

# Descartes and Spinoza on Numerical Identity and Time

*in progress*<sup>†</sup>

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## Abstract

Descartes and Spinoza claim that a person's body can be numerically identical over time, despite changes in its size, shape, and speed. How can we reconcile this with the Indiscernibility of Identicals, the principle that numerical identity implies indiscernibility? I believe that Descartes and Spinoza are working in a medieval Aristotelian tradition that links a person's identity over time to her essence, rather than to her properties. In this tradition, identity over time does not imply indiscernibility. While Descartes and Spinoza reject many aspects of this tradition, their views about identity over time still preserve its general structure.

## 1 Introduction

Numerical identity can seem straightforward. Consider the principle: A thing is numerically identical to itself. It's unclear how anyone could intelligibly disagree with this principle, because it's unclear how something could fail to be numerically identical to *itself*. Likewise, consider the principle: A thing is not numerically identical to something else. It's unclear how anyone could intelligibly disagree with this principle, because it's unclear how something could be numerically identical to *something else*. Many contemporary philosophers believe that the Indiscernibility of Identicals has a similar status. Roughly stated, it's the principle that, if  $x$  and  $y$  are numerically identical, they cannot instantiate contrary properties, even at different times. Many contemporary philosophers believe that this principle is obviously true. In their minds, disagreeing about the Indiscernibility of Identicals would be like disagreeing about whether a thing is numerically identical to itself. While Descartes and Spinoza reject many aspects of this tradition, their views about identity over time still preserve its general structure.

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<sup>†</sup>In particular: I plan to add missing citations, reduce the amount of overlap with the companion paper on the medieval Aristotelians, and possibly expand the focus to include Leibniz.

Perhaps as a result, many historians of philosophy attribute the Indiscernibility of Identicals to their subjects without much argument. Della Rocca is admirably forthright about why he attributes it to Spinoza: “Spinoza does not explicitly discuss this principle, but, given its triviality, it seem legitimate to attribute this principle to him. We could not, I think, coherently see Spinoza as denying this principle” (Della Rocca 1996, p.132).

I will argue that Descartes and Spinoza would reject the Indiscernibility of Identicals in response to a puzzle about identity over time. In particular, I will argue that they are working in a medieval Aristotelian tradition that links the identity of a person’s body over time to her essence, rather than to her properties. Philosophers in this tradition claim that a person can be identical over time, even if she instantiates contrary properties at different times. According to these philosophers, a person’s identity over time is due to her essence, allowing for variation in her properties. This doesn’t mean that the medieval Aristotelians completely sever the link between identity and indiscernibility. As we’ll see, many in this tradition still accept a weaker principle that links identity to indiscernibility at a time. Roughly stated, it’s the principle that, if  $x$  and  $y$  are numerically identical, they cannot instantiate contrary properties *at the same time*. While Descartes and Spinoza reject many aspects of this tradition, their views about identity over time still preserve its general structure.

My interpretation of Descartes and Spinoza should interest two groups. First, it should interest contemporary metaphysicians. Some contemporary metaphysicians believe that numerical identity is so straightforward that there can be *no* intelligible disagreements about it. As Lewis puts it, “identity is utterly simple and unproblematic” (Lewis 1986; see also Hawthorne 2003, p.99) These philosophers grant that there can be intelligible disagreements about which things are numerically identical, at least when those things are described in ways that don’t indicate whether they’re identical. For example, there can be an intelligible disagreement about whether the tallest man in the room is identical to the heaviest man in the room. But these aren’t disagreements about numerical identity itself. There’s a helpful contrast with beauty, truth, justice, and God. There are not only disagreements about which items are beautiful, which claims are true, which laws are just, and whether God exists, but also about the nature of beauty, truth, justice, and God. Many contemporary metaphysicians believe that numerical identity is different, in that we can disagree only about which things are identical, not about identity itself. My interpretation of Descartes and Spinoza challenges

this belief, because, if I'm right, Descartes and Spinoza disagree with contemporary metaphysicians not only about identity itself, but about one of the principles that's said to be obviously true.

This interpretation should also interest historians of philosophy. To start, it raises the possibility that other historical figures, besides Descartes and Spinoza, would reject the Indiscernibility of Identicals. It thereby puts pressure on any interpretation that takes for granted that a figure accepts it. It even puts pressure on interpretations of *Leibniz* that take for granted that he accepts it, even though it's the less controversial direction of what's now called "Leibniz's Law." I won't say anything more about Leibniz in this paper; that's a topic for another paper. For now, my point is just that, if Descartes and Spinoza would reject this principle, we should carefully reexamine our assumption that others, including Leibniz, endorse it.

This interpretation would also fill an important gap in the secondary literature on Descartes and Spinoza. As far as I'm aware, Gorham (2010) and Pasnau (2011, Ch 8) are the only scholars who try to reconstruct Descartes's view about identity over time, and neither reconstructs it in the way I'll recommend. Moreover, as far as I'm aware, no scholars have tried to reconstruct Spinoza's view about identity over time, beyond observing that a body's identity over time is supposed to depend on its pattern of motion (by 2PhysD1), and a mind's identity over time is supposed to depend on its pattern of thinking (by 2PhysD1 and 2P7) (see, e.g., Manning 2012).

This is a significant omission. Descartes's and Spinoza's claims about identity over time are crucial to some of their most important conclusions. For example, Descartes claims that a body is identical over time, despite changes in its size, shape, and motion. He concludes that the essence of a body is just to be extended, rather than to have any particular size, shape, or motion (AT VII 31). He also takes for granted that a mind is identical over time, despite instantiating contrary properties at different times. Spinoza argues that it is essential to a body to strive to increase its power (3P6). This presupposes that a body is identical over time, despite increases in its power. It also presupposes that a mind is identical over time, despite increases in its power (by 2P7). Spinoza's view of God relies on a similar presupposition. Spinoza claims that every change — including every change in a body's size, shape, and motion — is a change in God's properties (1P16D). This presupposes that God remains identical over time despite instantiating contrary properties at different times. An understanding of Descartes's and Spinoza's views of identity over time are crucial to our understanding of these

and other conclusions.

In addition, Descartes and Spinoza are both trying to rid metaphysics of substantial forms, and, as we'll see, one of the most important functions of substantial forms is to help explain identity over time. Thus, if we want to determine the extent to which Descartes and Spinoza successfully rid metaphysics of substantial forms, we must first reconstruct how they try to explain identity over time.

In the next section I'll introduce the puzzle. I will then describe how Aquinas and other medieval Aristotelians would respond (Section 3), and argue that Descartes and Spinoza would respond similarly (in Sections 4 and 5).

## 2 The Puzzle

The puzzle of identity over time is among philosophy's oldest, and there are many formulations. I'm going to formulate it in the way that I think best clarifies Descartes's and Spinoza's views. For concreteness, let's focus on Peter, a character familiar from both the medieval and early modern literatures. Suppose that Peter had an uneventful day: He woke up in the morning, walked until nighttime, and then fell asleep. Let *Morning Peter* be the person who moved in the morning, and let *Night Peter* be the person who rested at night. The following three claims seem mutually inconsistent:

- a. Morning Peter instantiated motion in the morning, and Night Peter instantiated a contrary property at night (namely: rest).
- b. Morning Peter and Night Peter are numerically identical.
- c. If  $x$  and  $y$  are numerically identical, and  $x$  instantiated a property at a time, there is no time at which  $y$  instantiated a contrary property.

The puzzle of identity over time is to say which claims, if any, we should reject.

The last of these claims, (c), is the Indiscernibility of Identicals. There are two notions at the core of this principle: property and instantiation. These notions are sometimes understood narrowly, so that denying that properties exist outside of space and time (as *universals*) is enough to deny that there are properties, and denying that properties can be instantiated by more than

one object is enough to deny that properties are instantiated. But let's understand these notions as broadly as possible, to give ourselves a framework general enough to accommodate other views, including views that imply that motions, shapes, colors, etc., exist only at some times and locations, and are each instantiated by at most one object (as *tropes*). For example, let's accommodate the view that Peter's motion exists only at Peter's location, and only while Peter is moving.

This isn't a canonical formulation of the Indiscernibility of Identicals. Here's a more canonical formulation:<sup>1</sup>

If  $x$  and  $y$  are numerically identical, and  $x$  instantiated a property,  $y$  did not instantiate a contrary property.

So formulated, this principle is ambiguous, in part because it doesn't say anything about time. Disambiguated in one way, it is equivalent to a principle that I think Descartes and Spinoza would accept:

If  $x$  and  $y$  are numerically identical, and  $x$  instantiated a property at a time, then  $y$  didn't instantiate a contrary property *at that time*.

Disambiguated in this way, the Indiscernibility of Identicals doesn't give rise to a puzzle about identity over time. The Indiscernibility of Identicals would just imply that Night Peter didn't instantiate rest *at the same time* that Morning Peter was walking. It thus wouldn't be inconsistent with the identity and discernibility of Morning Peter and Night Peter, i.e., (a) and (b).

I don't think it's worth arguing about how the canonical formulation should be disambiguated. For our purposes, what's important is that most contemporary philosophers think that there is a puzzle about identity over time, and what they call the Indiscernibility of Identicals gives rise to it.

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<sup>1</sup>Perhaps the most canonical formulation is: "If  $x$  and  $y$  are numerically identical,  $x$  instantiates a property if and only if  $y$  instantiates that property." This is the formulation people use when integrating the Indiscernibility of Identicals into Leibniz's Law. For our purposes, there isn't an important difference between this formulation and the formulation above. The only difference is that the formulation above says that  $y$  can't have a *contrary* property. But if  $y$  instantiates a contrary property (e.g., rest), it presumably doesn't also instantiate  $x$ 's property (e.g., motion). Thus, if there's a difference between these formulations, it's just that our formulation is weaker, and thus harder to reject. I prefer this formulation because I think it makes the puzzle more intuitive.

These philosophers have in mind a principle that is equivalent to (or at least sufficient for) the formulation of the principle we're working with. For our purposes, it's better to use a formulation that unambiguously captures the principle that these contemporary philosophers have in mind, because we're trying to establish that Descartes and Spinoza would reject that principle.<sup>2</sup> For us, 'Indiscernibility of Identicals' is just a convenient label.

To understand why most contemporary philosophers regard the Indiscernibility of Identicals as an obvious truth, let's consider eternalism, a popular view about time. According to eternalists, times are like locations. Just as minerals exist below us in the ground and clouds exist above us in the sky, eternalists claim that our ancestors exist before us in the seventeenth century and our descendants exist after us in the twenty-second century. Eternalists describe reality as four-dimensional, with things distributed across all four dimensions, including the fourth, temporal dimension. If you ask an eternalist what exists in the most expansive sense of 'exists', they will list objects that exist in the past, present, and future. According to them, terms like 'past', 'present', and 'future' indicate when something exists in relation to when we exist, just as terms like 'here' and 'there' indicate where something exists in relation to where we exist. These terms don't indicate which objects exist and which objects don't exist.

For an eternalist, the puzzle of identity over time is that our reasons for thinking that objects at different *locations* are non-identical also seem like reasons for thinking that objects at different *times* are non-identical. Let *Downstairs Peter* be a person who is currently on a treadmill downstairs, and let *Upstairs Peter* be a person who is simultaneously resting upstairs. One reason for thinking that Downstairs Peter isn't identical to Upstairs Peter is that Downstairs Peter instantiates *motion* and Upstairs Peter instantiates *rest*. This might not be the only reason for thinking that Downstairs Peter isn't identical to Upstairs Peter. But it seems like a sufficient reason. From an eternalist perspective, the puzzle of identity over time is that we seem to have just as good a reason to think that Morning Peter isn't identical to Night Peter, namely that Morning Peter instantiated *motion* and Night Peter instantiated *rest*. This seems like just as good a reason because, from an eternalist perspective, variation across reality's three spatial dimensions is

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<sup>2</sup>For surveys, see Haslanger 2003, Wasserman 2006, Kurtz 2006, and Sider 2007. I'm aware of only five philosophers who would reject the Indiscernibility of Identicals when it is formulated in this way: Myro 1986, Baxter 1999, Hansson 2007, Rychter 2009, and Hofweber 2009.

relevantly like variation across its fourth, temporal dimension. For the eternalist, if the mere fact that Downstairs Peter and Upstairs Peter are moving at different speeds is enough to establish that they are distinct people, the mere fact that Morning Peter and Night Peter were moving at different speeds is enough to establish that they are distinct people. Likewise, if the mere fact that Downstairs Peter and Upstairs Peter are in different locations is enough to establish that they are distinct people, the mere fact that Morning Peter and Night Peter are at different times is enough to establish that they are distinct people. Thus, from an eternalist perspective, the Indiscernibility of Identicals might seem obviously true.

In the next section I'll introduce the medieval Aristotelian tradition that I'll later argue Descartes and Spinoza are working in.

### 3 Medieval Aristotelians

To help frame our discussion, let's start with a passages from Aristotle. He writes in the *Categories*:

It seems most distinctive of substance that what is numerically one and the same is able to receive contraries... . For example, an individual man — one and the same — becomes pale at one time and dark at another, and hot and cold, and bad and good. (*Categories*, Ch 5, 4a10–11 and 18–21; Trans. Ackrill in Aristotle 1984a, p.7)

Interpreting Aristotle is always tricky business. But, given what he says here and elsewhere, one could interpret him as claiming that a person is numerically identical over time, despite instantiating contrary properties at different times, provided his substantial form remains. One could also interpret him as claiming that a person's intellective soul is his substantial form.<sup>3</sup> Regardless of whether this really is Aristotle's view, it is Aquinas's view. He writes:

[T]he human body, over one's lifetime, does not always have the same parts materially... . Materially, the parts come and go, and

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<sup>3</sup>See *Physics*, Bk 1, 190a32–b16; *Metaphysics* Zeta, Ch 8, 1034a5–9; *De Anima*, Bk 2, 412a18–26, 414a29–415a12; and *Metaphysics* Zeta, Ch 10, 1035b14–18. For more details, see my manuscript a.

this does not prevent a human being from being numerically one from the beginning of his life until the end [provided his intellectual soul is the same]. (Aquinas, *Summa Contra Gentiles*, Book IV, Question 81, Line 4157; Trans. Pasnau 2011, p.691)

Perhaps surprisingly, Aquinas doesn't regard this claim as even superficially puzzling. For example, he doesn't consider anything like the contemporary proposals that we'll discuss for denying that Morning Peter and Night Peter instantiated contrary properties. Instead, he moves on to the next topic. I think the best explanation is that the Indiscernibility of Identicals didn't seem true to him, and thus there didn't seem to be a puzzle. In other work, I argue that Ockham and Buridan would also reject the Indiscernibility of Identicals (manuscript a). In this tradition, Peter is numerically identical over time, despite instantiating contrary properties at different times, provided his substantial form remains.

Before we turn to Descartes and Spinoza, two further points will be helpful. First, many would make the same claim about Peter's essence. In particular, many would claim that Peter is numerically identical over time, despite instantiating contrary properties at different times, provided his *essence* remains. Aquinas, for example, claims that Peter's essence includes both his substantial form and non-signate matter (roughly, matter deprived of all its determinate properties, including size and shape) (*De Ente et Essentia*). Thus, given that Peter's essence includes his substantial form, Aquinas would accept the same claim about Peter's essence. This is important, because while Descartes and Spinoza reject substantial forms, they don't reject essences. To the extent that they are still working in this tradition, it's because they preserve a link between Peter's identity and his essence, rather than a link to his substantial form.

Second, many in this tradition seem to accept a weaker principle, mentioned earlier. In particular, they seem to accept:

If  $x$  and  $y$  are numerically identical, and  $x$  instantiated a property at a time, then  $y$  didn't instantiate a contrary property *at that time*.

Aristotle says that the most certain of all principles is that "the same attribute cannot *at the same time* belong and not belong to the same subject in the same respect" and that this implies that "it is impossible that contrary

attributes should belong *at the same time* to the same subject” (*Metaphysics* Gamma, Ch 4, 1005b19–20 and 26–27, Trans. Ross in 1984b, p.46, emphasis added). Philosophers within the medieval Aristotelian tradition often repeat this claim (see e.g., Buridan, *Summulae de Dialectica*, Tr 3, Ch 5, Sec 7). They also rely on it in their arguments — for example, in their objections to Scotus’s view of properties (as *universals*) (see again my manuscript a).

## 4 Descartes

According to Descartes, Peter is the substantial union of a mind and a body. Because Descartes mostly discusses the identity of bodies over time, let’s mostly focus on the identity of Peter’s body over time. In particular, let’s now let Morning Peter be the *body* that was moving, and Night Peter be the *body* that was resting.

In a 1645 letter to Mesland, Descartes says that a person’s body remains numerically the same over time, despite changes, as long as it is substantially united to the same soul:

[W]hen we speak of the body of a man, we do not mean a determinate part of matter, or one that has a determinate size; we mean simply the whole of the matter which is united with the soul of that man. And so, even though that matter changes, and its quantity increases or decreases, we still believe that it is the same body, numerically the same body, so long as it remains joined and substantially united with the same soul. (AT IV 166; Trans. Cottingham et al. 1984, 3:243)<sup>4</sup>

Thus, as long as Morning Peter and Night Peter are substantially united to the same soul, Descartes is committed to their identity, despite the difference in their motions.

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<sup>4</sup>He elsewhere he says that “a human body loses its identity merely as a result of a change in the shape of some of its parts”(AT VII 14; Trans. Cottingham et al. 1984, 2:10; see also AT XI 330–331). However, he’s there contrasting the immortality of the soul with the mortality of the body, and thus is merely saying that a human body is destroyed when certain of its parts change shape, such as when its lung permanently collapses. See Kaufman 2014, fn 17.

This is also a consequence of his general account of bodies. In the *Meditations* he says that a piece of wax remains numerically the same body as it melts, despite changes to its color, texture, and shape:

I put the wax by the fire, and look: the residual taste is eliminated, the smell goes away, the colour changes, the shape is lost, the size increases. ... But does the same wax remain? It must be admitted that it does; no one denies it, no one thinks otherwise. ... I am speaking of this particular piece of wax; the point is even clearer with regard to wax in general. ... It is of course the same wax which I see, which I touch, which I picture in my imagination, in short the same wax which I thought it to be from the start. (AT VII 30–31; Trans. Cottingham et al. 1984, 2:20–21)

While there's room for debate about whether it remains numerically the same *piece of wax* (see Kaufman 2014, p.80), everyone should agree that it remains numerically the same *body*. In a letter to an unknown recipient, Descartes says something similar:

[T]he same body can exist at one time with one shape and at another with another, now in motion and now at rest. (AT IV 349; Trans. Cottingham et al. 1984, 3:280; see also AT VIIIA 31)

Thus, Descartes's general account of bodies seems to commit him to the identity of Morning Peter and Night Peter, despite the difference in their motions.

There's a complication. In the letter to Mesland, he denies that non-human bodies always survive changes in their parts. Thus, if Morning Peter and Night Peter have different parts, his general account of bodies doesn't *entail* that they're numerically identical. In this regard, his choice of examples in the *Meditations* is perhaps significant, because a piece of wax doesn't seem to gain or lose parts as it melts. Fortunately, we can build into our puzzle that Morning Peter and Night Peter have all the same parts, perhaps by supposing that God intervenes to prevent Night Peter from gaining or losing parts. In that case, like the wax before and after it melts, Morning Peter and Night Peter differ only in their motions, colors, textures, shapes, and other modes, and are therefore numerically identical.

Thus, Descartes's specific account of human bodies, as well as his general account of bodies, seems to commit him to the identity and discernibility of Morning Peter and Night Peter. Like Aquinas, however, Descartes doesn't seem to regard his claims as even superficially puzzling. Instead, he moves on to the next topic. Let's consider three explanations.

#### 4.1 First explanation

The first explanation is that Descartes didn't notice the puzzle, or dishonestly chose to ignore it. But Descartes was deeply interested in identity, especially its necessary conditions. For example, he claims that a mind and a body are identical only if each cannot be conceived without the other. He concludes that a mind and a body must be distinct (AT VII 78). Descartes also relies on a principle that links identity and indiscernibility. He argues that a mind and a body must be distinct, because bodies, but not minds, have parts (AT VII 13, 86). This seems to rely on a weaker principle about parts, similar to the principle about properties mentioned earlier. In particular, it seems to rely on: if  $x$  and  $y$  are numerically identical, and  $x$  had a number of parts at a time,  $y$  had the same number of parts *at that time*.

In addition, the weaker principle about properties was explicitly endorsed, not only by Aristotle and the medieval Aristotelians, but also in the seventeenth century. For example, in a clear reference to the Aristotle, Mersenne says that the most certain of all principles is that "it is impossible for the same thing to be and not to be" and that this principle implies that the same thing cannot be green and not green, sweet and not sweet, and so on. He also says that this principle must be understood to be restricted to a time. He thus links identity to indiscernibility at a time (*Truth of the Sciences*, Trans. Ariew et al. 1998, p.162). Thus, Descartes was almost certainly exposed to this principle. And if he was exposed to it, then the stronger principle, the Indiscernibility of Identicals, must have occurred to him.

Is it possible that he failed to notice the puzzle, even though the Indiscernibility of Identicals occurred to him? Assuming that the principle seemed obviously true to him, that seems unlikely. After all, given the Indiscernibility of Identicals, the puzzle is completely straightforward. It jumps off the page.

It's also worth taking into account that his critics and correspondents also didn't seem to think there was a puzzle. Except for Mesland, none of Descartes's critics or correspondents mention it, and for Mesland the puzzle

is just to say what is responsible for the identity of a person's body over time, since Descartes can't appeal to substantial forms. Of course, it's possible that Descartes and his contemporaries all chose to dishonestly ignore the puzzle. But it's far more likely that they didn't think that there was a puzzle. Let's therefore turn to the other explanations.

## 4.2 Second explanation

The second explanation is that, despite passages that seem to commit Descartes to the identity and discernibility of Morning Peter and Night Peter, he's not really committed to these claims. However, there's compelling textual and systematic evidence that he is. As a way of structuring our discussion, let's consider why he wouldn't accept any of the contemporary proposals for denying the identity or discernibility of Morning Peter and Night Peter. This will also bring out the extent to which he is still working in an Aristotelian framework.

**Relationists** would deny the discernibility of Morning Peter and Night Peter (see Mellor 1998, Ch 8). They would first insist that *motion* and *rest* are relations to times. In that case, to say that someone instantiated *motion* is to say that he stood in the *motion* relation to a time. They would then insist that Morning Peter and Night Peter stood in the same relations to the same times. In particular, when Morning Peter was walking, he stood in the *motion* relation to the morning, and in the *rest* relation to the night. Likewise, when Night Peter was resting, he stood in the *motion* relation to the morning, and in the *rest* relation to the night. It might help to make a list:

Morning Peter stood in the *motion* relation to the morning.

Morning Peter stood in the *rest* relation to the night.

Night Peter stood in the *motion* relation to the morning.

Night Peter stood in the *rest* relation to the night.

Relationists would conclude that while Morning Peter was walking he instantiated all the same properties as Night Peter while he was resting. They would also conclude that none of these properties are contraries. Just as standing in the *taller than* relation to one person is compatible with standing in the *shorter than* relation to another person, standing in the *motion* relation to the morning is compatible with standing in the *rest* relation to

the night.

There are several reasons why Descartes wouldn't accept relationism. First, according to Descartes, a body changes by existing in one way and then existing in another way. Descartes also thinks that a body's properties — including its size, shape, and motion — are just the ways in which that body exists. Like Aquinas, he calls them *modes* (AT VIII 26, 31; Carriero 1995). As a result, once a thing stops moving, there's no sense in which its previous motion is still a property of it. Instead, it has a new property, because it exists in a new way. Thus, given his understanding of change and properties, Descartes would reject any proposal, including relationism, that implies that a thing doesn't gain and lose its properties.

Second, like the medieval Aristotelians, Descartes seems to deny that polyadic relations are things that exist. Order and number are paradigmatic examples of polyadic relations, and Descartes says that they're just ways of thinking about the things ordered and numbered (AT VIIIA: 26). In addition, Descartes says that everything that exists is a substance or a mode. Relations don't seem like substances, because a substance can exist apart from all other substances, and a relation's existence would seem to depend on the existence of other substances. Relations also don't seem like modes, at least by Descartes's lights, because his definitions of 'mode' and 'modal distinction' seem to presuppose that all modes are monadic (AT VIIIA 26, 29–30). In contrast, he repeatedly describes modes as things that exist (e.g., AT VII 185; Pasnau 2011). Thus, Descartes would reject any proposal that implies that properties are relations, including relationism, because it implies that properties are two-place relations to times.

Third, again like the medieval Aristotelians, Descartes seems to accept presentism, the view that objects exist only in the present. According to presentists, while minerals exist below us in the ground and clouds exist above us in the sky, our ancestors don't exist before us in seventeenth century, and our descendants don't exist after us in the twenty-second century. The most that can be said is that our ancestors in seventeenth century *used to* exist and our descendants in the twenty-second century *will* exist, and that doesn't imply that they exist, even in the most expansive sense of 'exists'. Presentists sometimes describe reality as three-dimensional, with objects distributed across all three spatial dimensions. As time passes, that distribution changes. Just as only one image is projected onto a movie screen at a time, reality is just one distribution of objects at a time. If you ask a presentist what exists in the most expansive sense of 'exists', their answer would include

minerals and clouds, but not our ancestors or our descendants.

Descartes seems to accept presentism. He says that God preserves a thing by creating it again at each moment (AT VII 49–50, 109), which suggests that God creates it moment-by-moment, through distinct acts of creation, rather than at all moments in a single act of creation. Otherwise, God wouldn't be creating it *again*. It also suggests that a thing exists simultaneously with God's act of creation, so that a thing exists at a moment just in case God creates it at that moment. Otherwise, God wouldn't be recreating it *at each moment*. Descartes's claim therefore suggests presentism.<sup>5</sup> In that case, he wouldn't accept any view that involves relations to objects that exist in the past or future, and thus presumably wouldn't accept any view that involves relations to past times or future times, including relationism, because it implies that properties are relations to times.

In addition, his view about the nature of time seems incompatible with relationism. He says that either we can identify time and duration, in which case times are just motions, or we can distinguish time from duration, in which case times exist only in our minds (AT VIII A 27). Either way, times don't seem like the right kind of *things* for properties to be relations to them.

**Adverbialists** would also deny the discernibility of Morning Peter and Night Peter (see Johnston 1987). They would first insist that, for every time, there is a different way of instantiating *motion*. They would then insist that Morning Peter and Night Peter instantiated the same properties in the same ways. In particular, while Morning Peter was walking, he instantiated the property *motion* in a morning-ly way, and he instantiated the property *rest* in a night-ly way. Likewise, while Night Peter was resting, he instantiated the property *motion* in a morning-ly way, and he instantiated the property *rest* in a night-ly way. It might help to again make a list:

Morning Peter instantiated *motion* in a morning-ly way.

Morning Peter instantiated *rest* in a night-ly way.

Night Peter instantiated *motion* in a morning-ly way.

Night Peter instantiated *rest* in a night-ly way.

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<sup>5</sup>This goes further than a “cinematic view” of how God creates the world (see Garber 2001, Ch 10, though Garber is specifically talking about how God creates motion). The cinematic view is neutral about whether God creates the “frames” one-by-one or all-at-once, and thus is neutral between presentism and eternalism.

Adverbialists would conclude that while Morning Peter was walking he instantiated all the same properties in the same ways as Night Peter while he was resting. They would also conclude that none of these properties are contraries. Just as greeting one person in a friendly way is compatible with greeting another person in an unfriendly way, instantiating *motion* in a morning-ly way is compatible with instantiating *rest* in a night-ly way.

There are several reasons why Descartes wouldn't accept adverbialism. First, it seems inconsistent with his account of change, because, as noted above, Descartes seems to think that a body changes by gaining and losing properties, whereas adverbialism implies that things always have the same properties.

Second, like many medieval Aristotelians, Descartes claims that properties are things that exist at some times but not other times, and at some locations but not at other locations (as *tropes*). Thus, if Night Peter instantiates motion in some sense, his motion must exist at some time and at some location. Given presentism, it must exist while he's sleeping. But where? And why does it no longer make anything move? These questions aren't unanswerable, but they are uncomfortable.<sup>6</sup> Perhaps for this reason, the medieval understanding of instantiation as inherence includes that it's a relation that a thing bears to properties relative only to the present. It is thus significant that Descartes still uses the term 'inherence' (see AT VII 176).

**Exdurantists** would deny that Morning Peter and Night Peter are identical. They claim that a person's body exists only for an instant, at which point it is replaced by a new body (see Hawley 2001, Ch 2; Chisholm 1976; Parfit 1984; Varzi 2003a, 2003b; Sider 1996). The new body is often, but not always, nearly indiscernible from the old body. For example, Morning Peter was replaced by a body that was nearly indiscernible, except that it was moving slightly faster, and perhaps also had a slightly different shape, because its knee was slightly higher. It was then replaced by another body, and so on. According to exdurantists, there was no body that was moving in the morning and then resting at night. There was just a series of different bodies, some moving, others resting, some with bent knees, others with straight knees. Morning Peter and Night Peter are supposed to be bodies in that series. This view has its roots in the writings of Heraclitus and other

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<sup>6</sup>Because Descartes, like Aquinas, but unlike Scotus, Ockham, and Buridan, conceives of properties as ways of existing, it's in principle open to him to claim that *was moving* is a mode of Night Peter. But there's no evidence that Descartes thought that this was a way of existing, or that it's a mode.

ancient Greek authors. It is also found in the writings of ancient Buddhist and Hindu authors.

Descartes wouldn't accept exdurantism. Returning to the passages above, Descartes says of a human body after it changes that "it is the same body, numerically the same body," and he says of a piece of wax after it changes that "no one denies" that it's the same piece of wax. Moreover, if the piece of wax weren't the same, and was replaced by a new body, then he wouldn't have shown that it can exist with a different size, shape, or motion, and thus wouldn't have shown that its size, shape, and motion are inessential to it. Thus, if the piece of wax weren't numerically identical over time, he couldn't conclude that the essence of a body is to be extended, rather than to have any particular size, shape, or motion (AT IV 166).

Finally, **perdurantists** would deny either the discernibility or the identity of Morning Peter and Night Peter, depending on how these names are disambiguated. According to perdurantists, people are composed of bodies that exist only for an instant (see Quine 1950; Lewis 1986, Ch 4). A person exists "partly" whenever one of her instantaneous parts exists. Thus, according to perdurantists, there were many things that were moving in the morning: To start, there were all the instantaneous bodies, one for each instant in the morning. In addition, there were all the things composed of at least one of those instantaneous bodies. As perdurantism is developed by Lewis and others, more than one person's body was moving in the morning, because the same instantaneous bodies were parts of more than one person's body (see especially Lewis 1993). If perdurantism is developed in this way, the names 'Morning Peter' and 'Night Peter' are ambiguous, because I let Morning Peter be *the* body that was moving in the morning, and I let Night Peter be *the* body that was resting at night, when in fact more than one body satisfies those descriptions. If we disambiguate these names so that they refer to the same body, and that body is composed of at least one instantaneous body that was moving in the morning and at least one instantaneous body that was resting at night, then perdurantists would deny their discernibility; just because a person has parts that instantiate contrary properties, it doesn't follow that the person as a whole instantiates contrary properties. But if we disambiguate these names so that they refer to anything else that satisfies the relevant descriptions, perdurantists would deny their identity.

There are several reasons why Descartes wouldn't accept perdurantism. First, as noted above, Descartes seems to accept presentism, the view that whatever exists, exists in the present. According to perdurantists, at most

one temporal part of a person's body exists in the present. Thus, if Descartes accepted perdurantism, he would need to say that at most one temporal part of a person's body exists, and thus to deny that people's bodies exist. Similarly, if only one spatial part of a car exists (e.g., its muffler), the car doesn't exist, and if only one spatial part of Peter's body exists (e.g., his foot), Peter doesn't exist (see Merricks 1995, p.524). It would be hard to deny that this principle applies to temporal parts as well. In this way, presentism and perdurantism would together imply that human bodies don't exist. Descartes must therefore reject perdurantism.

Second, Descartes can't be a perdurantist about a person's mind. According to Descartes, minds are independent substances that can exist without the body. Conjoined with perdurantism, it would follow that a person's mind is composed of minds that each exist just for an instant. But Descartes insists that minds lack parts, i.e., that they're simple.

For this reason, attributing perdurantism to Descartes wouldn't really explain why he doesn't seem to think there's a puzzle about identity over time. Even if it explained why he didn't think there was a puzzle about the identity of a person's *body*, it wouldn't explain why he didn't think there was a puzzle about the identity of a person's *mind*.

It's also worth noting that, while Descartes says that all bodies have spatial parts, in virtue of being extended, he never talks about temporal parts. It therefore seems unlikely that this would be his solution to the puzzle, for bodies or for minds.

Gorham (2010, p.168–170) claims that Descartes is committed to perdurantism because past bodies and future bodies can exist without each other (by AT VII 109, 370) and “two substances are really distinct if one can exist without the other” (AT VII 162). Gorham infers that past bodies and future bodies must be distinct substances, and thus bodies that persist over time must be composed of things that exist only for an instant. But that's unacceptable from a Cartesian point of view, for the reasons mentioned above. It seems more likely that the principle “two substances are really distinct if one can exist without the other” is restricted to a time, and thus is just a particular instance of the more general principle linking identity to indiscernibility at a time. In particular, it's an instance of the principle: If  $x$  and  $y$  are numerically identical, and  $x$  instantiated a property at a time,  $y$  did not instantiate a contrary property at that time. In support of this hypothesis, consider that Descartes only uses this principle to establish that if it's possible for a  $x$  to exist at a time, and for  $y$  to not exist at the same time,

then they are distinct — for example, that if it’s possible for a mind to exist at a time, and for a body to not exist at that time, then they are distinct. Also in support of this hypothesis, consider that Scotus and Ockham make similar claims about when two substances are really distinct, and they don’t take themselves to be committed to perdurantism (see again manuscript a).

Pasnau suggests an interpretation of Descartes that doesn’t straightforwardly fall under any of the responses we considered. According to Pasnau, Descartes’s view of identity over time relies on a distinction between thick substances and thin substances (Pasnau 2011, p.143). A thick substance is a substance “including” all of its properties, whereas a thin substance is a substance “excluding” all of its properties. According to Pasnau, Descartes inherits this distinction from the medieval Aristotelians. In that tradition, a *thin* substance consists of just prime matter and a substantial form, and a *thick* substance consists of prime matter, a substantial form, and accidental forms (Pasnau 2011, p.99–108; Brower 2014, p.91–100). Thin substances are intrinsically the same over time, in virtue of having the same constituents, whereas thick substances are created and destroyed with each change in their properties. Pasnau suggests that when Descartes says that a human body or a piece of wax is numerically the same over time, he’s talking about a thin substance.

But this wouldn’t really solve the puzzle. The Indiscernibility of Identicals isn’t restricted to Morning Peter’s and Night Peter’s *constituents*. It is about *all* of their properties. Even if Morning Peter and Night Peter are thin substances, they still have properties; Morning Peter moved, and Night Peter rested. Descartes is clear on this point, saying that a human body is still the same despite an increase in its size (AT IV 166), and a piece of wax is still the same despite losing its color (AT VI 30–31). Thus, if we’re thinking about Morning Peter and Night Peter as thin substances “underneath” the changing properties, we still need to think about them as having properties “on top.” In that case, changes in those properties would still be enough to give rise to the puzzle.

In addition, it’s not even clear that Descartes can countenance a distinction between thin and thick substances. Given Descartes’s understanding of properties as modes, a substance’s properties are just the ways in which that substance exists, so if we exclude a substance’s properties, we’re excluding its existence (as Pasnau acknowledges, 2011, p.275). Thus, Descartes would have to deny that thin substances exist. It’s also unclear what Descartes would include among the constituents of thin substances, given that he doesn’t coun-

tenance substantial forms or prime matter. Perhaps this is why Descartes nowhere makes or endorses a distinction between thick and thin substances.

### 4.3 Third explanation

Almost all contemporary philosophers reject either the identity or the discernibility of a person over time. This isn't a coincidence. Contemporary philosophers believe that, if we want to be coherent, these are our only options. But there's another response: reject the Indiscernibility of Identicals, perhaps in favor of the weaker principle restricted to times. I think that Descartes would respond in this way. And I think this best explains why he doesn't seem to regard his claims as puzzling; the Indiscernibility of Identicals didn't seem true to him, and thus there didn't seem to be a puzzle.

There are three further considerations in favor of this explanation, besides the shortcomings of the other explanations.

First, none of his arguments seem to presuppose the Indiscernibility of Identicals, rather than the weaker principle. For example, consider again his argument that a body and its mind are numerically distinct because the body has parts while the mind doesn't (AT VII 13, 86). As we noted, that argument just presupposes a principle that merely links identity to indiscernibility at a time. Of course, this is just one argument. But I can't find any arguments that require the Indiscernibility of Identicals.

Second, as a presentist, it would be easier for Descartes to reject the Indiscernibility of Identicals. From a presentist perspective, it isn't arbitrary to restrict the principle to a time but not to a location. Recall that, according to eternalists, variation across reality's three spatial dimensions is relevantly like variation across its fourth, temporal dimension. For the eternalist, if the mere fact that Downstairs Peter and Upstairs Peter have different motions is enough to establish that they are distinct bodies, the mere fact that Morning Peter and Night Peter had different motions is enough to establish that they are distinct bodies. According to presentists, there's an important asymmetry between locations and times: while objects exist at many locations, they exist at only one time, namely the present. Thus, a presentist will agree that Downstairs Peter exists downstairs and Upstairs Peter exists upstairs, but they will deny that Morning Peter exists in the morning and Night Peter exists at night, because at most one of these times is the present. As a result, our reasons for thinking that Downstairs Peter isn't identical to Upstairs Peter might be of a different kind than our reasons for thinking that Morn-

ing Peter isn't identical to Night Peter. Thus, even if the Indiscernibility of Identicals seems obviously true to eternalists, it needn't seem obviously true to presentists, at least not for the same reason.

From a presentist perspective, there are other motivations for the Indiscernibility of Identicals. I address them in the other paper, on the medieval Aristotelians (manuscript a). Like the medieval Aristotelians, I think that Descartes would resist the other motivations, and for many of the same reasons.

Third, Descartes was exposed to a philosophical tradition in which philosophers weren't committed to the Indiscernibility of Identicals, or at least could have been interpreted in this way. Aquinas, Ockham, and Buridan were especially influential in France.<sup>7</sup> It is thus likely that Descartes was exposed to their views, probably during his student days at La Flèche.<sup>8</sup> Indeed, Descartes seems to have this tradition in mind when, in his letter to Mesland, he says that the human body is numerically identical over time because of its relation to the *soul*. In this tradition, the Indiscernibility of Identicals wouldn't have seemed like a principle that needed to be given up; it wouldn't have seemed true. In contrast, he wasn't exposed to a tradition in which philosophers endorsed relationism or adverbialism, and while he *might* have been exposed to ancient authors who endorsed exdurantism, and perhaps also ancient and medieval authors who endorsed perdurantism about some beings (e.g., time, motion), it's far less likely that he would have absorbed these traditions unreflectively through his teachers and contemporaries. As marginal views, it's also likely that he would have felt the need to acknowledge and defend them. It's also likely that his contemporaries would have noticed and criticized them.

This doesn't mean that Descartes's view is completely traditional. There are at least two important departures. The first is that Descartes doesn't countenance substantial forms (AT III 502), and thus owes us an alternative account of the essence shared by Morning Peter and Night Peter. According to Descartes, they share the same essence in that they share the same principle attribute. In particular, they share the attribute of extension (AT VIIIA 25).

The second, related departure is that Descartes doesn't think that shar-

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<sup>7</sup>See Roensch 1964, Courtenay 2008, Ch 8, and Thijssen 2004, respectively, for the influence of Aquinas, Ockham, and Buridan on French scholasticism.

<sup>8</sup>See Ariew 1999, p.9, for more on Descartes's education at La Flèche. See Carriero 2008 for an extended discussion of Aquinas's influence on Descartes.

ing the same essence is *sufficient* for numerical identity. In particular, bodies are distinct from each other, but they share the same essence, namely the attribute of extension. While there's a debate about whether distinct bodies are distinct *substances* (see Secada 2000, p.208), and a debate about whether the distinctions between bodies are *mind-dependent* (see Sowaal 2004), everyone should agree that bodies are distinct from one another. Thus, bodies can share the same essence without being identical. This point is even clearer for minds. All minds share the same essence, namely thought (AT VIII A 25). But minds are distinct from one another; they're distinct substances (AT VII 14). Thus, minds can share the same essence without being identical. Once again, sharing the same essence isn't sufficient for identity.

Descartes does still claim that sharing the same essence is *necessary* for identity. For example, he argues that the mind and body are distinct because they have different essences (AT VII: 78). But he denies that it's sufficient.

What's sufficient for numerical identity? For human bodies, it's their inessential relation to the soul (AT IV 166–167). For non-human bodies, it's unclear. On the basis of the letter to Mesland, quoted above (again AT IV 166–167), it's tempting to say that a non-human body is numerically identical over time because it retains the same parts. But that leads to regress, because we'd then need to explain the numerical identity of the parts over time. For what it is worth, I can't find anything that prevents Descartes from saying that a body's essence is connected to its pattern of motion, which is what Spinoza later says (and which is similar to what Scotus and Ockham say about sensitive souls). In any case, the fact that Descartes doesn't tell us what's sufficient for the identity of non-human bodies over time is a serious omission, given that this is one of the roles of the substantial forms he rejects.

He also doesn't tell us what's sufficient for the identity of minds over time. But this is arguably a less significant omission, because minds are created and destroyed supernaturally, and thus there's an obvious distinction between when they're modified and when they're destroyed. It depends on an unambiguous act of God. While bodies can be destroyed through a series of gradual modifications (e.g., the removal of a tiny part), minds can't be destroyed in the same way.

## 5 Spinoza

The most important passage is Spinoza's definition of 'one body' in the so-called physical digression following 2P13:

When a number of bodies, whether of the same or different size, are so contained by other bodies that they lie upon one another, or if they so move, whether with the same degree or different degrees of speed, that they communicate their motions to each other in a certain fixed pattern [*ratio*], we shall say that those bodies are united with one another and that they all together compose one body, or individual, which is distinguished from the others by this union of bodies. (2PhysD1; see also KV App. II Sect. 14)<sup>9</sup>

Spinoza infers from this that, if a body's pattern of motion is disrupted, the body is destroyed (2PhysD1, 4P39S). He also infers that, as long as that pattern is preserved, the body remains numerically the same, as when its parts merely grow in size (2PhysL5) or when there's merely a change in the direction or speed of its overall motion (2PhysL6, 2PhysL7). Thus, Spinoza is committed to the identity and discernibility of a body over time.

Strikingly, Spinoza doesn't seem to regard his claims as even superficially puzzling. Like Descartes and the medieval Aristotelians, he moves on to the next topic. Let's consider the explanations.

### 5.1 First explanation

The first is that he didn't notice the puzzle, or dishonestly chose to ignore it. But this seems unlikely. Like Descartes, Spinoza was deeply interested in identity, especially its necessary conditions. For example, in response to Descartes, he claims that the thinking substance and the extended substance are identical even though each can be conceived without the other (1P10S). Some of his arguments also rely on the weaker principle, as when he argues that a body isn't the extended substance because the body has parts while the extended substance doesn't (1P13C, 2P10S). As we'll see later, he also

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<sup>9</sup>Spinoza 1985 translates *ratio* using 'manner'. But Garrett 1994, p.86–7, persuasively argues that 'pattern' better conveys what Spinoza has in mind.

seems to accept the converse principle, the Identity of Indiscernibility. Thus, the Indiscernibility of Identicals almost certainly occurred to him.

Spinoza thought deeply about identity despite change, as evidenced by the passage above (2PhysD1). It thus seems unlikely that he would fail to notice a puzzle generated by the Indiscernibility of Identicals, if it seemed true to him. It would also be completely out of character for Spinoza to notice the puzzle and dishonestly choose to ignore it.

## 5.2 Second explanation

The second explanation is that Spinoza isn't really committed to the identity and discernibility of Morning Peter and Night Peter. But there is textual and systematic evidence that he is. As a way of structuring our discussion, let's again consider why he wouldn't accept contemporary proposals for rejecting these commitments. This will also bring out the extent to which he's still working in the same framework as Descartes and the medieval Aristotelians.

**Relationists** would deny the discernibility of Morning Peter and Night Peter, because properties are relations to times. There are several reasons why Spinoza would reject relationism. First, like Descartes and Aquinas, he thinks that a body's properties — including its motion, size, and shape — are just ways in which the body exists. Like Descartes and Aquinas, he calls them *modes* (1P25C, 2D1). As a result, once a thing stops moving, there's no sense in which its previous motion is still a mode of it. Instead, it has a new property, because it exists in a new way. Thus, given his understanding of change and properties, Spinoza would reject any proposal, including relationism, that implies that a body changes without gaining or losing properties.

Second, like Descartes and the medieval Aristotelians, he seems to deny the existence of polyadic relations. He classifies them as “beings of reason.” There's an interesting puzzle about how to reconcile this with his claims about causation and inherence. But, regardless of how that puzzle is resolved, it seems unlikely he'd be willing to accept the kind of relations that are at the core of the relationist proposal. In contrast, Spinoza doesn't deny the reality of modes. He describes them as things that exist. That modes exist is especially clear for Spinoza, because he regards candles, tulips, butterflies, and human bodies as modes.

Third, Spinoza says that times are merely beings of reason, and thus depend on the mind for their existence (Ep12). For Spinoza, finite physical

reality is nothing but a causal ordering of all bodies; there are no “times” above and beyond that causal ordering. Thus, if properties like *motion* were relations to times, they would be relations to something that exists only in our minds, or to the activity of other bodies in the causal ordering. Either way, times don’t seem like the right kind of things for properties to be relations to them.

**Adverbialists** would deny the discernibility of Morning Peter and Night Peter, because they instantiated the same properties in the same ways, including morning-ly and night-ly. There are several reasons why Spinoza would reject adverbialism. First, as noted above, he seems to think a body changes by gaining or losing properties. Thus, like Descartes and the medieval Aristotelians, he would reject any proposal that implies that things always instantiate the same properties in the same ways.

Second, like Descartes and the medieval Aristotelians, Spinoza claims that the modes of bodies are things that exist at some times but not at other times, and at some locations but not at other locations (they are *tropes*). This again is especially clear for Spinoza, because candles, tulips, butterflies, and human bodies are modes, and they’re obviously created and destroyed. Spinoza also thinks that the modes of these modes are created and destroyed. For example, emotions are modes of our minds, and he repeatedly says that they’re destroyed (3P43, 3P38, 4P7, 5P2, 5P20S). There are some modes that always exist, the so-called *infinite* modes (1P21–23). But bodies and their modes are finite, and are thus created at some time and destroyed at a later time. Thus, as before, if Night Peter instantiates motion in some sense, his motion must exist at some time and at some location.

Unlike the views of Descartes and the medieval Aristotelians, this doesn’t conflict with a commitment to presentism. Spinoza accepts eternalism, the view that things exist in our past, present, and future. Thus, at least in principle, Night Peter can still be related to something that exists only in his past. But that has an awkward consequence, given Spinoza’s understanding of instantiation as inherence. To start, as Spinoza understands instantiation, the existence of a property metaphysically depends on whatever instantiates it (1D5; Carriero 1995). Thus, it would follow that the existence of something that exists in the past, and only in the past, *metaphysically* depends on something that exists in the present. In particular, Morning Peter’s motion when walking would metaphysically depend on Night Peter when he’s resting. In addition, as Spinoza understands instantiation, the existence of a property *causally* depends on whatever instantiates it. Thus, Morning Peter’s motion

when walking would have Night Peter when he's resting among its causes, a case of backwards causation.<sup>10</sup>

**Exdurantists** would deny the identity of Morning Peter and Night Peter, because in their view a human body exist for just an instant, at which point it's replaced by a new body. However, Spinoza repeatedly says that a person's body is identical over time. For example, he says that "one and the same man" can respond differently to the same stimulus at different times (3P51&S; see also 4P33). An insult might infuriate a man when he's young, but have no effect after his intellect is sufficiently strengthened (4P44S). He says that the mind, and therefore the body (by 2P7), can "undergo great changes, and pass now to a greater, now to a lesser perfection" (3P11S; see also 4Pref, 4P27). A human body can survive transitions from sadness to joy (3DefAffect), from sickness to health (5P39S), and, more generally, from childhood to old age (see 5P6S and 5P39S). A human body can therefore survive the relatively minor transition from walking to resting. Indeed, he seems to think that all bodies can survive similar changes, insisting that "each body moves now more slowly, now more quickly" (2PhysA1). For this reason, as long as Morning Peter and Night Peter share the same pattern of motion, Spinoza is committed to their identity.

Finally, **perdurantists** would deny either the identity or the discernibility of Morning Peter and Night Peter, because human bodies are composed of bodies that exist only for an instant. Unlike the other responses (relationism, adverbialism, exdurantism), I can't find anything in Spinoza's writings that rule out perdurantism. At least in principle, Spinoza can agree that there was an instantaneous body moving in the morning. The instantaneous body's pattern of motion might have required an exact heart rate (e.g., 100 bpm), and thus gone out of existence an instant later. Spinoza can also agree that there was a longer-lived body moving at that same instant. The longer-lived body's pattern of motion might allow for a broader range of acceptable heart rates (e.g., 20–300 bpm). Furthermore, at least in principle, longer-lived bodies could be composed of these instantaneous bodies. Thus, unlike his predecessors, Spinoza could have accepted perdurantism.

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<sup>10</sup>In my opinion, Della Rocca (2008) has been rightly criticized for saying that, according to Spinoza, things existing in the present metaphysically depend on things existing only in the past (see esp. Melamed 2012). If Spinoza were an adverbialist, he'd be committed to something even stranger, namely the converse: that things existing only in the past metaphysically depend on things existing in the present. All of the criticisms of Della Rocca apply just as much to this stranger commitment.

Nonetheless, there's no evidence that he did. For example, he never talks about instantaneous bodies, or even short-lived bodies. He also never describes longer-lived bodies as composed of bodies that exist at different times. He instead describes longer-lived bodies as existing at each instant because their patterns of motion are preserved at each instant, rather than because they have a part at each instant (see 2PhysD1 above). Like Descartes and the medieval Aristotelians, Spinoza seems to accept the traditional view that bodies exist "wholly," rather than "partly," at each instant.

There are two passages that might seem to suggest perdurantism, but on closer examination don't. Here's the first passage:

We live in continuous change, and that as we change for the better or worse, we are called happy or unhappy. ... In this life, then, we strive especially that the infant's body may change (as much as its nature allows and assists) into another, capable of a great many things and related to a mind very much conscious of itself, of God, and of things. (5P39S)

Spinoza says that an infant's body may *change into* an adult's body. According to the perdurantist, this happens when the infant's body (as an early temporal part) is destroyed and replaced by a series of bodies culminating in the adult's body (as a later temporal part). This passage doesn't rule out the possibility that people persist in this way. But it also doesn't commit Spinoza to anything so specific. It just says that the same body can belong to different kinds at different times, e.g., as an infant at one time, as an adult at another; as a moving thing at one time, as a resting thing at another. And that's true on almost all accounts of persistence.

Here's the second passage:

The human body, to be preserved, requires a great many other bodies, by which it is, as it were, continually regenerated. (2PhysP4)

Spinoza says that a person's body is, as it were, *continually regenerated*. Perdurantism gives a natural account of the sense in which a person might be continually regenerated. But I take the phrase 'as it were' in this passage to indicate that this isn't really a case of regeneration.

Importantly, Spinoza can't be a perdurantist about the extended substance, God. Spinoza denies that God has parts (1P13). While his argument

is explicitly about spatial parts, it equally establishes that God doesn't have temporal parts, and thus that God isn't composed of instantaneous bodies. Nonetheless, God is numerically identical over time despite instantiating contrary properties. For example, candles, tulips, butterflies, and human bodies are all properties of God, and they exist at some times but not other times. More generally, every change is a change in God's properties, including many conflicting properties (1P16).

For this reason, attributing perdurantism to Spinoza wouldn't really explain why he doesn't think there's a puzzle about identity over time. Even if it explained why he didn't think there was a puzzle about the identity of a person's finite body (and thus also about that person's finite mind, by 2P7), we would be left wondering why he doesn't seem to think there's a puzzle about the identity of God.

### 5.3 Third explanation

I think the best explanation for why Spinoza didn't regard his claims as puzzling is that he would reject the Indiscernibility of Identicals. There are three further considerations in favor of this explanation, besides the shortcomings of the other explanations.

First, none of his arguments seem to presuppose the Indiscernibility of Identicals, rather than a weaker principle. For example, as noted earlier, he argues that a body isn't an extended substance, because the body has parts while an extended substance doesn't (1P13C, 2P10S). This argument presupposes a link between identity and indiscernibility, but doesn't require the Indiscernibility of Identicals, because the extended substance lacks parts at the same time that the human body has parts.

Of course, this is just one of his arguments involving identity and indiscernibility. But I can't find any arguments that require the Indiscernibility of Identicals.

Second, even though Spinoza is an eternalist, he has the resources to resist the argument for the Indiscernibility of Identicals that I mentioned earlier. Recall that eternalists are committed to treating times like locations. Thus, if an eternalist believes that Downstairs Peter is not identical to Upstairs Peter merely because they instantiate conflicting properties, an eternalist is committed to believing that Morning Peter is not identical to Night Peter if they instantiate conflicting properties. Generalizing, if an eternalist believes that objects at different locations aren't identical merely because they

instantiate conflicting properties, she is committed to the Indiscernibility of Identicals. From an eternalist perspective, this is why the Indiscernibility of Identicals might seem obviously true.

But Spinoza has the resources to resist this argument. In particular, Spinoza might believe that *the attribute of extension* does not allow a body to have conflicting properties at the same time. Let's build up to this conclusion. According to Spinoza, the essence of a human body imposes a number of restrictions what states it can have. For example, a human body's heartbeat cannot exceed 300 bpm, and its internal temperature cannot drop below  $-18^{\circ}$  C. Under these extreme conditions, a human body is unable to sustain the fixed patterns of motion between its parts, and is destroyed (see again 2PhysD1). The essences of pigs, tulips, and diamonds don't impose these same restrictions. But there are some restrictions imposed by all bodily essences. For example, all bodily essences require a body to have a size, shape, and motion. If something lacks a size, shape, or motion, it can't be a body, and thus can't be a pig, tulip, diamond, etc. These restrictions follow from the attribute of extension. Another restriction imposed by all bodily essences is that a body cannot have contrary properties at the same time, so that, for example, a body cannot be wholly moving and wholly resting at the same time, or wholly white and wholly brown at the same time. This restriction also seems to follow from the attribute of extension. In that case, due to the attribute of extension: if  $x$  and  $y$  are numerically identical bodies, and  $x$  instantiated a property, then  $y$  didn't instantiate a conflicting property at the same time.

Now consider Morning Peter and Night Peter. The essence of a human body allows that body to to have conflicting properties at different times, because the essence of a human body allows for changes over time; it allows a human body to move in the morning and to rest at night. Thus, even though the essence of a human body does not allow Downstairs Peter and Upstairs Peter to be identical, because of their conflicting motions *at the same time*, it allows Morning Peter and Night Peter to be identical, despite their conflicting motions *at different times*. More generally, even though there is no bodily essence that allows a body to have conflicting properties at the same time, there are many bodily essences that allow a body to have conflicting properties at different times. In that case, the attribute of extension does not imply: if  $x$  and  $y$  are numerically identical bodies, and  $x$  instantiated a property, then there is no time at which  $y$  instantiated a conflicting property.

In this way, Spinoza can coherently reject the Indiscernibility of Identicals

while accepting the weaker principle. The key is that Spinoza can deny that Downstairs Peter is not identical to Upstairs Peter because of the *mere fact* that they instantiate conflicting properties. He can claim that this is also due to a restriction imposed by the attribute of extension, and that the attribute of extension doesn't impose a similar restriction on bodies having conflicting properties at different times.

Third, it's highly probable that Spinoza was exposed to a philosophical tradition in which philosophers would reject the Indiscernibility of Identicals. While I don't know whether he read Aquinas, Ockham, Buridan, or Scotus, he might have absorbed their tradition through a number of intermediaries, including Descartes, the Jewish authors he read in yeshiva, or the scholastic authors he read at the University of Leiden. It was in the air.

There's also evidence that he interpreted Descartes in this way. He attributes to Descartes the view, "Even though the hardness, weight, and the rest of the sensible qualities are separated from a body, the nature of the body will still remain whole" (PP 2P1). Spinoza also attributes to Descartes the axiom, "If something can be removed from a thing, while the thing remains intact [*integra*], it does not constitute the thing's essence..." (PP 2A2). It follows that a body remains "intact" even as it changes its sensible qualities. Thus, Spinoza might have absorbed this tradition through Descartes.

In any case, if he were working in this tradition, the Indiscernibility of Identicals wouldn't have seemed like a principle that needed to be given up; it wouldn't have seemed true. In contrast, he wasn't exposed to a tradition in which philosophers endorsed relationism or adverbialism. While he might have been exposed to a tradition in which philosophers endorsed exdurantism (through the stoics), his claims seem to explicitly rule it out. And while he might also have been exposed to a tradition in which philosophers endorse perdurantism about some things (e.g., times, rivers), it's less likely, and there's also no suggestion that he's extending this tradition to human bodies. Because exdurantism and perdurantism would have been marginal views, we also wouldn't expect Spinoza to take them for granted. We would expect him to more explicitly acknowledge them, and perhaps even defend them.

In at least one respect, Spinoza's view is more traditional than Descartes's. According to Spinoza, sharing the same essence is *sufficient* for numerical identity. This is clear from his definition of 'essence':

I say that to the essence of any thing belongs... that without

which the thing can neither be nor be conceived, and which can neither be nor be conceived without that thing. (2D2; see also 2P10C1S)

The first clause (“without which the thing can neither be nor be conceived”) implies that sharing the same essence is necessary for numerical identity (see also 1P20C2, 3P39D), and the second clause (“which can neither be nor be conceived without the thing”) implies that sharing the same essence is sufficient for numerical identity. Because Spinoza gives necessary and sufficient conditions for identity over time, his account is more complete than Descartes’s.

If I’m right, Spinoza would say that Morning Peter and Night Peter are identical over time, despite instantiating different properties at different times, because they share the same essence. He would also say that their minds are identical, despite instantiating different properties, because they share the same essence. And, perhaps most importantly, he would say that God is identical over time, despite instantiating different properties at different times, because of his essence.

Spinoza might still accept the converse principle, called the Identity of Indiscernibles. According to this principle:

If  $x$  instantiates a property just in case  $y$  instantiates that property, then  $x$  and  $y$  are numerically identical.

While Spinoza never explicitly commits himself to this principle, he does assume that numerically distinct substances must be discriminable (see 1P4). As Lin (2017, Sect 2) points out, it’s debatable whether this commits Spinoza to the Identity of Indiscernibles, because it’s unclear whether Spinoza thinks that numerically distinct *modes* must be discriminable. But, even if his arguments don’t require the Identity of Indiscernibles, he might still accept it.

In fact, Spinoza might accept this principle for the very reason he would reject the Indiscernibility of Identicals, namely the link between identity and essence. In particular, suppose that, for Spinoza, sharing the same essence is necessary and sufficient for numerical identity. In other words, suppose that  $x$  and  $y$  are identical if and only if they share the same essence. In that case, indiscernible things must be identical, because indiscernible things

must share the same essence, in virtue of being indiscernible. But discernible things could also be identical, because discernible things can also share the same essence. Thus, if Spinoza links identity to essence, we'd expect him to accept the Identity of Indiscernibles while rejecting the Indiscernibility of Identicals.

For Spinoza, what is the essence of Morning Peter and Night Peter? Unlike the medieval Aristotelians, he doesn't think that it involves a substantial form, because he regards substantial forms as unacceptably mysterious (Ep 60). Unlike Descartes, he doesn't think that it's extension, because all bodies are extended (2D1), and sharing the same essence is supposed to be sufficient for identity.

Most people will think that, for Spinoza, the essence of Morning Peter and Night Peter is a pattern of motion. For our purposes in this paper, that's fine. But, in other work (manuscript b), I argue that the essence of Morning Peter and Night Peter is a pattern of activity that isn't specific to motion, and thus can also be shared by a body and its mind. Spinoza would then have a unified account of the numerical identity of Morning Peter and Night Peter and the numerical identity of Peter's body and Peter's mind. In addition, like Scotus and Burley (see my manuscript a), Spinoza wouldn't even say that identity requires indiscernibility *at a time*. He would at most say that identity requires indiscernibility *within an attribute and at a time*. But I won't try to convince you of that in this paper.

## 6 Conclusion

Suppose I'm right, and that Descartes and Spinoza would reject the Indiscernibility of Identicals. How should contemporary metaphysicians respond? At a minimum, I think they should try to justify the Indiscernibility of Identicals. More ambitiously, I think they should take Descartes's and Spinoza's views seriously, especially now that many are once again comfortable with essences. It's worth keeping in mind that Descartes and Spinoza endorse a number of views that can at first seem absurd, but that on closer scrutiny prove credible. Examples include substance dualism (Zimmerman 2010), panpsychism (Strawson 2006), and necessitarianism (Dasgupta 2016). Their views about identity over time might prove similarly credible.

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