

# DESCARTES ON THE EXTENSIONS OF SPACE AND TIME

*Tad M. Schmaltz*

University of Michigan

## 1. INTRODUCTION

In the so-called *Conversation with Burman*,<sup>1</sup> a record of a lengthy discussion between Descartes and (most likely) the Dutch theological student, Frans Burman,<sup>2</sup> Descartes is reported to have claimed that our thought does not occur “in an instant” (*in instanti*), but rather “perseveres through some time” (*perseverare per aliquod tempus*). When Burman objected that such a claim has the unwelcome implication that “our thought will be extended and divisible” (*cogitatio nostra erit extensa et divisibilis*), Descartes responded that though the thought is “extended and divisible with respect to duration, because its duration can be divided into parts,” nonetheless it

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1 This commonly accepted title is not a translation of the Latin title of the manuscript in the University of Göttingen Library, which is: **Responsiones Renati Des Cartes ad quasdam difficultates es meditationibus ejus, etc., ab ipso haustae** (AT 5:146). In the text and notes, AT = C. Adam and P. Tannery, eds., **Œuvres de Descartes**, nouvelle présentation, 11 vols. (Paris: J. Vrin, 1964–74), cited by volume (-part) and page.

2 The margin of the first page of the Latin text includes the comment that the manuscript is *per Burmannum* and that it was transcribed on April 20 1648 *cum Claubergio*, that is, the then-Dutch student Johann Clauberg (AT 5:144–45). It is possible that the Burman is Frans Burman’s father, Peter Burman, who was a Protestant minister in Leyden. However, it is much more likely given the connection to the young Clauberg that his son was Descartes’s interviewer. The record of the interview that we now possess is based on an anonymous copy of Burman and Clauberg’s (lost) original.

is not “extended and divisible with respect to its nature, since it remains unextended” (AT 5:148). More precisely, Descartes’s view is that whereas the *res cogitans* that our thought modifies has an extended and divisible duration, it is a substance that remains by its nature unextended and indivisible. The clear contrast here is with body, which not only has an extended and divisible duration, but also is a substance that is extended and divisible by its nature as a *res extensa*.

It may seem problematic to open a discussion of Descartes with a text that Descartes himself neither composed nor (as far as we know) reviewed, and that others have taken to be a not completely reliable source for his own views.<sup>3</sup> Indeed, we will discover in due course that certain remarks immediately following the exchange concerning the duration of our thought that are attributed to him almost certainly do not reflect his own considered position. Nevertheless, I believe that this exchange is helpful in drawing attention to some significant complications for his conception of extension. These complications derive from the fact that there is in his system a fundamental distinction between a spatial extension that is divisible by its very nature and a temporal extension that though divisible in some sense, nonetheless can belong to a mind that is indivisible by its very nature.

It is Descartes’s account of these two kinds of extension that I wish to consider here. I begin in §2 with spatial extension. In arguing against the existence of a vacuum in the material world, Descartes identifies the extension of space with the extension of corporeal substance. Contrary to a certain Spinozistic reading of his views that one finds in the literature, he also takes the extension of this substance to be divisible into indefinitely many distinct substantial parts. Nevertheless, Descartes also suggests at times that substantiality requires the possibility of separate existence, and in his own comments on the vacuum Spinoza exploits such a requirement in arguing for a monistic conception of the material world. Considerations related to Spinoza’s argument reveal that in the end Descartes can avoid monism only by rejecting his own official position that the very same conceptions of the real distinction and substantiality govern the cases of divisible bodies and indivisible minds.

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<sup>3</sup> For challenges to the reliability of the **Conversation**, see the brief critical remarks in Ferdinand Alquié, ed., *Œuvres philosophiques de Descartes* (Paris: Garnier, 1973), 3:765–68, as well as the more extensive argument in Roger Ariew, “The Infinite in Descartes’ Conversation with Burman,” *Archiv für Geschichte der Philosophie* 96 (1987): 140–63. Cf. the remarks in note 38 concerning Ariew’s article.

For Descartes, divisibility into parts is not restricted to spatial extension. After all, he famously appeals in the Third Meditation to the fact that time is divisible into independent parts. However, I argue in §3 that the parts into which temporal extension is divisible are modal rather than substantial. Descartes does indicate that this extension is similar to spatial extension in being “indefinitely” divisible, that is to say, divisible into parts without limit. Whereas the derivation of indefinite divisibility from the nature of spatial extension is fairly straightforward, however, the derivation of this property is problematic in the case of temporal extension. In his summary of Descartes’s **Principles of Philosophy**, Spinoza offers on Descartes’s behalf an argument for the conclusion that such divisibility pertains to the duration of moving objects. This argument provides a reason for Descartes to resist the atomistic conception of temporal extension that some have attributed to him. Unfortunately, though, the argument also reveals the difficulty of justifying his claim that even the duration of thought must be indefinitely divisible. I conclude in §4 with a brief consideration of the relevance of this negative result for the view of the two extensions of space and time that Burman attributes to Descartes.

## 2. SPATIAL EXTENSION AND SUBSTANTIAL PARTS

A prominent feature of Descartes’s account of spatial extension is his denial that a vacuum in space is possible. In the second part of the **Principles of Philosophy**, he claims that since there can be no attributes of nothing, there cannot be a particular extension that no substance possesses. Thus, the extension of a space must belong to a substance. The conclusion is that “it is a contradiction to suppose that there is such a thing as a vacuum, that is, that in which there is nothing whatsoever” (*PP* II.16, AT 8-1:49).<sup>4</sup>

Descartes’s argument here draws on the particular view of space he offers in the **Principles**.<sup>5</sup> According to this view space or “internal place” is something that can be referred either to space or to a particular body. When it is referred to space,

<sup>4</sup> *PP* = **Principles of Philosophy**, cited by part and article.

<sup>5</sup> Here I draw on, but also correct on matters of detail, the discussion of Descartes’s account of space in my article, “Spinoza on the Vacuum,” *Archiv für Geschichte der Philosophie* 81 (1999): 182–91.

we attribute to the extension only a generic unity [*unitatem ... genericam*], so that when a new body occupies that space, the extension of the space is reckoned not to change, but rather to remain one and the same, so long as it retains the same size and shape and keeps the same position relative to certain external bodies that we use to determine that space. (AT 8-1:45)<sup>6</sup>

Space or place considered as having merely a “generic unity” count as a species of “extension considered in general” (*extensio consideratur in genere*) (PP II.12, AT 8-1:46),<sup>7</sup> which in Descartes’s view is a mere “mode of thinking” under which particular created things are conceived, and not something that exists external to mind (see PP I.58, AT 8-1:27).<sup>8</sup> In contrast, when it is referred to body, internal place is “extension as something singular,” which we consider “as changing whenever there is a new body” (PP II.10, AT 8-1:45).

The result in Descartes that space considered specifically, with respect to a particular body, is not distinct from the extension of that body is in line with the account of place that is central to the rejection of the vacuum in Aristotle’s **Physics**. One argument in this text is that since place has three dimensions, it must itself be a body, and so there cannot be a place without body, that is to say, a vacuum.<sup>9</sup> Descartes’s insistence that space considered generically can be distinguished from the extensions of particular bodies involves a qualification, present also in the work of the scholastics, of Aristotle’s identification of place with the surface of a

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6 Descartes further distinguishes the generic internal place from “external place.” Whereas the former is the generic size and shape of a place, the latter is the surface surrounding what is in a particular place. This surface is a mode that is common to the body in that place and the bodies surrounding it, and is something that can be considered to remain the same even when the surrounded or surrounding bodies change (PP II.15, AT 8-1:48).

7 There is also a reference to *extensionem in genere sumptam* in PP II.18, AT 8-1:50.

8 The passage states that anything *consideratur in genere* is a mode of thinking. As will become clear from the discussion below, however, Descartes’s view of the status of body considered *in genere* is more complicated than this passage suggests.

9 See *Physics*, bk. IV, chs. 6–9, in **The Complete Works of Aristotle**, ed. J. Barnes (Princeton: Princeton University Press, 1984), 1:362–69.

particular body.<sup>10</sup> Nonetheless, he endorses a core element of Aristotle's view when he claims in the **Principles** that "the names 'place' and 'space' do not refer to anything distinct from the body which is said to be in a place, but refer only to its size, shape, and situation among other bodies" (*PP* II.13, AT 8-1:47). Descartes therefore denies, with Aristotle, that extra-mental place and space are entities that exist over and above bodies and the features of their extension.

Where Descartes goes beyond the standard Aristotelian position, of course, is in holding that body has a nature that is exhausted by the extension that it possesses. In his terms, extension in length, breadth and depth is a "principal attribute" that "constitutes the nature of corporeal substance" and to which all other properties of that substance "must be referred" (*PP* I.53, AT 8-1:25). There is nothing more to body than its extension and the various shapes and motions that modify this extension. Space is simply the consideration of the extension and its modifications in abstraction from the particular corporeal substance to which it belongs.<sup>11</sup>

A different, and perhaps more familiar, account of space was offered in the early modern period by Gassendi as well as by Newton and the Newtonians. On this account, space is not a mere abstraction, but is rather the immobile concrete container in which particular bodies move.<sup>12</sup> For Descartes, however, such a container is simply extension considered generically (*generic extension*), which is not an extra-mental entity but a mere mode of thinking. In contrast, extension considered specifically (*specific extension*) is a particular portion of extension that

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**10** For this identification, see *Physics*, bk. IV, ch. 4, **Complete Works**, 1:358–61. For the distinction of generic space from body in Descartes, see Garber, **Descartes' Metaphysical Physics** (Chicago: University of Chicago Press, 1992), 134–36. On the scholastic background to the distinction of generic space from body, see Edward Grant, **Much Ado About Nothing: Theories of space and the vacuum from the Middle Ages to the Scientific Revolution** (Cambridge: Cambridge University Press, 1981), 14–19. For Descartes's view of external place as the surface common to surrounded and surrounding bodies, see note 6.

**11** There is a detailed discussion of the relation between Descartes and the scholastics on space, quantity, and corporeal substance in Dennis Des Chene, **Physiologia: Natural Philosophy in Late Aristotelian and Cartesian Thought** (Ithaca: Cornell University Press, 1996), ch. 9.

**12** Grant discusses both the Gassendist position deriving from the Stoic view of Patrizi (**Much Ado**, 199–213) and the later discussion of space in the writings of Newton and the Newtonian Samuel Clarke (*ibid.*, 240–54).

moves with the body that possesses it (see *PP* II.10, AT 8-1:45). It is such portions of specific extension that Descartes has in mind when he argues in the **Principles** that if a vacuum is anything at all, it must be the extension of a particular part of space, from which it follows that it is simply the extension of a particular corporeal substance and thus not a space devoid of any such substance, that is to say, not a vacuum (see *PP* II.16, AT 8-1:49).<sup>13</sup>

Descartes's remarks concerning the vacuum broach the question whether he takes the portions of specific extension to constitute the nature of different corporeal substances, or whether for him it is only extension as a whole that constitutes the nature of a single corporeal substance. The former option requires a "pluralist" interpretation of his account of corporeal substance, according to which matter comprises a plurality of such substances. In contrast, the latter option indicates the sort of "monist" conception of corporeal substance that Spinoza famously defends in his **Ethics**. In the scholium to the fifteenth proposition in the first part of this text, Spinoza argues that since "corporeal substance, insofar as it is substance, cannot be divided," there can be only one such substance. He admits in this scholium that particular bodies are divisible, but also insists that this is because such bodies are modes of substance rather than distinct substances. His conclusion is that though the modes of corporeal substance can be separated and divided, as well as generated and corrupted, corporeal substance itself is absolutely indivisible, ingenerable and incorruptible (G 2:59).<sup>14</sup>

Martial Gueroult has urged that this Spinozistic view of corporeal substance in fact reflects Descartes's own considered position. In his study of the first part of the **Ethics**, Gueroult appeals in particular to Descartes's distinction in the Synopsis of the **Meditations** between "body taken in general" (*corpus ... in genere sumptum*), which is a substance and therefore incorruptible, and particular bodies such as our own, which are subject to corruption since they are "made up of accidents" (AT 7:14). According to Gueroult, what we find here is precisely the

<sup>13</sup> For more on Descartes's account of space, see Roger Woolhouse, "Descartes and the Nature of Body (**Principles of Philosophy**, 2.14–19)," *British Journal for the History of Philosophy* 2 (1994): 19–33; Garber, **Descartes Metaphysical Physics** (Chicago: University of Chicago Press, 1992), 134–36, 148–55; and Des Chene, **Physiologia**, 371–74.

<sup>14</sup> G = G. Gerhardt, ed., **Spinoza Opera**, 4 vols. (Heidelberg: Carl Winters, 1925), cited by volume and page.

Spinozistic distinction between “universal extended substance” and the particular bodies that are modal “determinations” of this substance.<sup>15</sup>

Unfortunately for Gueroult’s interpretation, Descartes explicitly endorses the claim—which Spinoza is concerned to reject in his scholium—that corporeal substance is divisible into parts that are themselves really distinct substances. Indeed, in the **Principles** Descartes illustrates the nature of a *distinctio realis*—that is, for him, a real distinction between two or more substances<sup>16</sup>—by noting that our idea of corporeal substance reveals that “if it exists, each and every part of it, as delimited in us by our thought, is really distinct from the other parts of the same substance” (*PP* I.60, AT 8-1:28–29). Elsewhere Descartes indicates that his rejection of indivisible atoms in fact depends on the claim that every corporeal substance is divisible into parts that are themselves corporeal substances. In a letter to Gibieuf, for instance, he writes that the claim that there can be parts of matter that are indivisible is contradictory since “from the simple fact that I consider the two halves of a part of matter, however small it may be, as two complete substances, ... I conclude with certainty that they are really divisible” (19 Jan. 1642, AT 3:477). Here the parts of spatial extension—that is to say, of corporeal substance—are conceived not as modes of that extension, but rather as really distinct corporeal substances.

Descartes’s view that spatial parts are substances rather than modes is further reinforced by his claim in the Sixth Replies that the surface of a body “is merely a mode and hence cannot be a part of a substance. For body is a substance, and a mode cannot be a part of a substance” (AT 7:433). He explains that since surface has no depth, and thus is completely two-dimension-

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15 Martial Gueroult, **Spinoza, I: Dieu (Ethique, I)** (Hildesheim: G. Olms, 1968), 541. Cf. Gueroult, **Descartes selon l’ordre des raisons** (Paris: Aubier, 1953), 1:107–18. For defenses in the English-language literature of various versions of the monistic reading of Descartes’s account of corporeal substance, see S. V. Keeling, **Descartes** (Oxford: Oxford University Press, 1968), 129–30; Bernard Williams, **Descartes: The Project of Pure Inquiry** (London: Penguin, 1978), 126–29; John Cottingham, **Descartes** (London: Blackwell, 1986), 84–88; Georges Dicker, **Descartes: An Analytical and Historical Introduction** (New York: Oxford University Press, 1993), 212–17; and Thomas Lennon, “The Eleatic Descartes,” *Journal of the History of Philosophy* 45 (2007). See also David J. Marshall, Jr., **Prinzipien der Descartes: Exegese** (Freiburg: Verlag Karl Alber, 1979), 54–57.

16 As indicated in note 28, Descartes deviated on this point from the account of the real distinction in the earlier work of Suárez.

al, it cannot be a three-dimensional part of a body, but must be a mode of such a part.<sup>17</sup> The clear indication, however, is that the three-dimensional parts are not themselves modes, but rather compose the substance of the body. Given this indication, Descartes clearly could not have accepted Spinoza's position in the **Ethics** that a body can be conceived as a part only insofar as it is conceived as a mode of corporeal substance.

Descartes's account of the difference between modes and parts is informed by a conception of substance that is prominent in the presentation *more geometrico* of the **Meditations** that he provides in the Second Replies. There Descartes defines substance as that "in which whatever we perceive immediately resides, as in a subject." He offers as an illustration the fact that "the substance that is the immediate subject of local extension and of the accidents that presuppose extension, such as shape, position, local motion, and so on, is called *body*" (AT 7:161). The immediate subject of particular shapes or motions would seem to be not the whole of matter, but rather delimited parts of it. If so, then by this definition these parts, as well as the whole of matter that comprises all such parts, count as substances.

To be sure, Descartes does allow that a mode can be the subject of further modes. For instance, he holds that motion can be the subject of the further modes of (scalar) speed and directional determination. When Hobbes protested that determination in particular cannot be in motion "as in a subject" given that motion is itself a mode, Descartes responded by insisting that "there is no awkwardness or absurdity in saying that an accident is the subject of another accident." Yet he also cautioned that when he says that "motion is to its determination as a flat body is to its top or surface," he means not that motion is like the body in being a substance, but merely that they are both "concrete things" rather than "abstractions" (see *To Mersenne for Hobbes*, 21 Apr. 1641, AT 3:355–56). There remains a difference between the two concrete entities insofar as the flat body is the ultimate three-dimensional subject of its surface, whereas motion is a subject of determination that requires a further three-dimensional subject. Descartes's response to Hobbes therefore is consistent with the non-Spinozistic distinction in the Sixth Replies between parts and modes.



What then of the purportedly Spinozistic view in the Synopsis that Gueroult emphasizes? An initial point is that it is not at all clear that by the talk in this text of corporeal substance “taken in general,” Descartes means matter taken *in globo*.<sup>18</sup> In other passages that use similar terminology, Descartes has in mind delimited portions of spatial extension rather than spatial extension as a whole. In the **Principles**, for instance, Descartes indicates that “extension in general” consists not of the whole of extension, but rather of particular parts of space conceived generically.<sup>19</sup> Moreover, in a 1645 letter to the Jesuit Denis Mesland (hereafter, the Mesland letter) he uses ‘a body in general’ (*un corps en general*) to mean not the whole of matter, but rather “a determined part” (*une partie déterminée*) of it (9 Feb. 1645, AT 4:166).

For Descartes, however, there are some important differences in the ways in which extension or body can be considered *in genere*. We have seen that the **Principles** distinguishes generic extension as a mode of thinking from extra-mental specific extension. In contrast, the Mesland letter indicates that a body in general is precisely the extension of a body as it is physically realized in the material world. Given the definition in the **Principles** of ‘one body’ as “whatever is transferred at the same time” from contiguous bodies (*PP* II.25, AT 8-1:54–55), this physical realization will involve the actual possession of a particular motion. Since motions can be gained or lost, the bodies-in-general of the Mesland letter are subject to change. Indeed, the emphasis in this letter is on the fact that such bodies are no longer numerically the same (*idem numero*) if any portion of them is removed (AT 4:166).

That the “body taken in general” mentioned in the Synopsis is distinct from the corruptible parts of matter mentioned in the Mesland letter is clear from the stress in the former text on the fact that body in general, in contrast to the human body, is incorruptible. Moreover, it is interesting that when Descartes argues in the **Principles** for the real distinction of parts of

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**18** This consideration does not apply to all monistic interpretations of Descartes’s view of matter considered in general. It does not apply, for instance, to the interpretation in Lennon (see note 15), which identifies this matter with a subsisting essence rather than with spatial extension as a whole. Thanks to Joseph Zapeda for bringing this point to my attention.

**19** In *PP* II.12, Descartes offers as an example of “extension considered in general” the extension successively occupied by a stone, wood, water, and air (AT 8-1:46–47), whereas in *PP* II.18, he offers as an example of “extension taken in general” the interior of a vessel conceived as having no necessary connection to any particular body the fills it (AT 8-1:50).

matter, he focuses on the parts “as delimited in our thought” (*a nobis cogitatione definitam*) (PP I.60, AT 8-1:28), rather than as actually individuated by motion.<sup>20</sup> Likewise, in presenting the argument against atomism in the letter to Gibieuf, Descartes refers to his “consideration” (*considerare*) of the two halves of the purported atom as complete substances. In contrast to the view in the Mesland letter of determinate material parts, then, the suggestion here is that the distinct substances that compose matter need not be individuated by some actual motion.<sup>21</sup> Indeed, the indication is that the parts so individuated are composed of, as opposed to being identical to, the parts of extension that we can delimit in our thought. Though changes in accidents can bring about the destruction of the parts that are individuated by motion, no such changes can destroy any portion of the extension that composes the parts. Such portions therefore share with minds the property of being naturally incorruptible.<sup>22</sup>

The emphasis on the fact that incorruptible body is delimited by our thought may seem to indicate that it is the same as the generic extension mentioned in the **Principles**. However, the Synopsis is referring not to a mere mode of thinking, but rather to an incorruptible specific extension that at different times can compose different corruptible bodies (the bodies-in-general of the Mesland letter). Each portion of this extra-mental extension that we pick out in thought constitutes a corporeal substance. In contrast to the determinate bodies individuated by motion, these substances are individuated by means not of relations to other objects, but rather of something intrinsic to the substances, namely, the portion of specific extension that is essential to them.<sup>23</sup>

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**20** For this point, see Garber, **Descartes’ Metaphysical Physics**, 176. Cf. the discussion in Edward Slowik, “Descartes and Individual Corporeal Substance,” *British Journal for the History of Philosophy* 9 (2001): 1–15.

**21** For the point that material substances are not the same for Descartes as the particular bodies he considers in his physics, see Garber, **Descartes’ Metaphysical Physics**, 176.

**22** Cf. the reading of the Synopsis passage defended in Matthew Stuart, “Descartes’s Extended Substance,” in R. J. Gennaro and C. Huenemann, eds., *New Essays on the Rationalists* (New York: Oxford University Press, 1999), esp. 92–101. Stuart’s conclusion that “Descartes identifies extended substances with quantities of matter” (*ibid.*, 99) is similar to my own. However, Stuart does not consider the Spinozistic objection, which I address presently, that quantities of matter cannot be substances that are really distinct from each other since they cannot exist apart from each other.

The “body in general” of the Synopsis thus can be positioned between the “extension in general” of the **Principles** and “a body in general” of the Mesland letter. Body in the Synopsis shares with the extension of the **Principles** the fact that it does not depend for its identity on a certain kind of actual motion, and thus is distinguishable from the body in general in the Mesland letter. Yet the body of the Synopsis is also similar to the body of the Mesland letter in possessing a specific extension that can exist apart from thought. Both are therefore distinct from the generic extension of the **Principles**, which is a mere mental entity that is individuated by thought. In the Synopsis, then, Descartes attempts to make room for parts of matter that have an extra-mental existence but that differ from the particular bodies that that are individuated, and can be corrupted, by motion (see Table 1).

<b>Principles</b>	Synopsis	Mesland letter
<i>extensio consideratur in genere</i>	<i>corpus in genere sumptum</i>	<i>un corps en general</i>
generic extension	specific extension	specific extension
mode of thinking	extra-mental	extra-mental
individuated by thought	individuated by extension	individuated by motion
	incorruptible	corruptible

Table 1

23 In *De ipsa natura* (1698), Leibniz objected that since no portion of extension can be distinguished from any other portion that is qualitatively indistinguishable from it, bodies cannot be individuated in terms of extension alone (see G. W. Leibniz: **Philosophical Essays**, ed. R. Ariew and D. Garber [Indianapolis: Hackett, 1989], 163–65). However, my suggestion on Descartes’s behalf is that different portions of specific extension can be distinguished merely by the fact that they individuate distinct corporeal substances. Even if we could not distinguish qualitatively indistinguishable portions of specific extension, God could know which portion goes with which corporeal substance. For a similar suggestion, in response to Garber’s defense of Leibniz’s objection (in **Descartes’ Metaphysical Physics**, 181), see Des Chene, **Physiologia**, 375.

I suspect that Descartes concluded that parts of matter are distinct substances primarily on the basis of the fact that he took them to be distinguishable three-dimensional subjects of modes that are themselves incorruptible.<sup>24</sup> However, there is a problem for this conclusion that Descartes seems not to have confronted, but that Spinoza emphasizes. The relevant text is again found in the scholium to *Ethics* Ip15, and in particular in the remarks there concerning the vacuum. Spinoza argues that those who reject the possibility of a vacuum must grant that matter cannot be composed of really distinct parts. For in the case of “things which are really distinct from one another, one can be, and remain in its condition, without the other.” If the parts of matter were really distinct in this sense, however, one part could “be annihilated, the rest remaining connected as before,” thus creating a vacuum. Since in fact all the parts of matter “must so concur that there is no vacuum,” these parts cannot be really distinct (G 2:59).

Descartes himself allows for the logical possibility that God can annihilate a portion of matter. However, his claim is that if God were to do this, then the surrounding bodies would have to come into contact (*PP* II.18, AT 8-1:50). Moreover, in correspondence with More, Descartes added that in the case of this sort of annihilation other bodies would have to move to replace the annihilated body (*To More*, 5 Feb. 1649, AT 5:272–73).<sup>25</sup> So Descartes, at least, would deny the possibility—which for Spinoza carries with it the possibility of a vacuum—that a body be annihilated with “the rest being connected as before.”

Even if Descartes can sidestep the problem of the vacuum, however, the possibility of the annihilation of matter introduces a new problem for his claim that the parts of matter are really distinct. The problem here derives from the fact that the incorruptible parts of matter mentioned in the Synopsis seem to depend on the material parts that compose them.<sup>26</sup> In the case of the

<sup>24</sup> Descartes speaks at times as if even corruptible subjects of bodily modes, such as a stone (AT 7:44), a hand (AT 7:222), or pieces of clothing (AT 7:441), are themselves substances. However, we could take his view to be that these subjects are substantial only in the sense that they are composed of more basic subjects that are themselves substances in a strict sense that entails incorruptibility. This move would be required, in any case, to accommodate the view in the Synopsis. See the discussion of this point in Stuart, “Descartes’s Extended Substance,” 99–101.

<sup>25</sup> I am indebted here to the discussion of Descartes’s account of bodily annihilation in Joseph Zapeda, “Spinoza’s Vacuum Argument Revisited.”

<sup>26</sup> In contrast, Spinoza was more concerned with the problem of the dependence of a part of matter

composing parts, there may well be no problem with claiming that one such part can continue to exist even in the case where God annihilates another such part. However, it seems that the whole that includes the annihilated part cannot survive the annihilation, since the extension that individuates the whole is simply the sum (or, to use a current metaphysical term of art, the “fusion”) of the extensions that individuate its parts.

The question now is whether this whole could be something really distinct from the parts that compose it. The answer to this question depends on a crucial ambiguity in Descartes’s remarks concerning the *distinctio realis*, that is, the real distinction between different substances. The account of this distinction in the **Principles** begins with the claim that substances are really distinct just in case “we can clearly and distinctly understand one apart from the other” (PP I.60, AT 8-1:28). On one reading, the claim is that we can so understand one to be a subject of properties that differs from other subjects. This reading seems to be confirmed by the appeal in this passage to the fact that he can think of each part of corporeal substance as the subject of certain modes of extension that differs from subjects of other modes of extension. On this reading, it seems that we can think of the whole as really distinct from the parts that compose it, since the whole and its parts can be conceived as distinguishable subjects.

However, the passage from the **Principles** continues by noting that if substances are really distinct, then God has the power “of separating them, or keeping one in being without the other” (AT 8-1:29). Likewise, in the geometrical presentation of the **Meditations** in the Second Replies, Descartes includes in his set of definitions the claim that “two substances are said to be really distinguished when each of them can exist apart” (AT 7:162). The indication in these passages, it seems, is that the real distinction requires not only the understanding of the substances as separate subjects, but also the understanding that they can exist without other created substances. On this stronger reading of the real distinction, the whole cannot be conceived to be really distinct from its parts, since it cannot exist in separation from them.

The context of Descartes’s theory of distinctions helps to explain why he tended to speak as if the real distinction requires separable existence. In the **Principles**, he offers, in addition to the *distinctio realis* we have considered, a *distinctio modalis* between a mode and the substance it

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to other material parts that do not compose it.

modifies,<sup>27</sup> as well as a *distinctio rationis* between a substance and some attribute without which it cannot exist (*PP* I.60–62, AT 8-1:28–30). This set of distinctions is not original to Descartes, but can be found in the earlier work of the scholastic Francisco Suárez. In his massive **Disputationes Metaphysicae** (1597), Suárez uses the same terms to denote a distinction of *res* from *res* (*distinctio realis*), of *res* from a *modus* of that *res* (*distinctio modalis*), and of two ways of conceiving one and the same *res* (*distinctio rationis*).<sup>28</sup> The notion of a modal distinction is in fact one of Suárez's distinctive contributions to modern philosophy, as is his view that the three kinds of distinctions can be understood in terms of separable existence. Whereas for him there is mutual separability in the case of really distinct *res*, there is only a one-way separability of a *res* from its mode, and a mutual inseparability in the case of entities that are distinct merely "in reason."<sup>29</sup>

Descartes is clear on the necessity of mutual separability in the case where the distinct substances have different kinds of attributes. Thus, he emphasizes in the Sixth Meditation that it follows from the fact that mind and body are really distinct substances that his mind can exist without his body (AT 7:78).<sup>30</sup> But Descartes also seems to be committed to the necessity of

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27 As indicated below, Descartes allows that this sort of distinction holds between modes of the same substance (*PP* I.61, AT 8-1:29–30). However, he indicates that this case counts as a modal distinction only because both modes are inseparable from the same substance. He notes that in the case where the modes belong to really distinct substances, the distinction between them is more properly a real than a modal one (AT 8-1:30).

28 See Suárez, **Disputationes Metaphysicae** (Hildesheim: G. Olms, 1965), disp. VII, §1, 1:250–74. There is an English translation of this Disputation in C. Vollert, trans., **On the Various Kinds of Distinctions** (Milwaukee: Marquette University Press, 1947). Whereas Suárez allowed for a real distinction between corporeal substances, on the one hand, and their substantial forms and real qualities, on the other, Descartes insisted that any mutable feature of body can be only modally and not really distinct from such a substance (see, for instance, *To Mersenne*, 26 Apr. 1643, AT 3:649).

29 On the distinctive nature of Suárez's theory of distinctions in the context of scholastic thought, see Stephen Menn, "Suárez, Nominalism, and Modes," in *Hispanic Philosophy in the Age of Discovery*, ed. K. White (Washington, D.C.: Catholic University Press of America, 1997), 226–56. Menn indicates in particular how Suárez's theory of modes distinguishes him from other realist and nominalist scholastics, who agreed on the point that the real and rational distinctions are exhaustive.

30 For more on the issue of separability and its relation to Descartes's argument for mind-body distinctness, see Marleen Rozemond, **Descartes's Dualism** (Cambridge, MA: Harvard University Press,

separability in the case of the real distinction of two created substances that share the attribute of thought. For surely he would conclude from the fact that two finite minds are really distinct that each can exist without the other. After all, he holds in the Sixth Meditation that a mind is “single and complete on its own” (AT 7:85–86), and so presumably can exist on its own apart not only from body, but also from other created minds.<sup>31</sup>

However, this argument for the necessity of separability for the real distinction cannot apply to bodies. Indeed, in the Sixth Meditation passage just cited, Descartes takes the fact that minds are single and complete on their own to distinguish them from bodies, insofar as the latter are divisible into parts by their very nature (AT 7:86). No portion of specific extension can be single and complete apart from all other created substances, since all such portions are composed of distinct substantial parts from which they cannot exist in separation.<sup>32</sup>

In order to hold that each portion of specific extension is a substance that is really distinct from the parts that compose it, then, Descartes must employ a concept of the real distinction that, in contrast to the concept that applies to the case of created minds, does not require the possibility of existence apart from all other substances of the same type. But this difference in the understanding of the real distinction carries with it a difference in the concepts of substance that apply to minds and bodies. In the **Principles**, Descartes famously allows that the term ‘*substantia*’ does not apply univocally in all cases. In particular, he argues there that the term

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1998), ch. 1, esp. 28–35. However, Rozemond is most interested in the claim that separability constitutes the real distinction, and does not address the question of whether there can be a real distinction that does not involve separable existence.

**31** Descartes denies, however, that finite minds can exist apart from God’s infinite mind. This denial reflects his position, to be considered below, that the term ‘substance’ does not apply univocally to God and creatures.

**32** Cf. Calvin Normore’s claim that the strong notion of the real distinction allows for the dependence of a particular part of matter on the rest of indefinitely large matter since “there is no particular indefinitely large extension” that this part requires; “any will do” (“Descartes on the Metaphysics of Extension,” in J. Carriero and J. Broughton, eds., **A Companion to Descartes** [Malden, MA-Oxford: Blackwell, 2008], 281). However, Normore also allows that for Descartes individual quantities of matter “are essentially dependent upon the very parts that they have” (ibid.), and it is this point that I take to create a difficulty for a conception of the substantiality of material parts in terms of a strong notion of the real distinction.

cannot apply in the same way to God and creatures since God is a substance in the sense of depending on nothing else, whereas creatures cannot be substances in this sense given that they depend for their existence “on the work of the *concursus* of God” (PP I.51, AT 8-1:24). Nevertheless, he continues by affirming that the term “applies univocally to mind and body” since both “need only the *concursus* of God to exist” (PP I.53, AT 8-1:24–25).<sup>33</sup> Descartes can allow that the substantial parts of spatial extension share with finite minds the property of depending only on God’s concurrence for existence, and thus of being naturally incorruptible. However, it seems that he must admit some fundamental difference between the kinds of substantiality involved in the two cases given his view of the “complete difference” between mind and body. Whereas the mind is indivisible, and so single and complete on its own, body is by its nature divisible into distinct and naturally incorruptible parts, and so cannot exist on its own apart from those parts.<sup>34</sup> In order to accommodate this difference, Descartes needs to admit that the substantiality of bodily parts, unlike the substantiality of minds, does not require the possibility of existence apart from any other created substance. It turns out, then, that ‘substance’ cannot apply univocally to mind and body given the idiosyncratic nature of the spatial extension he posits.<sup>35</sup>

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33 For further discussion of Descartes’s account of God’s *concursus*, see ch. 3 of my **Descartes on Causation** (New York: Oxford University Press, 2008).

34 Interestingly, Descartes himself notes in the **Principles** that “it is easier for us to have an understanding of extended substance or thinking substance than it is for us to understand substance on its own, leaving out the fact that it thinks or is extended” (PP II.63, AT 8-1:31). What he did not recognize, however, is that this difficulty may be due in part to the fact that the substantiality of *res extensa* differs in some fundamental respects from the substantiality of *res cogitans*.

35 Spinoza, of course, would reject such a non-univocal understanding of substance, and insist that any substance, including extended substance, must be “single and complete” in a manner that precludes substantial divisibility; see **Ethics** Ip12d, G 2:55.



### 3. TEMPORAL EXTENSION AND MODAL PARTS

In the course of arguing in the Third Meditation that he could not exist if God did not, Descartes claims that since

the whole time of life can be divided into innumerable parts [*innumeras partes*], each single one of which depends in no way on the remaining, from the fact that I was shortly before, it does not follow that I must be now, unless some cause as it were creates me anew at this moment [*me quasi rursus creet ad hoc momentum*], that is conserves me. (AT 7:49)

We will return later to Descartes's conclusion that there must be some cause that conserves him at each moment he exists. What is most relevant for the moment is the view of "the nature of time" from which this conclusion is derived, and in particular the claim that time is divisible into "innumerable parts," each of which is independent of the others.

In order to understand this claim, we must start with Descartes's official account of time in the **Principles**. There he holds that when time is considered in general, apart from the duration of particular objects, it is just a "mode of thinking" (PP I.57, AT 8-1:26–27). As in the case of extension considered in general, so time considered in general is a mere abstraction. By the same token, just as extension considered specifically is identical to the extension of a corporeal substance, so time considered as existing in objects is identical to the duration of those objects, which is to be identified in turn with the enduring object. In technical terminology that he borrowed from the scholastics, Descartes expresses this as the point that duration is distinct only "in reason," and not really or modally, from the substance to which it is attributed. He takes this point to follow from the fact that we cannot distinctly understand an enduring substance apart from its duration, and also cannot so understand the duration, as it exists in the substance, apart from the substance itself (PP I.62, AT 8-1:30).<sup>36</sup>

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<sup>36</sup> For the claim in Suárez that there is merely a *distinctio rationis* between duration and the existing object, see his **Disputationes**, disp. L, §1, ¶5, 1:914. Geoffrey Gorham, in "Descartes on Time and Duration," *Early Science and Medicine* 12 (2007): 28–54, offers a similar account to the one provided here of the distinction in Descartes between time and duration. Gorham cites the work of other commentators who take Descartes to hold that duration as well as time is something that is merely ideal or mind-dependent. See, for instance, Clarence Bonnen and Daniel Flage, "Descartes: The Matter of Time," *International Studies in Philosophy* 32 (2000): 1–11.

So much for time and duration. What about their parts? If the parts are conceived in the same manner as Descartes conceives of the parts of spatial extension, then temporal extension must be composed of distinct substantial parts. However, such a conception leaves us with the strange result that all temporal substances are composed of distinct substantial time-slices. For when it is considered in objects, time is nothing other than a duration that is distinct only in reason from the enduring substance. And if the duration is composed of distinct substantial parts, the substance itself must be composed of distinct substantial parts over time, just as extended substance is composed of distinct substantial parts at any time.

There is reason to think that this result would be unacceptable for Descartes. In the passage from the Third Meditation concerning the nature of time, he considers his own temporal duration as a thinking thing. Yet we have seen Descartes's insistence in the Sixth Meditation that the mind is completely indivisible. His conclusion there that "it is one and the same mind that wills, that senses, that understands" (AT 7:86) seems to hold not only at any particular point in time, but also over time.

Nevertheless, one might object that whether Descartes likes it or not, his remarks in the Third Meditation commit him to the conclusion that different temporal parts of his mind constitutes distinct substances. For the suggestion in this text is that God can create each part on its own, separate from the other parts. Given the view in Descartes, which he borrowed from Suárez, that mutual separability is sufficient for a real distinction, it seems to follow that the different temporal parts of his mind are really distinct substances.<sup>37</sup>

We can respond to this line of objection by drawing on the claim in the **Conversation** that even though the mind is divisible with respect to its duration, still it is indivisible with respect to its nature. Thus the mind that exists at one time has the same indivisible nature that it has when it exists at another time. What allows for the substantial divisibility of body, however, is the fact that the distinct bodily parts have different natures. In the terms of the **Conversation** passage, body is extended and divisible with respect to its nature. Thus a bodily part individuated by a particular portion of specific spatial extension has a nature distinct from that of another bodily part that is individuated by a different portion of that extension. Whereas the distinction

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37 Thanks to Dan Garber for pressing me on this point.

between the parts of spatial extension requires that the parts have different substantial natures, then, the distinction between the parts of temporal extension allows for the persistence of an object with the same substantial nature.<sup>38</sup>

If the temporal duration of mind is not divisible into substantial parts, however, into what sort of parts can it be divided? We have noted that Descartes borrowed from Suárez the view that there are only three sorts of ontological distinctions, namely, real, modal and merely rational.<sup>39</sup> We have ruled out the claim that the temporal duration of the mind is subject to the sort of divisibility into really distinct substantial parts that derives from the nature of spatial extension. But a merely rational distinction would not yield temporal parts truly independent of each other given Descartes's view that we cannot distinctly understand as separate what is distinct only in this manner (*PP* I.62, AT 8-1:30). By default, then, the distinction among these parts must be a modal one.

Descartes indicates that a modal distinction holds between two modes of the same substance, since "we can know one mode without the other, and vice versa, but neither however without the same substance in which they inhere" (*PP* I.61, AT 8-1:29). My proposal, then, is that he takes the different parts of the duration of a substance to be modally distinct from each other. An immediate counterexample to this proposal may seem to be provided by Descartes's claim in the **Principles** that "in created things, that which never has in itself diverse modes, such as existence and duration in the thing existing and enduring, must be called not qualities or modes but attributes" (*PP* I.56, AT 8-1:26). However, we need to remember his position that thought and extension also are attributes that are not subject to modification *considered as such*. As he notes in an important correspondence with Arnauld (to which we will return):

as extension, which constitutes the nature of body, differs greatly from various shapes or modes of extension that it assumes, so thought, or thinking nature, in which I take the essence of the human mind to consist, is very different from this or that act of thinking ... It

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**38** There is the Spinozistic objection that the different parts of body have the same nature as *res extensa*, and so cannot constitute distinct substantial parts. However, the suggestion in Descartes is that whereas the nature of all bodies consists in extension, different bodily parts nonetheless are distinct ultimate subjects of bodily qualities, and so can be considered to have distinct substantial natures.

**39** But see the difference between their conceptions of the real distinction indicated in note 28.

depends on the mind itself whether it elicits this or that particular mode of thinking, not however that it is a thinking thing. (29 July 1648, AT 5:221)

In the similar way, Descartes could say that invariable duration differs greatly from the particular modes that it has at different moments. Just as Descartes can distinguish the continuing attributes of thought and extension from the varying modes that it assumes, so, it seems, he can distinguish the duration of thinking and extended substances from its modally distinct parts.

However, it might seem that a modal distinction does not provide the sort of difference between temporal parts that the account of time in the Third Meditation requires. After all, the fact that a mind can be modified by different thoughts at the same time cannot suffice to show that it has distinct parts.<sup>40</sup> So how could it follow from the fact that the duration of that mind can be modified in different ways that that duration has distinct parts?<sup>41</sup>

The answer is that the different portions of my duration count as distinct temporal parts simply in virtue of the fact that by their very nature they cannot be simultaneous. It is because they cannot occur at once that it is possible that I endure at one time without enduring at other times. This sort of distinction of parts does not apply to the case of different modes that can exist at the same time. Thus, it doesn't follow simply from the fact that a mind has different modes that it is divisible into modal parts. What is required further is that it has an extended duration composed of non-simultaneous portions. Such a duration has distinct modal parts insofar as endurance through one of the parts does not require endurance through the other parts.

To say that the duration of a substance is divisible, then, is just to say that its attribute of duration can take on different modes at different non-overlapping times. But this sort of divisibility does not preclude the substantial indivisibility of the thinking substance from which this attribute differs only "in reason." And even though extended substance is divisible into

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<sup>40</sup> In the **Conversation**, Descartes is reported as holding that he can have more than one thought at the same time, as when he simultaneously has the thought that he is talking and the thought that he is eating (AT 5:148).

<sup>41</sup> Thanks to Alison Simmons for suggesting this line of objection.

substantial parts, the divisibility of its duration does not introduce any additional division of its substance. As in the case of mind, so in the case of body there is only a modal distinction among the various parts of its duration.

Thus, I take the distinction in the **Conversation** between divisibility in duration and divisibility by nature to reflect the considered view in Descartes that different kinds of divisibility are involved in the cases of spatial and temporal extension. However, I alluded at the outset to difficulties concerning the account of duration attributed to Descartes in this text. These difficulties derive from the recorded claim that just as the duration of our indivisible mind is itself divisible, so it is with the duration of God: “we can divide his duration into infinite parts [*infinitas partes*], even though God himself is not divisible.” When Burman objected that divine eternity is “altogether and at once” (*simul et semel*), Descartes is said to have responded that God’s duration “is not altogether and at once insofar as he exists altogether, for since we can distinguish in him now parts after the creation of the world, why can we not also distinguish it before then, when this is the same duration?” (AT 5:148–49).

There is reason to question the reliability of this particular report given the indication in Descartes’s own writings that he accepted the traditional conclusion that the duration of God is “altogether and at once.”<sup>42</sup> Thus, he claims in the **Principles** that in the case of God there is “always the same and simple action by which he at once [*simul*] knows, wills and accomplishes everything” (PP I.23, AT 8-1:14). Moreover, shortly after his meeting with Burman, Descartes insists in correspondence that it involves “a contradiction to conceive of any duration intervening between the destruction of an earlier world and the creation of a new one,” and that “if we refer this duration to a succession in divine cognition or something similar, this would be an error of the intellect, not a true perception of anything” (*To More*, 15 Apr. 1649, AT 5:343).<sup>43</sup>

On my reading of his account of temporal duration, Descartes has good reason to reject the claims concerning divine duration that Burman attributes to him. For on that reading, the divisibility of the duration of our mind requires a diversity of modes in us. But Descartes makes

<sup>42</sup> Here I oppose Gorham’s conclusion that this passage from the *Conversation* reflects Descartes’s most considered position; see “Descartes on Time and Duration,” 47–49.

<sup>43</sup> See also Descartes’s claim in his 1648 correspondence with Arnauld, considered below, that the duration of our thought is not “*tota simul* like the duration of God” (*To Arnauld*, 4 July 1648, AT 5:193).

clear in the **Principles** that “we properly say that there are in God not modes or qualities but only attributes since no variation in him is intelligible” (*PP* I.26, AT 8-1:26). God simply cannot have the sort of modal diversity that would be required to conceive of his duration as divisible into modally distinct parts.

There is a more subtle difficulty, however, that concerns Burman’s attribution to Descartes of the claim that our duration is divisible into “infinite parts.” Descartes was notoriously reticent to apply the notion of infinity to the division of extension, preferring instead to speak of an “indefinite” divisibility that has no limits we can conceive (see, for instance, *PP* I.26–27, AT 8-1:14–15). Indeed, when discussing the divisibility of his life in the Third Meditation, he was careful to refer to a division into “innumerable,” as opposed to infinitely, many parts. God’s simplicity precludes the division of his duration into any distinct parts, much less an infinity of them. However, even in our case the most we can say, according to Descartes’s official position, is that we cannot conceive any limit to the divisibility of our duration.<sup>44</sup>

There remains some question concerning the justification within Descartes’s system for even this more cautious claim. In the case of spatial extension, the inconceivability of any limit to division follows fairly directly from his argument for the impossibility of atoms. The argument in the **Principles** appeals to the fact that any part of matter, no matter how small, must have some sort of extension that we can divide at least “in thought” (*PP* II.20, AT 8-1:51). What is less clear is why Descartes must reject the very conceivability of indivisible portions of temporal extension. Indeed, there is the claim in the literature, which Gueroult has developed with the

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<sup>44</sup> In order to illustrate the problematic nature of the view of infinity that Burman attributes to Descartes, Ariew emphasizes that Descartes’s reported comment on the Third Meditation that “the infinite is the same as the indefinite multiplied” (AT 5:154) conflicts with the insistence in this very text that an indefinite increase in perfection is distinct in kind from actually infinite perfection (AT 7:47; see Ariew, “The Infinite in Descartes’ Conversation,” 159–63). I agree with Ariew that this conflict prevents us from trusting that portion of the Burman report in the way in which other commentators have done. Nevertheless, it must also be said that the precise nature of the infinite/indefinite distinction is not entirely clear in Descartes’s own writings. For documentation of this point, see Margaret Wilson, “Can I Be the Cause of My Idea of the World? (Descartes on the Infinite and Indefinite),” in A. Rorty, ed., **Essays on Descartes’ Meditations** (Berkeley: University of California Press, 1986), 339–58. For evidence that Descartes did not always observe this distinction, see notes 52 and 53.

greatest care, that he actually understands this sort of extension to be a discontinuous collection of indivisible parts.<sup>45</sup> In particular, Gueroult argues that Descartes takes as primary “the point of view of creation and of the concrete,” from which time must be conceived as a “repetition of indivisible and discontinuous creative instants.”<sup>46</sup> In Gueroult’s view, then, the time that Descartes posits differs from spatial extension insofar as it is divisible ultimately into indivisible atemporal instants.

The debate in the literature over Gueroult’s interpretation has tended to emphasize the technical issue of whether Descartes took durationless instants to be boundaries of extended temporal parts rather than distinct parts of time.<sup>47</sup> There is even the view that the texts underdetermine a particular account of temporal instants.<sup>48</sup> I will address some points relevant to this debate toward the end of this section. For the moment, however, I propose to focus on a fresh set of considerations that derive from the intriguing suggestion in Spinoza that Descartes is committed to rejecting an atomistic conception of at least a particular sort of temporal extension. This suggestion is found in his 1663 summary of Descartes’s **Principles**, a text that was in fact the only one that Spinoza published under his own name. In the scholium to proposition 6 of the second part of this text, Spinoza responds to an argument, purportedly from Zeno, against

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45 The prominence of Gueroult’s conclusion in the earlier literature is reflected in Yvon Belavel’s remark that “it is common knowledge that for Descartes time is discontinuous” (*Leibniz critique de Descartes* [Paris: Gallimard, 1960], 149). There are earlier anticipations of Gueroult’s interpretation in the French literature; see, for instance, Jean Vigier, “Les idées du temps, de durée et d’éternité chez Descartes,” *Revue philosophique* 89 (1920): 196–233, 321–48, and Jean Wahl, **Du rôle de l’idée de l’instant dans la philosophie de Descartes** (Paris: Félix Alcan, 1920). For a defense of this conclusion in the recent English-language literature, see Ken Levy, “Is Descartes a Temporal Atomist?,” *British Journal for the History of Philosophy* 13 (2005): 627–74.

46 *Descartes selon l’ordre*, 1:275.

47 See the critical discussion of Gueroult in Jean-Marie Beyssade, **La philosophie première de Descartes** (Paris: Flammarion, 1979), ch. 3 and conclusion; and Richard Arthur, “Continuous Creation, Continuous Time: A Refutation of the Alleged Discontinuity of Cartesian Time,” *Journal of the History of Philosophy* 26 (1988), 373–75. See also Jean Laporte, **Le rationalisme de Descartes** (Paris: Presses Universitaires de France, 1950), 158–60.

48 See, for instance, J. E. K. Secada, “Descartes on Time and Causality,” *Philosophical Review* 99 (1990): 45–72; and Garber, **Descartes’ Metaphysical Physics**, 266–73.

the consistency of local motion.<sup>49</sup> The argument is that the concept of such motion is contradictory because in the case of the circular motion with the greatest speed, the points of the circle will remain in the same place, and thus be at rest. Spinoza observes that this argument assumes both that there can be a circular motion with the greatest speed, and that “time is composed of moments, just as others have conceived that quantity is composed of indivisible points.” The greatest speed would be simply that which occurs in an indivisible moment. However, Spinoza rejects the assumption that there can be a greatest speed on the grounds that “our intellect finds a contradiction in conceiving a motion so fast that there cannot be a faster one, no matter how short its course may be” (G 1:193). In defending this claim, he appeals to the case of the motion of a wheel ABC connected by a belt to another wheel DEF half its size (see Figure 1). No matter how fast ABC is moving, DEF must move twice as fast. Thus, there will be no case in which ABC moves with the greatest speed. And since for any wheel there could be a wheel half its size with motion that is correlated with the motion of the larger wheel, this argument will work for the motion of any wheel whatsoever (G 1:194).

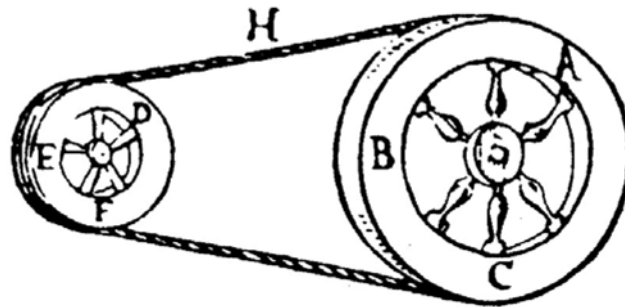


Figure 1

<sup>49</sup> This argument does not in fact correspond to any of Zeno’s arguments against motion reported in ancient sources; cf. the texts pertaining to Zeno’s arguments in G. S. Kirk, J. E. Raven, and M. Schofield, eds., *The Presocratic Philosophers* (Cambridge: Cambridge University Press, 1983, 2nd edn.), ch. IX). Perhaps the argument is one that Spinoza constructed on the basis of principles that he took to be central to Zeno’s actual arguments.



The argument against the assumption that time is composed of indivisible moments depends on the conception of time as “the measure of motion.”<sup>50</sup> Since any portion of the distance a body travels is divisible into parts, “the time by which that motion is measured will also be divisible, and the duration of that motion, *or* time, will be divisible, and this to infinity, q.e.d.” (G 1:194). Admittedly, so expressed the argument is not entirely in line with Descartes’s own official position. For instance, we have seen that Descartes was concerned to distinguish time, as a “mode of thinking,” from the duration that cannot be conceived apart from the enduring object.<sup>51</sup> Moreover, the claim that spatial and temporal extensions are divisible “to infinity” does not respect his official distinction of the infinite from the indefinite.<sup>52</sup> Nonetheless, it does seem that Descartes could accept the argument that insofar as the distance a body travels must be indefinitely divisible, so also must the duration of the motion of that body. For the duration can be mapped onto the distance, with portions of the distance corresponding to portions of the duration of the motion over that distance. As there is no smallest distance of the motion, so there will be no smallest part of the duration of that motion (see Figure 2).<sup>53</sup>

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50 Cf. Descartes’s claim in the **Principles** that time considered apart from duration is “called the measure of motion” and involves the comparison of the duration of an object with the “most regular motions that give rise to years and days” (PP I.57, AT 8-1:27). Aristotle of course had defined time as the “number of motion”; see *Physics*, bk. IV, ch. 11, 220<sup>a</sup>25, in **Complete Works**, 1:373.

51 Though Spinoza is well aware of this distinction; see his claim in the **Cogitata Metaphysica** appended to his summary of Descartes’s **Principles** that time “is not an affection of things, but only a mere mode of thinking, or, as we have already said, a being of reason” (G 1:244).

52 But see Descartes’s own claim in correspondence that “there is no quantity that is not divisible into an infinity [*une infinité*] of parts; and force, motion, percussion, etc., are species of quantity” (*To Mersenne*, 11 Mar. 1640, AT 3:36).

53 In his own response to Zeno’s Achilles paradox, Descartes insists on the fact that a finite quantity can be composed of infinitely (*sic*) many parts (*To Clerselier*, June/July 1646, AT 4:445–47; the argument is repeated in *To Mersenne*, 7 Sept. 1646, AT 4:499–500). Though he focuses here on the distance of the race, it seems that he could provide the same argument for the duration of the race in just the manner that Spinoza indicates.

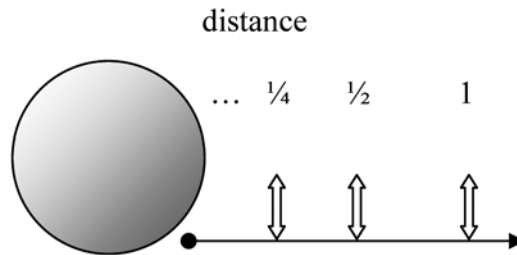


Figure 2

According to this argument, then, the indefinite divisibility of the duration of motion derives from the fact that this motion has an indefinitely divisible spatial extent. In the *Principles*, however, Descartes insists that “the duration that we understand to be involved in motion is no different from the duration involved in things that do not move” (*PP* I.57, AT 8-1:27). By “things that do not move,” he apparently intends to include bodies at rest, for he provides as an example of the point the fact that the duration of two bodies does not differ simply in virtue of the fact that one is moving more quickly than another.<sup>54</sup> Although this example does not concern explicitly the case of resting bodies, his view, presumably, is that just as a body has the same sort of duration whether its motion is swift or slow, so it has the same sort of duration whether it is in motion or at rest.

There remains the case, so prominent in the Third Meditation, of the duration of the mind. This case is addressed explicitly in the correspondence with Arnauld that I cited previously. In the letter that initiated the exchange, Arnauld objects to the claim in the Third Meditation that the duration of his mind is divisible into “innumerable many” parts. He appeals in particular to the view of “the philosophers and theologians” that “a permanent and maximally

<sup>54</sup> In a passage from his correspondence with Arnauld considered presently, Descartes indicates that he also intended to include immaterial minds, which not only are not moving but also are not subject to motion (or rest).

spiritual thing, such as the mind ... has a duration that is permanent and *tota simul* (which the duration of God certainly is), and consequently not possessing those parts, the earlier of which do not depend on the later." In this view, the simultaneous and indivisible duration of pure spirits must differ in nature from the divisible duration of motion, "which alone is time in a proper sense." Arnauld notes that given the assumption in the Third Meditation that there is no material world, and hence no real motion, the only duration that could be at issue in this text would be the permanent duration of pure spirits. But then, he concludes, those who accept the common view must deny that this duration is divisible into distinct parts (*Arnauld to Descartes*, 3 June 1648, AT 5:188–89).

Descartes responds that this line of objection "rests on the scholastic opinion ... with which I differ greatly."<sup>55</sup> He cites in particular his claim in the **Principles** that the duration of objects in motion is the same as the duration of objects that do not move. But he adds that "even if no bodies existed, it still could not be said that the duration of the human mind was *tota simul* like the duration of God" since "our thoughts display a successiveness that in no way can be admitted in divine thoughts" (*To Arnauld*, 4 July 1648, AT 5:193). When Arnauld questions in a subsequent letter "whence the before and after, which must be found in all succession, is to be selected in the successive duration of things not in motion" (*Arnauld to Descartes*, July 1648, AT 5:215), Descartes replies that "the before and after of any duration is known to me in no other way than by the before and after of the successive duration that I detect in my own thought, with which other things co-exist" (*To Arnauld*, 29 July 1648, AT 5:223).

Jean-Marie Beyssade has appealed to these remarks to Arnauld in support of the conclusion that Descartes takes reflection on our own thought to reveal that duration in general is indefinitely divisible.<sup>56</sup> But though the remarks seem to me to provide a solid textual basis for

55 For more on the scholastic opinion and its relation to Descartes's views, see Jean-Robert Armogathe, "Les sources scolastiques du temps cartésien: elements d'un debat," *Revue internationale de philosophie* 37 (1983): 326–36; and Jean-Luc Solère, "Descartes et les discussions médiévales sur le temps," in J. Biard and R. Rashed, eds., **Descartes et le moyen âge** (Paris: J. Vrin, 1997), 329–48. See also the discussion below of the scholastic account of the temporality of angelic thought in Thomas and Suárez.

56 **La philosophie première**, 134–42. But cf. Wahl's claim that for Descartes the recognition of the truth of the cogito proposition requires "an instantaneous certitude, a judgment, a reasoning gathered [ramassé] in an instant," one which "contains no succession in time" (*Du role de l'idée*, 54, 55).

Beysade's conclusion, we still require some argument for the claim that the duration of thought must have this sort of divisibility. As Arnauld noted, after all, divine thought can be entirely *tota simul*, and thus lack any sort of succession. And even if finite thought must involve some sort of succession, it is not immediately obvious that this successive duration must be composed of parts that themselves possess a divisible temporal extension.

Certainly Descartes is committed to holding that spatial extension is composed of parts that have a divisible spatial extension. Thus, he argues in correspondence that since body is just "a thing that length, breadth and extension," it cannot be composed of indivisible parts insofar as "an indivisible thing cannot have any length, breadth or depth" (*To Mersenne*, 28 Oct 1640, AT 3:213–14). In his view, the parts of spatial extension must either have such an extension, and so be divisible, or else have no spatial extension at all, and so be incapable of constituting something with spatial extent.<sup>57</sup> If this same argument can be applied to temporal extension, we would have the result that temporal extension cannot be composed of temporally indivisible parts. And indeed, some of Descartes's followers did attempt to apply the argument in this manner. For instance, we find the French Cartesian Pierre-Sylvain Régis (also Régis) claimed in a 1704 text that to compose temporal duration of indivisible instants "is the same thing as to compose a number of nullities."<sup>58</sup>

This argument against indivisible temporal instants assumes that in the case of temporal extension the choice is between that which has temporal extension and that which has no existence at all. However, Descartes's remarks to Arnauld indicate that the choice is rather between successive thought with distinct parts, on the one hand, and non-successive thought that is *tota simul*, on the other. Thus, to compose temporal extension of instants that are themselves non-successive would not necessarily, *pace* Régis, be to compose it of nullities. To be sure, if Descartes

57 Cf. the argument in Arnauld and Nicole's Cartesian text, **Logique ou l'Art de penser**, that if the parts that compose extension themselves are extended, "then they are divisible, and they have several parts," whereas if they do not have extension, "they therefore have zero extension, and hence it is impossible for them to form an extension" (pt. IV, ch. 2, in **Logic or the Art of Thinking**, trans. J. Buroker [Cambridge: Cambridge University Press, 1996], 232).

58 **Usage de la raison et de la foi**, ed. J.-R. Armogathe (Paris: Fayard, 1996), bk. I-2, ch. 17, 313; emphasis in original. Cf. the claim of Malebranche, cited in note 74, that the same argument against atomic parts of matter rules out atomic parts of time.

held that only an infinite mind could think *tota simul*, then given the exhaustive nature of the distinction between successive and simultaneous thought, he could say that any finite thought must be successive. But though Descartes perhaps has reason to deny that the thought of a finite mind could be entirely *tota simul*, it is not clear that he has reason to deny that such a mind could have individual thoughts that themselves involve no succession.

Indeed, we can look to the “scholastic opinion” with which Descartes takes issue in his correspondence with Arnauld for a possible conception of finite thought constituted of different individual thoughts that are *tota simul*. For instance, Thomas Aquinas claimed that though all embodied human thought is discursive, and thus involves temporal change, the cognition of disembodied angels involves an instantaneous intellectual grasp of principles and all of their consequences.<sup>59</sup> He further distinguished this instantaneous intellectual act from divine cognition in two ways. First, he noted that angelic cognition does not comprehend everything at once, and thus has a limited content,<sup>60</sup> and secondly, he suggested that an angelic intellect can have distinct instantaneous acts of cognition.<sup>61</sup> Both differences from divine cognition are reflected in Suárez’s later view that angelic cognition is composed of a series of non-discursive “angelic instants” (*instantia angelica*) that can be measured by a sort of “discrete time” (*tempus discretum*).<sup>62</sup>

59 See **Summa Theologiae**, pt. I, quest. 58, art. 3 (Ed. Blackfriars [New York: McGraw-Hill, 1964–81]). For more on medieval debates concerning the temporality of angelic thought, see Pasquale Porro, “Angelic Measures: *Aevum* and Discrete Time,” in P. Porro, ed., **The Medieval Concept of Time: The Scholastic Debate and Its Reception in Early Modern Philosophy** (Leiden: Brill, 2001), 131–59.

60 For Thomas’s view of divine cognition, see **Summa Theologiae**, pt. I, quest. 14, art. 7. Elsewhere Thomas indicates that whereas God understands everything through a single object, namely, his own essence, angelic intellects have a more limited understanding that depends on distinct intellectual “species”; see, for instance, *ibid.*, pt. I, quest. 55, art. 1, and quest. 87, art. 1.

61 This suggestion is found in his claim that since the act by which an angel merits beatitude could not exist simultaneously with the act of beatitude itself, “it is necessary to suppose a diversity of instants, in one of which the angel merited beatitude, and in another was beatified” (**Summa Theologiae**, pt. I, quest. 62, art. 7, ad 2).

62 **Disputationes**, disp. L, §7, ¶¶8–10, 2:947–48. For a consideration of Suárez’s view of discrete time, see my **Radical Cartesianism: The French Reception of Descartes** (New York: Cambridge University Press, 2002), 191–93, and Armogathe, “Les sources scolastiques.” Cf. Porro, “*Angelic Measures*.”

In the **Conversation with Burman**, Descartes is reported to have complained that the work of Thomas, the so-called “Angelic Doctor,” is nowhere “more pointless” (*ineptior*) than in his speculations concerning the distinctive nature of angels, since “the cognition of angels is virtually concealed from us when we do not draw it from our mind” (AT 5:157). On this point, there is a perfect match with his own writings. For in correspondence Descartes begs off providing a definitive response to the question of whether angels sense by claiming that “I never determine that for which I have no certain reason, and I never allow room for conjecture” (*To More*, Aug. 1649, AT 5:402). Yet the issue for us is not whether Thomas or Suárez can establish that disembodied intellects in fact possess non-successive thoughts, but whether it is even intelligible to suppose that there could be a finite thought that does not itself involve temporal succession, but is *tota simul*. Insofar as Descartes has not shown that any such thought is unintelligible, he cannot claim that the duration of any finite mind must be divisible without limit.<sup>63</sup>

There is still Descartes’s conclusion in the Third Meditation that he could not exist at any moment unless “some cause as it were creates” him at that moment, a cause that he ultimately identifies with God.<sup>64</sup> To be sure, Gueroult, among others, has understood this conclusion to commit Descartes to the view that there are discrete indivisible moments at which God re-creates any object he conserves.<sup>65</sup> But it is significant that Descartes claims in the Third Meditation only that something *quasi* creates him anew. Moreover, he appeals in the Fifth Replies to the

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**63** Secada has insisted that claims concerning the indefinite (or, as he puts it, infinite) divisibility of time commit Descartes only to the density of duration and not to its continuity, with the difference being that only the latter precludes indivisible parts (“**Descartes on Time**,” 65–66). If Descartes assumed that the duration of his mind could have indivisible parts, however, it is not clear why he would have insisted that this duration must be divisible into parts without any conceivable limit. Surely the indivisible parts would provide the limit to the divisibility, even if there were uncountably many of them.

**64** See Descartes admission in the First Replies that conservation can in no way come from any secondary cause, but “altogether from that in which there is such great power that as it conserves a thing external to itself, so much the more it conserves itself by its own power, and thus is *a se*” (AT 7:111). For Descartes, of course, only God has the supreme perfection required to derive existence from himself.

**65** Gueroult, **Descartes selon l’ordre**, 1:274–76. Following Henri Bergson, Gueroult labels this the “cinematographic” reading of Descartes’s account of conservation (*ibid.*, 274). See the similar interpretation in Etienne Gilson’s commentary on the **Discours de la Méthode** (Paris: J. Vrin, 1925), 340–42, and in Norman Kemp Smith’s *New Studies in the Philosophy of Descartes* (London: Macmillan, 1952), 202.

view, which “all metaphysicians admit as manifest,” that conservation is “the continued influx [*continuo influxi*] of the first cause” (AT 7:369), and in the **Discourse on the Method** he endorses the “opinion commonly accepted among the theologians” that “the act by which God now conserves [the world] is entirely the same [*toute la meme*] as that by which he has created it” (AT 6:45).<sup>66</sup> The indication here is that divine conservation consists not in continuous re-creation, but rather, as Suárez himself had emphasized previously, in a continuation of God’s initial act of creation.<sup>67</sup>

Given this understanding of conservation, however, Descartes may seem to have an argument for the conclusion that the temporal extension of any created entity is indefinitely divisible. As Richard Arthur has expressed it, the argument is that since “any thing has duration or exists only as long as it is being created or produced by God,” and since that creation or production is continuous, “then the duration of each created thing must likewise be continuous.”<sup>68</sup> Insofar as continuity requires indefinite divisibility, there appears to be reason for Descartes to claim that the duration of any created thought must be divisible into indefinitely many parts.

Descartes’s doctrine of conservation as continued creation certainly requires the continuing production of the object with its attribute of duration. What it does not clearly dictate, however, is that the modes of this attribute must themselves be composed of indefinitely many distinct modal parts. For God’s continued creation could result in a mind that has a succession of individually non-successive thoughts. Indeed, though Suárez was a prominent scholastic proponent of the doctrine of conservation as continued creation, we have seen that he insisted on the fact that angelic cognition occurs in a discrete rather than a continuous time. For Suárez, then, divine conservation of the angelic intellect consists in a continued production of something that is the subject of acts that are themselves discontinuous.

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66 In the Fifth Replies, Descartes illustrates his view of conservation by drawing on a passage from Thomas Aquinas’s **Summa Theologiae** that includes the conclusion that God conserves “by a continuation of that action whereby he gives being” (pt. I, qu. 104, art. 1, ad obj. 4). Suárez later defended the conclusion that the conservation of the being of the object differs only “in connotation” (*connotatione*) from the initial creation of that object *ex nihilo* (**Disputationes**, disp. XXI, §2, ¶3, 1:791).

67 For this view in Suárez, see note 66.

68 “Continuous Creation, Continuous Time,” 355–56.

Admittedly, Descartes's claim in the correspondence with Arnauld that our mental life does not involve anything akin to the *tota simul* of divine thought is introspectively quite plausible. Nor is it any less plausible to deny that our thought involves something akin to the angelic instants that Suárez posited. Gueroult himself allows that Descartes takes our duration to appear to be continuous when we consider it from "the point of view of created things, or in the abstract."<sup>69</sup> As we have seen, however, Gueroult also insists that what is primary for Descartes is the "point of view of creation and of the concrete," from which time is seen to be composed of indivisible instants. His main evidence that Descartes privileged the concrete view is drawn—ironically enough, given Spinoza's discussion in his summary of Descartes's **Principles**—from "the whole Cartesian conception of motion." In particular, Gueroult claims that Descartes embraced a "static" conception of motion that is reflected most clearly in his insistence that light is transmitted in an atemporal "instant."<sup>70</sup> Thus, whereas from our own psychological perspective time seems to be continuous, the case of motion is supposed to show that it is really discontinuous.

Gueroult's brief is not convincing. For one thing, Descartes himself emphasizes in the *Principles* that "the power of light consists not in some duration of motion, but rather in the pressure or preparation for motion" (*PP* III.64, AT 8-1:115), which pressure or preparation derives from the tendency of bodies in a vortex to move in a straight line.<sup>71</sup> Thus, the transmission of light can be instantaneous since it is not itself a motion but only a result of the "preparation for" motion. In the same passage, moreover, Descartes notes that bodies in perpetual motion have a particular configuration that "can endure only through the minimum point of time, which they call an instant, and therefore the continuation [*continuitatem*] of their motion is not interrupted" (AT 8-1:115). Here the instantaneous states, far from precluding continuous motion, are said to be required for it.<sup>72</sup>

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69 In what follows I draw on my discussion of Gueroult's position in "The Cartesian Refutation of Idealism," *British Journal for the History of Philosophy* 10 (2002): 513–40.

70 **Descartes selon l'ordre**, 1:194–95.

71 See *PP* III.55–60, AT 8-1:108–12.

72 Cf. Arthur's conclusion that Descartes needs to appeal to instantaneous states of a moving body "to give a consistent analysis of continuous motion and duration without the concepts of the calculus"



Even though Gueroult's argument that Descartes is committed by "the whole Cartesian conception of motion" to temporal discontinuity is untenable, I think it still must be conceded that the claim in the Third Meditation that our mental life is divisible into distinct parts does not itself preclude the position that these parts are themselves indivisible. What the claim strictly requires is only that the parts are independent in the sense that one can be actual without the others being so. But then the doctrine that our conservation is not distinct from our creation at each moment does not itself entail the conclusion that created thought must have an indefinitely divisible temporal duration.

So far, Descartes is left without a firm basis for this conclusion. It is difficult to see how he could construct an argument for the conclusion that is analogous to the argument that Spinoza offered on his behalf for the continuity of the duration of motion.<sup>73</sup> Admittedly, the fact that there is such a difficulty does not suffice to establish that he cannot take indefinitely divisible succession to be essential to created thought as such. By the same token, however, it is fair to request an argument for the relatively strong assumption that the duration of such thought requires not just succession, but a succession that happens to match the indefinitely divisible succession of the duration of motion. The more temporal extension is detached from spatial extension, the less bright the prospects for such an argument seem to be.<sup>74</sup>

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("Continuous Creation, Continuous Time," 373).

**73** Regis later explained the unlimited divisibility of the duration of our thought by appealing to the essential dependence on motion (*Usage*, Bk. I-2, ch. 16, 307). On this point Regis followed his fellow French Cartesian Robert Desgabets, who argued that the continuous nature of the duration of our thought derives from a "union with motion"; see Desgabets's *Supplément* to Descartes's *Meditations*, in *Dom Robert Desgabets: Œuvres philosophique inédites*, ed. J. Beaudé (Amsterdam: Quadratures, 1983–85), 5:190. However, both Desgabets and Regis were taking issue with the view in Descartes that consciousness reveals purely intellectual thoughts in us that have a temporal duration but have no relation to motion. For further discussion of this critique of Descartes in Desgabets and Regis, see my *Radical Cartesianism*, ch. 4.

**74** The fact that Descartes has less difficulty establishing the indefinite divisibility of duration in the case of material objects than he has in the case of minds seems to support the conclusion of Malebranche that the nature of body is better known to him than the nature of mind. This conclusion was itself a critique of Descartes's own official position in the Second Meditation that the nature of mind "is better known than body" (AT 7:23). For a discussion of Malebranche's position that is sympathetic to his conclusion, see my *Malebranche's Theory*

## 4. CONCLUSION

We began with the distinction, which the **Conversation with Burman** attributes to Descartes, between the divisibility of something that is extended by nature, on the one hand, and the divisibility of the duration of something that is indivisible by nature, on the other. I hope to have shown that this distinction can be explained in terms of the further distinction deriving from Descartes's own writings between the divisibility of *res extensa* into substantial parts and the divisibility of the temporal duration of *res cogitans*, as well as of *res extensa*, into modal parts. It is because Descartes holds the duration of the *res cogitans* to be only modally divisible that he can remain confident that thought itself is unextended and indivisible in its nature, that is to say, substantially indivisible.

We have discovered reasons to doubt the reliability of the report in the **Conversation** that Descartes takes God's duration as well as our own to be divisible into "an infinity of parts." It is possible to bring this claim into line with Descartes's own official views by substituting 'indefinitely many' for 'an infinity of' and by restricting the claim to created duration. But we do not thereby explain why any sort of created duration must be indefinitely divisible into parts. Spinoza proposes on Descartes's behalf an explanation in the case of the duration of motion by appealing to the connection to the spatial extent of the motion itself. As Beysade observes, however, Descartes himself emphasizes in his correspondence with Arnauld an understanding of duration that derives from "the before and after of the successive duration that I detect in my own thought" (AT 5:223). The problem is that the indefinite modal divisibility of the temporal extension of his thought simply is not evident for Descartes in the way in which the indefinite substantial divisibility of spatial extension is. Not that the indefinite substantial divisibility of spatial extension is entirely unproblematic for him; indeed, we have considered the Spinozistic argument from his own claims regarding the real distinction to the substantial indivisibility of this extension. But at least Descartes has a conception of spatial extension that supports his claim that this extension must be divisible into indefinitely many substantial parts. In contrast,

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**of the Soul: A Cartesian Interpretation** (New York: Oxford, 1996). Malebranche was unable to appeal to this consideration regarding duration in support of his critique of Descartes, however, given his own assumption that there can no more be a smallest part of duration than there can be a smallest part of matter; see **Recherche de la vérité**, pt. I, ch. 8, in **Œuvres complètes de Malebranche**, ed. A. Robinet (Paris: J. Vrin, 1958–84), 1:104.

his conception of thinking substance provides no obvious support for the conclusion that his thought must have a duration that is divisible into indefinitely many modal parts. Descartes had more reason than he apparently realized to insist on the distinction in the *Conversation* between the temporal extension of our thought and the spatial extension of what is divisible with respect to its very nature.<sup>75</sup>

#### RESUMO

Nesse artigo pretendo examinar a distinção atribuída a Descartes, em *Conversações com Burman*, entre, de um lado, a divisibilidade de algo que é por natureza extenso e, de outro, a divisibilidade da duração de algo que é por natureza indivisível. Pretendo mostrar que essa distinção pode ser explicada em termos de uma outra distinção que deriva dos escritos do próprio Descartes, entre a divisibilidade da res extensa em partes substanciais e a divisibilidade da duração temporal da res cogitans e da res extensa em partes modais.

**Palavras-chave:** Descartes, tempo, espaço, divisibilidade, partes substanciais, partes modais

#### ABSTRACT

In this article I wish to consider the distinction, which the *Conversation with Burman* attributes to Descartes, between the divisibility of something that is extended by nature, on the one hand, and the divisibility of the duration of something that is indivisible by nature, on the other. I intend to show that this distinction can be explained in terms of the further distinction deriving from Descartes's own writings between the divisibility of res extensa into substantial parts and the divisibility of the temporal duration of res cogitans, as well as of res extensa, into modal parts.

**Keywords:** Descartes, time, space, divisibility, substantial parts, modal parts

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