

## Introduction to *Persistence*: What's the Problem?

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Moment by moment the world changes. Everything is in constant flux. An acorn matures from a bright green to a rich brown over a season. A waddling duckling learns to fly. A candle, straight in the morning, bends under the heat of the afternoon sun. We experience the world as a place filled with objects that persist through change. We believe that the green and brown acorns are one and the same nut, that the flightless duckling just is the same duck once it takes to the skies, and that the straight candle is numerically identical to the bent candle. Yet a single object cannot be both green all over and brown all over, or both incapable and capable of flight. One and the same thing cannot be both bent and straight. So is the belief that objects persist an illusion?

No. Over time the green acorn matured, the duckling learned to fly, the straight candle bent. None disappeared to be replaced *ex nihilo* by a numerically distinct object with different properties. Rather, each persisted through a change in its properties. Thus some ordinary objects persist through change.

At least, that is the thesis shared by the editors of this volume and the included authors. At stake in the debate among these authors, then, is not *whether* objects persist through change but rather *how* they do so. To give some context to this debate, in this introduction I motivate the real metaphysical problem of how objects persist through change, consider three broad approaches to explaining persistence, and briefly explore the bearing of some key metaphysical issues on the tenability of various accounts of persistence.<sup>1</sup>

### The Initial Tension Concerning Persistence

Many philosophers share a deep commitment to three metaphysical theses that express some of our surest and most firmly held intuitions about how things are in the world.

- (1) **CONSISTENCY** Nothing can have incompatible properties. (**CONSISTENCY** follows from the law of noncontradiction: Necessarily not, for any object  $x$ ,  $x$  has property  $F$  and  $x$  lacks property  $F$ .<sup>2</sup>)
- (2) **CHANGE** Change involves incompatible properties.
- (3) **PERSISTENCE** Objects persist through change.

When we hold these theses jointly, an initial tension quickly confronts us. For in maintaining any two, we seem to implicitly deny the remainder. Consider, for instance, the book that I read this morning. The book was open and is now shut.<sup>3</sup> Let us assume that the book persists through a change that involves the incompatible properties of being open and being shut (**PERSISTENCE** and **CHANGE**). But, nothing can have the incompatible properties of being open and being shut (**CONSISTENCY**). Thus it seems it must be a different book after all.

Now we could simply bypass this tension by dismissing one of the theses. We could reject the law of noncontradiction, Aristotle's "most certain of all principles,"<sup>4</sup> leaving us room to assert that something can both have and not have a property (forfeiting **CONSISTENCY**). But our intuition that **CONSISTENCY** is obviously and necessarily true is as strong, or stronger, than our intuitions that support the existence of persisting objects.<sup>5</sup> This makes the far-reaching philosophical implications of such a move very unappealing.

Or, we might hold that nothing changes, perhaps accepting Parmenides's picture of a static, monolithic reality in which all is as it ever was and ever will be (forfeiting **CHANGE**).<sup>6</sup> Or, closely related, we might insist that change does not involve incompatible properties. But such a notion of change verges on nonsensical. Change just does involve either something being  $F$  and something becoming not- $F$ , or something being not- $F$  and something becoming  $F$ . To give up **CHANGE** is to give up change. True, if we do give up our minimal metaphysical commitments about how change works, **PERSISTENCE** and **CONSISTENCY** generate no contradiction. But few today would be content with this kind of change nihilism. Again this strategy avoids paradox at too high a metaphysical cost.

Finally, we could argue that nothing persists, siding with Heraclitus who denied the existence of objects in favor of a reality constituted solely by flowing processes (forfeiting **PERSISTENCE**).<sup>7</sup> Given the less radical solutions presented in this collection, this move—at odds with both deeply held intuitions and a range of metaphysical theories—is unjustified.

Thus, to preserve something close to our understanding of how ordinary things—acorns, ducks, candles, rivers, books, even ourselves—exist and

persist in the world, let us take *CONSISTENCY*, *CHANGE*, and *PERSISTENCE* to be nonnegotiable. Doing so creates the need for an account of persistence that genuinely resolves the initial tension by reconciling the theses. It is this project that gives rise to the real problem of persistence about how ordinary everyday objects like acorns, ducks, candles, books, and persons persist through change.<sup>8</sup>

Notice again that the question at issue is not whether objects persist through change. *PERSISTENCE* assumes they do. Nor is it a concern with determining through which changes an object can persist. (Does a book cease to exist if it loses its cover? Can one and the same acorn not only turn brown but also sprout?) Rather the challenge is: What is it for ordinary objects to persist through change at all—is it for them to *perdure*, *exdure*, or *endure*? The structure of this problem will emerge in the next two sections.

### Ease the Tension, Find the Problem

*CHANGE* and *PERSISTENCE* are weakly formulated metaphysical claims. They leave open what counts as persistence, change, and incompatible properties being involved in change. The key to resolving tension among the nonnegotiable theses is to develop understandings of the phenomena of persistence and change that make the theses co-realizable. Different such understandings distinguish among three broad approaches to persistence: *perdurantism*, *exdurantism*, and *endurantism*. *Perdurantism* and *exdurantism* share a metaphysics according to which ordinary objects have temporal parts. In contrast, *endurantism* adopts a metaphysics according to which ordinary objects lack temporal parts.

By arguing that persisting objects *perdure*, *exdure*, or *endure*, each approach succeeds in resolving the tension among *CONSISTENCY*, *CHANGE*, and *PERSISTENCE*. But, in doing so, each sacrifices at least one intuitively and philosophically appealing metaphysical claim that bears on persistence. Deciding which such sacrifice to make is the real problem of persistence. To show why this problem arises, I now sketch how the three approaches address the initial tension around persistence.

To maintain the nonnegotiable theses, each approach explains persistence, change, and the involvement of incompatible properties in change in a way that makes them consistent. So that we may easily see how these explanations differ in metaphysical consequences, I reserve four terms for use in this introduction: *numerical identity*, *survival*, *alteration*, and *just having* a property.

The term *numerical identity* refers to the usual identity relation: the relation every object bears to itself solely in virtue of it being a single object. An object *survives* when it is more than a momentary object. More precisely, an object *survives* if and only if it is numerically identical to something that exists at a different time. An object *alters* by gaining or losing properties. More precisely, an object *alters* if and only if it is numerically identical to objects that instantiate different properties at different times. Finally, an object *just has* a property if and only if it simply instantiates (*Fx*) that property. That is, an object *just has* a property if and only if no extrinsic facts are relevant to the truth of the proposition that the object has that property.

In our everyday understanding of the world, we think that persisting objects survive. If I check out a book from the library in the morning and return it in the evening, I return that very same book. Although several hours older, it remains numerically identical to the book I borrowed. And if library books don't survive being out on loan, certainly at least things like people survive for more than a moment—surely, though a bit older, I am now the very same person that I was when I started typing this sentence.

In our everyday understanding we also firmly believe that change alters objects. The book that was open and is now shut is one and the same book. In closing the book, I did not make one book disappear and then instantly pluck a distinct book from thin air. When I chip a nail, I do not suddenly grow a new hand with a less than perfect manicure. Rather, my hand has simply undergone a minor alteration.

And, as part of our everyday understanding of the world, we suppose that at least in some cases ordinary objects *just have* those incompatible properties in virtue of which they change, regardless of how the rest of the world is. Lewis brings out the intuitiveness of this when he writes:

When I sit I'm bent, when I stand I'm straight. When I change my shape, that isn't a matter of my changing relationships to other things, or my relationship to other changing things. I do the changing, all by myself. Or so it seems. (Lewis 1999, 187)

With respect to the book, we tacitly hold that nothing beyond the book matters to its being open or its being shut—that there is some sort of primitive, nonrelational bond between the book and openness or shuttness. When turned to a page, the book *just has* the property of being open; with a closed cover, the book *just has* the property of being shut. In some sense the book is open or shut *simpliciter*, regardless of its relation to the desk upon which it rests at 3:00 p.m.<sup>9</sup>

But to maintain the consistency of the three nonnegotiable theses, we must sacrifice some piece of this of everyday understanding of how persistence involves survival, alteration, or the just having of properties. Such is the outcome with the three approaches to persistence canvassed in this volume—perdurantism, exdurantism, and endurantism. As noted above, the first two employ a metaphysics of temporal parts.

### Metaphysics of Temporal Parts and Persistence

The parts of ordinary objects constitute them. But what are these parts? Let us grant that ordinary objects have spatial parts. Perhaps they also have modal parts, dependent parts, abstract parts, or logical parts, among others. We need not take a stand on the ontological status of those sorts of parts here, and so for the purposes of this introduction I will ignore them. The particular claim a metaphysics of temporal parts (MTP) makes is that objects have temporal parts. Such temporal parts or time slices or stages exist only at a moment. So, on a view consistent with MTP, multiple momentary duck stages could exist—a merely waddling-duck stage, a distinct flying-duck stage, etc.—and a duck could be wholly or partially constituted by one or more such stage. The tenability of perdurantism and exdurantism turns on how well each view succeeds in using temporal parts to explain the persistence of ordinary objects through change. For reasons for and against preferring MTP to a metaphysics of enduring things (discussed below), see Theodore Sider (chapter 4), Judith J. Thomson (chapter 7), David Lewis (chapter 9), Dean W. Zimmerman (chapter 10), and Katherine Hawley (chapter 11) in this volume.<sup>10</sup>

**Perdurantism** The *perdurantist* takes change over time to be analogous to change over space. Just as color changes across the surface of a canvas when different *spatial* parts of the canvas have incompatible colors, so the color of an acorn changes over time from green to brown when distinct *temporal* parts (stages) of the acorn are green and brown. In both cases, change consists in distinct parts of an object having incompatible properties.

Perdurantists take advantage of the ontological resources offered by MTP to argue that ordinary objects are space-time worms composed of distinct momentary stages. On this view, just like a candle is extended vertically in space, it is extended temporally into its past and its future. It follows that an ordinary object is partially present at any one moment it exists in virtue of the stage existing at that moment. Not present at that moment are the other stages of the object in virtue of which it extends in time. The idea

is that an object persists by perduring, and perdures by surviving change. An object survives because, being a fusion of momentary stages, it exists at different times. It changes because some of its stages just have incompatible properties. For some standard perdurantist accounts in action, see W. V. O. Quine (chapter 1), Richard Taylor (chapter 2), and Lewis (chapter 3) in this volume.

Let us consider the case of the book to see how perdurantism resolves the tension among the nonnegotiable theses. Perdurantists hold that because it survives change, the book persists by perduring. It changes because it has as parts two distinct stages that just have the incompatible properties: one stage is open, another stage is shut (CHANGE). It survives this change in virtue of being numerically identical to the space-time worm extended through time (PERSISTENCE). Finally, because no single thing is open and shut (rather, distinct parts are), perdurantists can easily accept CONSISTENCY.

However, perdurantism does have a significant metaphysical cost: it gives up our everyday understanding of change as alteration. As a space-time worm, the book does not gain or lose a property. Instead, objects in a succession (the stages) have the incompatible properties in virtue of which the book has changed. Strictly speaking, perdurantists deny that we can predicate the properties of being open and being shut simply of the book as a whole. Thus they deny that the book is numerically identical both to an object that instantiates being open and a distinct object that instantiates being shut. So persistence as perdurance rules out that ordinary objects alter with change. Rather, change consists in the generation and destruction of momentary stages that are parts of ordinary objects (at least in the sense that at each moment, new stages exist at that moment and old stages cease to exist at that moment). See especially Sally Haslanger (chapter 8) on this point in this collection.

There is also a tension between perdurantism and the everyday view that objects just have the incompatible properties involved in change. Distinct stages that are proper parts of a perduring object simply instantiate incompatible properties ( $Fx$  and  $\text{not-}Fy$ ). But an entire perduring object itself does not simply instantiate those properties. Rather, in whatever sense it has incompatible properties, it does so through its relationships to its constituent stages. For instance, distinct parts of the book, its open stage and its shut stage, simply instantiate the incompatible properties, not *the book* itself. As a space-time worm, the book itself is open and shut only in virtue of its relationships to the stages constituting it. But arguably our intuitions about just having a property mesh more consistently with an approach on which *the book* as a whole, and not some part of it, is open and then is shut.

**Exdurantism** The *exdurantist*, or stage theorist, takes identity over time to be analogous to identity between possible worlds. Assume that an actual gingerbread house with white frosting shingles *could be* an unshingled gingerbread house in virtue of an unfrosted counterpart in some possible world. Analogously, exdurantists assume that a duck that now can fly *was* land-bound in virtue of a flightless counterpart waddling around in the past. In both cases distinct objects (the shingled gingerbread house and its unfrosted counterpart, the present duck and its earlier waddling counterpart) have incompatible properties. The exdurantist then contends that change over time is nothing more than an object and its temporal counterpart having incompatible properties and existing at different moments in the *actual* world.

Like perdurantists, exdurantists embrace MTP, but they adopt a different account of change. Perdurantists maintain that ordinary objects are composed of multiple stages, and so only partially present at any moment they exist. In contrast, exdurantists hold that an ordinary object is numerically identical to a single stage and that a temporal counterpart is numerically identical to a distinct stage. Each stage is wholly present at the moment it exists and exists only at that moment. The idea is that objects persist when they exdure, and exdure by changing over time. An object changes over time, then, when it and a counterpart stage just have incompatible properties. Given this account of change, it follows that a persisting object does not survive change, because it is numerically distinct from all earlier stages. In this collection the views of Sider (chapter 5) and Hawley (chapter 6) illustrate exdurantism.

Let us return to the case of the book to see how this approach resolves the tension among the nonnegotiable theses. Exdurantists hold that the book changes over time, and thus persists by exduring. It changes because it and a counterpart stage just have the incompatible properties: one stage is open, the other stage is shut (CHANGE). It changes *over time* in virtue of standing in a counterpart relation to a stage from a different time (PERSISTENCE). And, because no single thing is open and is shut (rather, distinct stages are), exdurantists can easily accept CONSISTENCY.

Exdurantism creates less tension with the everyday view that objects just have incompatible properties involved in change than perdurantism. On both accounts, the instantiation of incompatible properties is simple. But only exdurantism counts one of those stages as the ordinary object itself. For exdurantists, the book *just is* shut, its counterpart *just is* open. That is, *the book* itself is numerically identical to the shut stage. This way *the book* as a whole, and not some part of it, is shut. So an exduring ordinary

object simply instantiates one of the incompatible properties involved in a change because it is wholly present.

However, exdurantism pays for this metaphysical perk elsewhere. As with perdurantism, exdurantism's MTP rules out alteration. Distinct book stages are open and shut, no one book has lost one property and gained the other. Moreover exdurance precludes the survival of persisting objects—no book is numerically identical to both the earlier open stage and the later shut stage. At best, a persisting object continues (in some sense) in virtue of a succession of distinct momentary stages bearing the relevant counterpart relations to each other. But an earlier and a later stage in such a succession are no more one and the same object than the first and third links in a five-link chain are one and the same link.

Now exdurantists may accuse me of begging the question with my implicit acceptance of a particular notion of existence. They could argue that although the book is a momentary stage, it does survive change because the counterpart relations between stages allow it to, in some sense, exist at different times. They might maintain that “the shut book existed in the past as an open book” is true in virtue of an open counterpart book existing at a different time. If embraced, this derivative notion of existence would allow them to maintain that the book did survive change. For, they could say, the book survives the change because it is numerically identical to itself at a past time at which it (derivatively) existed. However, such a move threatens the coherency of the very idea of existence. It posits the existence of ordinary objects at times in the world during which they could not have causal powers and could not overlap with any material object. They would exist in the world but not be present (unless also derivatively so). Of course, exdurantists could argue that our ordinary understanding of existence is flawed, that what I am calling derivative existence *just is* existence. While I recognize this as a strategy available to exdurantists, I leave it to them to defend such a view. For this introduction I assume that the derivative forms of existence available to exdurantists do not suffice to permit objects to survive across time.

To sum up, both perdurantists and exdurantists endorse a temporal parts metaphysics according to which ordinary objects have temporal and spatial parts. Their exploitation of temporal parts to avoid contradiction allows the simple instantiation of incompatible properties (though not in a tension free way). Both approaches conflict with change as alteration because neither can hold simply that *the book* is open and *the book* is shut, rather distinct stages have these properties. Ultimately, though, the views differ in



metaphysical costs. Perdurantists may maintain that persisting objects survive change because they attribute incompatible properties to different parts of a single ordinary object that is at least partially present before and after a change. Exdurantists must deny survival because they deny that an ordinary object is numerically identical to an object existing both before and after it changes.

### Metaphysics of Enduring Things

According to the metaphysics of enduring things (MET) some objects endure. To claim that some objects endure is to claim that in some cases a numerically identical object is wholly present at different times. This claim states the minimal metaphysical commitments that distinguish the ontologies of MET from MTP.

On both views, objects may have temporal as well as spatial, modal, dependent, abstract, or logical parts. So the existence of a space-time worm constituted by waddling and flying duck stages is consistent with MET and MTP, as is the existence of a momentary object constituted by a single floating duck stage. However, MET merely allows for the existence of temporal stages while MTP entails their existence. A second difference is that only MET entails the existence of some enduring objects.

Thus the barebones ontologies required by the views differ. MTP requires objects partially or wholly constituted by stages, while MET requires the existence of objects falling outside that domain. For, an *enduring* object cannot be a space-time worm, nor can it be identical to a single momentary stage. Otherwise, it could not be wholly present at different times. So we see that on a view consistent with MET, multiple momentary duck stages could exist—a merely waddling-duck stage, a distinct flying-duck stage, etc. But an enduring duck would be distinct from a duck that is either a space-time worm or a single momentary stage.

Of course, a MET theorist *may* hold that an object identical to a stage or having stages as parts exists only as an extraordinary object or does not exist at all. The latter may be attractive—with enduring objects in her ontology, she may see no reason to countenance stages. Or she may (more weakly) wish to adopt a view that classifies all MTP objects as ontologically weird—on a par, for instance, with a fusion of Barbara's right ear on each of her birthdays. After all, seeing ordinary objects as enduring objects has intuitive appeal. If a friend gives me an acorn to add to my collection, I believe that he has given me the whole nut and that it stays the same nut when I put it in my pocket. If I give a friend a book, I believe that I have

given him the entire book, not just part of it, and that it will remain the same book as he reads it. But MET does not entail the claim that ordinary objects lack temporal parts.

Why then is the distinction between MET and MTP important to the question of persistence? Because the ontology of MET yields a third way to look at the persistence of ordinary objects. MET entails that at least some objects not identical to space-time worms or momentary stages have more than a momentary existence. This feature makes a view relying on MET congenial to our understanding of the survival and alteration of persisting objects, while views incorporating MTP create significant tension with that understanding (as we saw above). Perdurantism and exdurantism agree on MTP as their metaphysic, but disagree on their ontologies of ordinary objects and accounts of change. *Endurantism*, the third and final broad approach to persistence considered here, conflicts with perdurantism and exdurantism in its background metaphysic (MET vs. MTP) and its ontology of ordinary objects as well as its account of change.

**Endurantism** On a straightforward *endurantist* view, ordinary objects fall within the domain of the enduring things of the MET theorist.<sup>11</sup> If a duck is an ordinary object, then it would not be a space-time worm or a single momentary stage. Rather it would be wholly present at different moments. Nevertheless, multiple momentary duck stages could exist—a merely waddling-duck stage, a distinct flying-duck stage, etc., as well as space-time worms made up of stages. But, an endurantist would hold that an ordinary, enduring duck would be distinct from them.

According to the endurantist, ordinary objects persist by enduring. To put it otherwise, the endurantist takes identity over time to be strict identity between objects wholly present at different times. She takes change over time to be the instantiation of incompatible properties by objects identical over time. So, arguably, she holds the most intuitive understanding of change over time as a phenomenon that is nothing more than a numerically identical object instantiating different properties across time.

According to endurantism, wholly present ordinary objects *have* incompatible properties, in some sense. The account avoids contradiction by holding that temporal facts—facts external to an ordinary object—*mediate* the instantiation of incompatible properties without an appeal to temporal parts.

Adopting *temporally mediated property instantiation*—instantiation mediated by time or tense—allows endurantists to hold that an ordinary object persists through change by being wholly present before and wholly present

after a change despite its having incompatible properties. This allows persisting objects to both alter during change and survive change. There are several strands of endurantism that share this strategy but vary in their implementation. See, for instance, Peter van Inwagen (chapter 12), Hugh Mellor (chapter 13), Mark Hinchliff (chapter 16), and Ned Markosian (chapter 17). Each generates more or less tension with the view that objects *just have* (as defined above) the incompatible properties involved in change. For, if property instantiation is mediated by facts about time or tense, then an object having a property is dependent on such facts. The significance of that tension depends on the force of the claim that changing objects *just have* (in our sense) incompatible properties.

Let us once more revisit the case of the book to see how endurantism resolves the tension among the nonnegotiable theses. Endurantists hold that the book is wholly present while being open and while being shut, so the book persists by enduring. The book straightforwardly survives because the book that is shut is numerically identical to the book that was open (PERSISTENCE). Moreover mediated property instantiation makes theoretical space for the book to alter.<sup>12</sup> For instance, an endurantist using tense contends that the entire book that *was open* in the past *is shut* now (CHANGE). And, because no single thing just has the properties of being open and being shut, mediated property instantiation allows endurantists to easily accept CONSISTENCY. This way endurantism allows for a wholly present book to bear incompatible properties at different times, and thus survive alteration.

However, an endurantist cannot consistently hold both that the book *just is open* and that the book *just is shut* ( $Fx$  and  $\text{not-}Fx$ ). Instead, the view of change involving objects *just having* incompatible properties is replaced by one involving property instantiation mediated by some sort of appeal to times or tense.

The introduction of time or tense into property instantiation introduces a host of potential worries. First, temporal concerns intuitively seem irrelevant to whether an object has those intrinsic properties in virtue of which it can change. Finding out what time it is certainly seems irrelevant to determining whether the book is open or shut. Second, it threatens our understanding of how a property can be predicated of an object because of theoretical issues like those arising from Bradley's Regress (which appears later in the discussion on temporary intrinsics.)

Third, it obscures how the properties involved in change are incompatible. An enduring object has the properties of *being F* and *not being F* involved in change in a way that does not generate contradiction because

in some sense they can be co-instantiated. For instance, if the book is open-in-the-morning and shut-in-the-afternoon, this looks no more problematic than the book being rectangular and red. So why did incompatible properties cause worries in the first place? Something at the heart of the matter seems to have been bypassed too easily.

Finally, without some sort of more robust incompatibility, it becomes difficult to see why we should even postulate change in the first place. After all, change just seems to be an object losing one property when it gains an incompatible property because they cannot be co-instantiated. I have only gestured at these worries to get them on the table. Various strands of endurantism handle these worries more or less well, as discussed in the later section on temporary intrinsics.

To sum up, the three broad strategies—perdurantism, exdurantism, and endurantism—share the virtue of allowing us to resolve the tension among CONSISTENCY, PERSISTENCE, and CHANGE. In some sense each allows us to deny that the book is open and is shut, while holding that the book persists through changes involving those incompatible properties. Yet each gives rise to its own metaphysical worries. Thus we see why deciding which metaphysical consequences to accept in the interest of reconciling the non-negotiable theses is the heart of the real problem of persistence.

### The Real Problem of Persistence

It is worth drawing out this problem a bit more explicitly. Contradiction ensues when we conjoin the nonnegotiable theses of CONSISTENCY, CHANGE, and PERSISTENCE with three additional theses supported by our ordinary metaphysical intuitions and theoretical commitments. These theses capture our concern with alteration, survival, and the just having of properties that we considered above.

ALTERATION constrains how things change. SURVIVAL constrains how things persist. ATEMPORAL INSTANTIATION constrains how incompatible properties are involved in change. We must deny, substantially revise, or significantly reinterpret our ordinary understanding of one of these negotiable theses in seeking any solution to the real problem of persistence.

(4) ALTERATION Any object that changes is the proper subject of the incompatible properties involved in the change.

ALTERATION limits acceptable interpretations of change to those that involve alteration in the sense we used above, that is, those that involve genuine changes in the properties of a single object. It says that an object

undergoes change only if the persisting thing is the bearer of incompatible properties. *ALTERATION* entails that the book changes only if *it* has the incompatible properties of being open and shut. Thus the existence of open and shut book stages, as either parts of a space-time worm or counterparts, would not suffice for change. For, as we saw above, that would be to attribute the incompatible properties to distinct objects. The perdurantist and exdurantist, then, must find a way to negotiate this thesis. The endurantist's wholly present ordinary objects that gain and lose properties sit well with *ALTERATION*, though we will see that this depends on what it takes to be the proper subject of a property.

(5) *SURVIVAL* If an object persists through change, then the object existing before the change is numerically identical to the one existing after the change.

*SURVIVAL* constrains the class of persisting objects to those that survive through change. It entails that the book persists when it is shut only if it is (numerically) the very same book before and after the shutting. The perdurantist's partially present ordinary objects and the endurantist's wholly present ordinary objects both allow for the book to exist before and after a change. However, the exdurantist's shut book that has an open book counterpart would not deliver persistence if we accept *SURVIVAL*. For, the shut book would not be identical to the open book. Proponents of exdurantism, then, must find a way to negotiate this thesis—its ontology of only wholly present momentary ordinary objects denies that they exist (in the everyday sense) at different times.

(6) *ATEMPORAL INSTANTIATION* If an object is the proper subject of a property, then (i) the object has that property, and (ii) facts about time and tense are irrelevant to the truth of the proposition that the object has that property.

*ATEMPORAL INSTANTIATION* contains a particular metaphysical view about the properties of proper subjects. Roughly, it says that an object is the proper subject of a property only if the object instantiates the property without temporal qualification ( $Fx$ ). This rules out many ways of understanding how it could be true that the book is the proper subject of the incompatible properties of being open at noon and being shut at midnight. The ways ruled out include appeals to time indexed properties ( $x$  is  $F$ -at- $t$ ), time relative predicate relations ( $x$  is-at- $t$   $F$ ), relations with times as arguments ( $x$  is  $F$  at  $t$ ), adverbial accounts ( $x$  is  $F$   $t$ -ly), temporal context sensitivity (Obtains at  $t$  ( $x$  is  $F$ )), and tense ( $x$  was  $F$ ). *ATEMPORAL INSTANTIATION* entails

that if *the book* is the proper subject of being open and shut, then it is true—without any overt or covert reference to time or tense—that the book is open and the book is shut, which clearly violates CONSISTENCY ( $Fx$  and  $not-Fx$ ).

The perdurantists' and exdurantists' temporal parts metaphysics allows them to mark distinct stages as the proper subjects of the incompatible properties ( $Fx$  and  $not-Fy$ ), making ATEMPORAL INSTANTIATION unproblematic for them. However, endurantists rely on some sort of temporal qualification based on time or tense to avoid contradiction, and so must negotiate this thesis. Moreover, when they revise or replace ATEMPORAL INSTANTIATION with a different thesis about the nature of proper subjects, the revised understanding of proper subjecthood must work with ALTERATION to avoid incurring additional metaphysical costs.

Achieving progress on the issue of how to modify or forfeit at least one of the negotiable theses is progress on the real problem of persistence. So far we have seen why SURVIVAL, ALTERATION, and ATEMPORAL INSTANTIATION individually challenge the viability of some basic perdurantist, exdurantist, and endurantist views. The deeper concern is that taken jointly the nonnegotiable and negotiable theses force a contradiction for any possible view. We see this in the following argument:

### Assumptions from the Nonnegotiable Theses

- (i) The book persists through change. (Assumption about the book capturing PERSISTENCE.)
- (ii) The book's changing involves the incompatible properties of being open and being shut. (Assumption about the book capturing CHANGE.)
- (iii) It is not the case that the book is open and the book is shut. (Assumption about the book capturing CONSISTENCY.)

### Steps Drawing on the Negotiable Theses

- (iv) The book existing before the change from being open to being shut is numerically identical to the book existing after that change. (SURVIVAL and i)
- (v) The book is the proper subject of being open and being shut. (ALTERATION, ii and iv)
- (vi) The book is open and the book is shut (ATEMPORAL INSTANTIATION and v).

## Contradiction

(vii) Steps (iii) and (vi) cannot both be true.

Given assumptions (i), (ii), and (iii) are based on nonnegotiable theses, this argument forces us to conclude that SURVIVAL, ALTERATION, or ATEMPORAL INSTANTIATION is false. It is an argument that can be run for any ordinary object that persists through change. So, something must give. Our goal then should be to strike the best balance between achieving philosophical beauty in terms of elegant, coherent metaphysical theories of persistence and matching our intuitions about what the ordinary objects filling the world around us are like—including acorns, ducks, candles, books, and ourselves. Finding that balance is the beginning of a real solution to the real problem of persistence.

## Clarifying the Debate about the Real Problem of Persistence

The heart of the persistence debate revolves around which of the negotiable theses should be sacrificed, revised, or substantially reinterpreted to avoid contradiction. Perdurantist, exdurantist, or endurantist approaches point us in different directions. A judgment as to which one most deserves philosophical endorsement is premature and beyond the scope of this introduction in any case.

However, to better describe the context of the current debate, it is worth raising some metaphysical concerns that provide, or seem to provide, reasons for and against the different approaches. This debate is complicated, in part because sometimes issues thought to cut along the lines of the approaches instead crosscut them. Two of the most important crosscutting issues are the metaphysics of time and the truth-makers of tensed propositions. The noise in the debate caused by attention to these matters draws attention away from arguments grounded in metaphysical issues that actually divide the approaches. One significant concern that forces choices among the approaches is the role of temporary intrinsics in persistence. Addressing the interplay of the crosscutting and the decisive issues with persistence is essential to the project this book represents—an attempt to inform and reframe the debate around persistence.

## Persistence and the Metaphysics of Time

Clearly, questions about persistence are going to involve questions about the metaphysics of time. Two prominent theories about time, *presentism*

and *eternalism*, figure frequently in debates between perdurantists and endurantists.

Briefly, eternalism and presentism are conflicting views about the nature of time. The eternalist claims that all times exist and thus that the objects present at all past, present, and future times exist. In contrast, the presentist argues that only the present exists, and thus that only those objects present now exist. As a result the eternalist, but not the presentist, can sincerely quantify over all times and objects existing at those times.

Arguments for or against perdurance and endurance have often appealed to one of two theses assumed about the role of time in persistence:

MTP ETERNALISM Any view of persistence incorporating MTP entails eternalism.

MET PRESENTISM Any view of persistence incorporating MET entails presentism.

If we were to accept MTP ETERNALISM and MET PRESENTISM, decisive arguments that choose between accounts of time would help settle the persistence debate. For instance, an argument for eternalism would rule out endurantism because it relies on MET. An argument for presentism would rule out perdurantism and exdurantism because they rely on MTP. But we ought not accept MTP ETERNALISM or MET PRESENTISM—the issue of which metaphysics is the correct account of time crosscuts the issue of whether ordinary objects have temporal parts.

First, though each often assumes eternalism, neither perdurantism nor exdurantism entails that account of time. Why might they be thought to? The idea is that without eternalism, temporal stages cannot play their key role in the explanation of persistence that the views require for coherence. According to the standard ontology of perdurantism, ordinary objects are space-time worms that have stages existing at different moments as parts. Exdurantists identify a single ordinary object with a single momentary stage that exists, but to explain change they need to refer to other (counterpart) stages from other times. Thus to explain the persistence of ordinary objects, the perdurantist and exdurantist apparently must both quantify over times to describe ordinary objects and/or how they persist.

However, there are ways around this. The purported entailment turns on metaphysical assumptions not required by either view. A perdurantist could hold, for instance, that a space-time worm exists only at the present moment and somehow subsists at other times. An exdurantist could hold that an ordinary object exists now while its counterparts merely subsist at different times because they already have existed, or will exist, or perhaps



that they exist now as abstract representations.<sup>13</sup> While such views may look unattractive, they are coherent. In each, the prior question is what it is for a certain kind of object to exist or subsist. It is not a view's endorsement of MTP that determines if it is committed to eternalism, but rather its approach to existence.

Second, endurantism does not entail presentism. Why might we think it does? Well a (wholly present) enduring object bears incompatible properties at different moments. Now suppose that eternalism is true. Then the enduring object exists at those moments and instantiates the incompatible properties. But, if the enduring object simply instantiates those properties ( $Fx$  and  $\text{not-}Fx$ ; the book is open and the book is shut), then this violates CONSISTENCY. So it looks as if CONSISTENCY forces endurantists to deny that objects exist at more than one time and thus to endorse presentism.

However, we saw that endurantism can bypass such worries by going in for mediated property instantiation. Basically this allows an endurantist to say, in one way or another, that a numerically identical object had one property and now has an incompatible property ( $Fx\text{-at-}t_1$  and  $\text{not-}Fx\text{-at-}t_2$ ; the book was open and the book is now shut), regardless of whether the endurantist is an eternalist or presentist. Thus the issue prior to a concern with the metaphysics of time is the acceptability of adopting property instantiation mediated by time or tense. Endurantism's endorsement of MET commits it to a presentist account of time only if the strong claim that all forms of mediated property instantiation are unacceptable is true. (For some reasons favoring this strong claim, see the later section on temporary intrinsics.)

Notice that although only endurantism entails mediated property instantiation, all three approaches to persistence use time or tense in some way to avoid paradox. Perdurance and exdurance squeeze time into an object rather than its properties—their stages are what we might call time-indexed objects. Endurance builds time or tense into the properties that the object has or how it has those properties. But none of these ways of building time or tense into an object or its having a property entails eternalism or presentism, nor do any of the three approaches to persistence. For, whether or not perdurantism, exdurantism, or endurantism requires a particular account of time hinges on questions about existence and instantiation, questions that MTP and MET leave open.

Thus, contra a frequent theme in persistence literature, a view of persistence incorporating MTP or MET can incorporate eternalism or presentism, although perhaps not with equal intuitive or theoretical ease. Although MTP persistence theorists tend to endorse eternalism, nothing in such

accounts rules out a presentist variant. Likewise nothing in the endurantist framework rules out an eternalist variant even if endurantists tend toward presentism. So, rather than helping us decide whether objects perdure, exdure, or endure, an argument favoring one account of time (in itself) merely weighs against those variants committed to the opposing view. See especially Markosian (chapter 17), William R. Carter and H. Scott Hestevold (chapter 18), and Sider (chapter 19) on this topic.

Before moving on, it is worth noting that there is a third view about the metaphysics of time, the growing block view, not considered above. On this view, only past and present times exist, not future times. Exdurantists and perdurantists adopting this view could appeal to subsistence (as above) in the case of future objects. With respect to past objects, endurantists embracing the growing block view could rely once again on the mediated property instantiation move.<sup>14</sup>

### Persistence and Tensed Propositions

Questions about persistence will also involve questions about how propositions about the past, present, and future have truth values. At issue, is whether the 'is' of predication is irreducibly tensed (*serious tensing*) or the 'is' is timeless (*surface tensing*) in the logical structure of propositions. *Serious tenses* adopt the first position: that only tensed propositions have truth values. On their view, any apparently untensed 'is' in a sentence stands for 'was' or 'is now' or 'will be' in the logical structure of predication; there is no timeless predication relation. Thus, seriously tensed propositions can change in truth value as conditions change over time. To see this, suppose that I will open the book tomorrow morning and then destroy the book tomorrow afternoon. Now, consider the proposition:

(7) The book will be open tomorrow.

Today (7) is true. But tomorrow (1) will be false because on the day after tomorrow the book will not exist to be open or closed.

Serious tenses seek to represent time in a way that captures change happening. Seriously tensed propositions change in truth value as things come to pass, because the 'is' of predication builds in whether something had, is having, or will have a property. Intuitively this is appealing. We usually think that I speak sloppily if I say that Aristotle is a great philosopher. For surely, what I mean, not to detract from his virtues, is that Aristotle was a great philosopher.

In contrast, *surface tenses* maintain that all propositions are eternally true or eternally false, which makes all tense eliminable. On their view, all

tense is merely on the surface—any apparently tensed proposition is in fact untensed in its logical structure. If so, then a proposition like (7) will reduce to a proposition like: the book is open the day after June 4, 1927. Such an untensed proposition will either always be true or always be false, even if the book ceases to exist.

Surface tensors seek to avoid the complications of tense logic caused by questions about how inference works when predication comes in more than one form. And, more important, they often take seriously McTaggart's claim that tensing leads to contradiction, and thus seek a view of propositional truth that avoids that result.<sup>15</sup> Some argue for the relevance of this result to the persistence debate. For instance, Lewis argues that McTaggart's proof of the incoherence of serious tensing means we must reject presentism, and thus endurantism. (See Lewis, chapter 3, and Zimmerman, chapter 20, for an analysis of Lewis.)

However, such arguments conflate the disagreement between serious and surface tensors with the disagreement between eternalists and presentists. The debates are different. For example, an eternalist may hold that although all times exist, it is always by reference to the present that something is or is not the case. Such a move requires serious tensing because the truth values of propositions will change as the present time changes. So 'Aristotle' refers to Aristotle, but to say something *about* Aristotle we must situate the fact with respect to the present, for example, Aristotle *was* wise. Alternatively, an eternalist may hold that because all times exist, the present is not privileged in any way. This move requires surface tensing as the truth values of propositions will not change. So, to say something about Aristotle, we need merely state it eternally, for example, Aristotle *is* wise in ancient Greece. Thus one's position on tensing, in itself, does not entail a position on the metaphysics of time.

It is only if we conjoin a view about tense with certain other metaphysical claims about existence and predication that we generate conflict with some approaches to persistence. Both surface and serious tensing are consistent with the metaphysics underlying each of the three broad approaches to persistence.

Surface tensing, in itself, is compatible with both MTP and MET, and thus with perdurantism, exdurantism, and endurantism.<sup>16</sup> While a surface tensor cannot rely on tensed predicate relations (the book *was* open, the book *is* shut) because she maintains tense is eliminable, she may opt for tenseless predication combined with MTP or she may opt for either MTP or MET combined with any of several different strategies of mediated property instantiation that exclude tense (e.g., time-indexed properties,

relations with times as arguments, adverbial accounts, or temporal context sensitivity). In each case, time is in some sense built into an object itself or it having a property, whether it is because the object is a temporalized object under MTP or because instantiation is mediated by time in some way. Eternalism is consistent with all these strategies. Presentism could be made consistent by relying on ersatz times.<sup>17</sup> So surface tensing is consistent with perdurance, exdurance, and endurance, including presentist and eternalist variants of each.

Serious tensing is likewise consistent with the three approaches to persistence, for each may easily use the same strategies of mediating instantiation or temporalizing an object. A *serious tenser* already mediates property instantiation with tense, so facts about the flow of time are relevant to whether an object has a property. Moreover she may appeal to temporalized objects offered by MTP without inconsistency. Again, eternalism is consistent with all these strategies. Presentism can be consistent if it allows propositions that involve less than fully existing entities, perhaps via appeals to subsisting stages, abstract representations, or objects having but not instantiating a property.

To sum up, we have seen that perdurantism, exdurantism, and endurantism may have consistent eternalist or presentist variants, each of which may or may not take tensing seriously. Why does this matter? It shifts the debate around persistence. Even the most decisive arguments in favor of eternalism, presentism, serious tensing, or surface tensing will not rule out one of the core positions, although they may eliminate some variants and make others more or less intuitively or theoretically appealing.

### Persistence and Temporary Intrinsics

In contrast to the debates concerning time and tense, the tenability of a particular view of temporary intrinsics does help decide among the three approaches to persistence. Intuitively, an intrinsic property of an object is one that the object has *simply by virtue of being itself*. *Temporary* intrinsics are intrinsic properties that an object has only temporarily. Recall the example of Lewis bent and Lewis straight. *Being bent* and *being straight* are intrinsic properties of Lewis that he has only temporarily. Real change occurs when an object has, in some sense, incompatible temporary intrinsic properties at different times.<sup>18</sup> Thus any tenable account of persistence through change will need to address how ordinary objects have temporary intrinsic properties.

Many take seriously the claim motivating ATEMPORAL INSTANTIATION: that objects *just have* their temporary intrinsic properties. Consider the acorn's

color, the duck's capacity for flight, the candle's straightness, and the book's openness. Apparently, each of these properties is bonded to the relevant object in a way that has nothing to do with anything outside the object. The acorn just is green, the duck just is able to fly, the candle just is straight, and the book just is open. The fact of these objects having these properties is in no way mediated or qualified. To put the idea differently, predication just is a primitive, nonrelational bond between an object and its intrinsic properties that leaves no room for the temporal qualification via time or tense on which endurantism relies.

Thus, if this view regarding the instantiation of temporary intrinsics is correct, it rules out endurantism. To understand the force arguments concerning temporary intrinsics have against endurantism, it is important not to take the just having view lightly. Significant theoretical worries stemming from the Bradley Regress about the coherency of predication and instantiation, in addition to the Lewisian intuitions discussed above, support it.

The Bradley Regress is a problem that arises with relations in general. Consider these two claims: (1) some objects stand in a relation to each other; (2) a relation stands in a relation to the objects that instantiate it. A tricky, and perhaps vicious, regress arises when we take these claims seriously. Any relation will generate an infinite sequence of relations obtaining among relations, other relations, and objects. Suppose that a duck alights on a branch next to an acorn. The duck thus stands in a relation of nearness to the acorn. Moreover the relation of nearness stands in a relation to the duck and acorn, as the pair of objects instantiating nearness. And, the relation of instantiation stands in a relation of occurring to the duck-acorn pair and the nearness relation, and so on.

Let us accept the Bradley Regress as a significant worry. It poses no problem for the instantiation of temporary intrinsics, *if* predication just is some sort of primitive, nonrelational bond between an object and a property (the acorn is green). However, if predication is instead a relation obtaining between an object and a time (the acorn is green at *t*), then the Bradley Regress threatens that relation. It also threatens any mediated account of property instantiation that reduces to a relational account.

An account of persistence that endorses the negotiable thesis of ATEMPORAL INSTANTIATION can bypass such concerns raised about the Bradley Regress.

(6) ATEMPORAL INSTANTIATION If an object is the proper subject of a property, then (i) the object has that property, and (ii) facts about time and tense are irrelevant to the truth of the proposition that the object has that property.

This thesis is consistent with the simple predication ( $Fx$ ) that bypasses worries about the Bradley Regress.

Perdurantism and exdurantism mesh with ATEMPORAL INSTANTIATION because distinct stages can straightforwardly just have their temporary intrinsic properties. But ATEMPORAL INSTANTIATION rules out endurantism.

Clause (ii) of ATEMPORAL INSTANTIATION amounts to the claim that an object is the proper subject of a property only if it instantiates the property in a way unmediated by time or tense. Because endurantists do not count temporal parts among the parts of ordinary objects, their explanation of persistence depends on temporalizing the having of a property via some form of mediated property instantiation. So it follows from ATEMPORAL INSTANTIATION that no enduring object can be the proper subject of a property. But ALTERATION requires proper subjects, so in that case an enduring object cannot alter. And, because the endurantist account of change involves alteration, it then follows that no object can change and thus no object can survive change given SURVIVAL. So, if we accept ATEMPORAL INSTANTIATION, endurantism falls apart as an account of persistence.

Must we accept ATEMPORAL INSTANTIATION without modification? It seems not. The strong claims included in the thesis are justified by worries about the Bradley Regress only if all mediated instantiation reduces to relational forms of instantiation. But this is not the case. For example, consider three ways that temporary intrinsic properties might be instantiated.

*Monadic property instantiation* is the straightforward interpretation captured by ATEMPORAL INSTANTIATION. On this understanding, a book has the temporary intrinsic property of being open just in case the book is open ( $Fx$ ). Only an approach with MTP can rely solely on this kind of instantiation, which preserves the purest form of *just having* a property. It cannot save endurantism. However, the next two kinds of instantiation may offer a way to negotiate ATEMPORAL INSTANTIATION.

*Nonmonadic property instantiation* forfeits the idea that an object *just has* its temporary intrinsic properties. Each form of it disrupts the simple object-property connection. Replacing temporary intrinsic properties with relations between the objects and times—the book is open at  $t$ —is one way to do this, but a way that immediately raises concerns about Bradley's Regress. One possible response is to insist that a relation involving a time is not an everyday relation but is somehow special in a way that blocks the regress.

Other strategies, though, bypass the regress more simply. For instance, tensed predicate relations (the book was open), making time-dependent properties (the book is open-at- $t$ ), and adverbial accounts (the book is

open *t*-ly) avoid the regress (unless they reduce to the relational account). Further there is no obvious incoherence in a view of endurantism that modified clause (ii) to allow these forms of instantiation.

While such strategies resolve the regress problem, they generate other objections. They do not allow us to say that the book *just has* the temporary intrinsic property of being open because the fact of the book being open turns on some further fact about time or tense. This worry has force equal to that of Lewisian style intuitions. A further concern particular to tensing is how to devise a workable tense logic.

Moreover, if endurantists avoid tense, then different concerns arise. The use of time-dependent properties and *t*-ly adverbs make change a difficult concept to understand or to justify countenancing. For, the incompatibility of the properties involved in change has gone missing. There is no obvious incompatibility in the properties of green-at-*t*<sub>1</sub> and brown-at-*t*<sub>2</sub> that would keep them from being co-instantiated. Nor is there contradiction in saying that a duck does not fly early-in-the-spring-ly and that it flies later-in-the-spring-ly. So why insist that a green acorn that becomes brown has incompatible properties in the first place? The motive of consistency no longer clearly drives the need for change.

In contrast, *monadic type instantiation* looks to better preserve the resources endurantists need for change. (See Graeme Forbes, chapter 15, for an example.) On this account a temporary intrinsic property is instantiated just in case a token context of some type (a state of affairs, a situation) obtains. Here a book has the temporary intrinsic property of being open just in case the type state of affairs, for instance, of a book being open, obtains (i.e., obtains at *t* (*Fx*)). Plausibly, this approach bypasses the Bradley Regress because no relation is asserted to interfere with the primitive bond between an object and a temporary intrinsic property, represented by '*Fx*'. So in an attenuated sense an object *just has* a property on this view. However, even type instantiation falls short of fully satisfying the letter of ATEMPORAL INSTANTIATION in that the instantiation is qualified by something *beyond* that connection, namely the token obtaining at a time. Thus adopting monadic type instantiation still leaves endurantists in the position of needing to revise clause (ii) of that thesis. Fortunately for endurantism we have seen no compelling reason for them not to do so.

To sum up, endurantists' wholly present ordinary objects that have survived change cannot just have two incompatible properties time and tense independently. It cannot be that the book just has openness and just has shuttness. Rather, endurantists must give up the just having of properties altogether or accept the attenuated sense of the just having of properties

offered by monadic type instantiation. In this way, the question of temporary intrinsics has a direct bearing on the persistence debate because the understanding of property instantiation underlying *ATEMPORAL INSTANTIATION* is congenial to perdurantism and exdurantism, while it is opposed to endurantism. Nevertheless, an argument demonstrating the inconsistency of endurantism and an unmodified *ATEMPORAL INSTANTIATION* is not a decisive argument against endurantism given the available alternatives.

## Conclusion

Issues about the metaphysics of time and tensing crosscut approaches to persistence. However, there are concerns about temporary intrinsics that, if legitimate, rule out endurantism. Anti-endurantists have a case against endurantism if we accept something as strong as *ATEMPORAL INSTANTIATION*. That thesis is supported by Lewisian intuitions and the Bradley Regress problem. With respect to the intuitions, it is not clear that referring to times when making a claim about oneself or an object makes that claim any less about me or that object—that is, talking about times does not introduce other things in the way an ordinary relation does. With respect to the Bradley Regress, there are kinds of mediated property instantiation that are clear alternatives to the kind of relational accounts of instantiation that generate the regress. Thus the justification for *ATEMPORAL INSTANTIATION* proves inadequate to serve as part of a compelling argument against endurantism. We are thus left with three accounts of persistence, each of which appears to be coherent.

After considering concerns prominent in the persistence literature, we see again that the real problem of persistence remains one of balancing trade-offs. To explain how objects persist by (in some sense) having incompatible properties at different times, we must revise and/or forfeit some of our basic intuitions and theoretical commitments regarding change, non-momentary objects, and temporary intrinsics.

Perdurantism, exdurantism, and endurantism succeed in this project. Each approach explains the phenomenon of persistence without collapsing into contradiction countenancing, change nihilism, or persistence nihilism. However, each sacrifices something in terms of its view of change, persistence, or predication. Within perdurantist, exdurantist, and endurantist frameworks, the costs and benefits in terms of intuitiveness, theoretical attractiveness, and elegance of a particular view will vary significantly. Each framework has space for views that take different stands on questions



about the metaphysics of time, the logical structure of propositions, and temporary intrinsics.

## Notes

**For further reading, see the bibliography on the web associated with this book:** [⟨http://mitpress.mit.edu/0262582686⟩](http://mitpress.mit.edu/0262582686) or [⟨http://mitpress.mit.edu/0262083507⟩](http://mitpress.mit.edu/0262083507).

1. My statement of the problem owes much to my co-editor's understanding of it, as described in "Persistence through Time," by Sally Haslanger in *The Oxford Handbook of Metaphysics*, ed. M. J. Loux and D. W. Zimmerman (Oxford: Oxford University Press, 2003), pp. 315–354.

2. Aristotle, for instance, holds this position: "...the same attribute cannot at the same time belong and not belong to the same subject in the same respect..." in *Metaphysics* (IV.3.1005b1.17), *The Complete Works of Aristotle: The Revised Oxford Translation*, ed. J. Barnes, 2 vols., Princeton, 1984.

Note that CONSISTENCY could be equally well-grounded in Leibniz's Law: Necessarily, for any objects  $x$  and  $y$ , if  $x$  and  $y$  are identical, then  $x$  has property  $F$  just in case  $y$  has property  $F$ .

3. I assume throughout that if a book is shut, then it is not open. If the reader rejects this view, this may be more clumsily expressed by substituting the term "not open" for "shut."

4. Aristotle, *Metaphysics* (IV.3.1005b1.17), in Barnes.

5. Note, though, that some interesting work has been done with views that question Leibniz's Law and thus reject CONSISTENCY. (See, for example, D. Baxter 2001, "Loose Identity and Becoming Something Else," *Noûs* 35: 592–601.) Such projects may be theoretically justified, but arguably they nevertheless conflict with our deepest intuitions.

6. For an overview of positions that deny change from Parmenides and contemporary theorists, see C. Mortensen, "Change," *Stanford Encyclopedia of Philosophy* (Winter 2002 edition), ed. E. N. Zalta [⟨http://plato.stanford.edu/archives/win2002/entries/change/⟩](http://plato.stanford.edu/archives/win2002/entries/change/).

7. For an accessible introduction to this view from Heraclitus and others, see N. Rescher, "Process Philosophy," *Stanford Encyclopedia of Philosophy* (Summer 2002 edition), ed. E. N. Zalta [⟨http://plato.stanford.edu/archives/sum2002/entries/process-philosophy/⟩](http://plato.stanford.edu/archives/sum2002/entries/process-philosophy/).

8. Extraordinary objects might include the thing entirely overlapping my iBook except for its spacebar, or the fusion of the Zakim Bridge and Judith Thomson, or the space-time worm constituted by time slices of each day's *Boston Globe* when it lands

on my front porch. Such things may or may not exist, and they may or may not persist, but plausibly such issues lack relevance here. Plausibly, the implications for extraordinary objects for an account of persistence of ordinary objects have little bearing on its tenability.

9. Theoretical reasons also support the view that objects just have the incompatible properties involved in change. These include, for instance, avoiding Bradley's Regress, discussed later.

10. For another helpful piece on what motivates MTP, see K. Hawley, "Temporal Parts," *Stanford Encyclopedia of Philosophy* (Spring 2004), ed. E. N. Zalta <<http://plato.stanford.edu/archives/spr2004/entries/temporal-parts/>>.

11. Endurantism could be more weakly stated. For instance, endurantism could have the more minimal commitment that at least *some* ordinary objects are enduring things.

12. See the last section for some discussion regarding these variants.

13. Consider the analogous strategies for actualist accounts of possible worlds. (Stalnaker 1976; Lewis 1986, ch. 3).

14. Thanks to Michael Tooley for mentioning the importance of this view to me elsewhere. For accounts that defend a growing block view, see C. D. Broad, S. McCall, and M. Tooley, among others.

15. For McTaggart's proof and opposing views of its success, see J. M. E. McTaggart 1908 "The Unreality of Time," *Mind* 18: 457–484; A. N. Prior 1970 "The Notion of the Present," *Studium Generale* 23: 245–248; D. H. Mellor 1981, *Real Time* (Cambridge: Cambridge University Press).

16. See Mellor (1981) in this collection.

17. See especially Graeme Forbes (1987) and Mark Johnston (1987) on eternalism and Lewis (1986, p. 204) on presentism.

18. Some philosophers distinguish real change from "Cambridge change." Cambridge change is change only in an object's relations (and occurs constantly); *real* change involves a change in the intrinsic or nonrelational properties of the object.

# I Metaphysics of Temporal Parts



## A Perdurance

