- 24 Since exchange of parts (that is, replacement of one part by another, new part) would involve a loss of a part, our modified version of Heller's argument would, if sound, show that an endurantist account of exchange of parts involves the same sort of contradiction.
- 25 See Roderick Chisholm (1973).
- 26 Ibid.
- 27 See Chisholm (1971).
- 28 See Chisholm's "Is there a mind-body problem?" in Chisholm (1989).
- 29 Geach (1967).
- 30 See, for example, Wiggins (1980: 30-5).
- 31 Van Inwagen (1981).
- 32 See Heller (1990: chaps I and II).
- 33 This criticism is developed in Van Inwagen (1981: 134—5).

Further reading

Very clear formulations of the perdurantist account of persistence are found in Heller (1990) and in the afterword to Lewis (1976). The former includes Heller's version of the Descartes-Minus argument. Van Inwagen's earlier version of the argument is presented in Van Inwagen (1981). For a statement of Lewis's argument for perdurantism, see Lewis (1986: 202—5). A clear statement of the endurantist view, together with a reply to Lewis's argument, is found in Merricks (1994). A clear statement of mereological essentialism is found in Chapter Three of Chisholm (1976). The selection from Lewis (1986), Lewis (1976), Heller (1990) and Merricks (1994) are all found in *Metaphysics: Contemporary Readings*.