Mereological Nihilism:
Substance and Matter in Leibniz’s Metaphysics

by

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Abstract

Central to Leibniz’s philosophical system is his view that substances must have genuine unity, that they must be simple or indivisible. In this dissertation, I argue that Leibniz’s well-known view that substances must be simple, i.e. without parts, follows from his commitment to mereological nihilism—the view that nothing with a plurality of parts is truly one being. I begin by offering a detailed analysis of Leibniz’s view that matter or body is inherently plural. I argue that the reasons for this view have not been fully understood, and are rooted in Leibniz’s claim that matter is discrete. I then defend Leibniz’s commitment to the plurality of matter against what I call the “Spinozistic Challenge” according to which the entire physical world is a single substance, a view sometimes attributed to Descartes. This challenge alleges that since the physical world is a plenum, the parts of matter can’t exist without the entire physical world, and as such the physical world is really one thing, not many things. I argue that, for Leibniz, the sort of dependence involved here does not undermine the plurality of matter.

After establishing the reasons for Leibniz’s view that matter is inherently plural, I turn to Leibniz’s frequent talk of composite, corporeal substances. How can Leibniz account for such
substances given his views that matter is inherently plural and that no substance—no true
unity—has a plurality of parts? I first examine Leibniz’s view that composite substances have
bodies that are actually infinitely divided. It seems that this view conflicts with Leibniz’s explicit
rejection of infinite number. I defend the claim that Leibniz can accept infinite pluralities without
accepting infinite number. Finally, I analyze Leibniz’s attempt to reconcile the existence of
composite substances with his view that no substance has parts. Ultimately, I argue, this attempt
fails to offer a real account of the per se unity of composite substances, and this leads Leibniz to
a theory where only monads are genuine substances.
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Introduction

A Mereological Nihilist denies the existence of composite objects, i.e. objects composed of parts. One way to explain what the nihilist asserts, rather than what he denies, would be to say (and we would sound very Leibnizian already) that the only things that exist are simples, which can be arranged in various ways. Composite objects, the nihilist argues, are not entities in their own right, but merely arrangements of other entities, ultimately arrangements of simples. Leibniz is a mereological nihilist, though he would not, of course, express his view in these terms. One important thing to note is that unlike the contemporary nihilist, whose simples are material simples, the simples of Leibniz’s ontology are immaterial monads. This indicates a difference between Leibniz’s ontology and the ontology of the contemporary nihilist, but it does not indicate a difference in either the motivations for, or the essential commitments of their nihilism itself. The crucial difference is that Leibniz develops independent arguments against the coherence of material simples, while the contemporary nihilist is content to accept the putative simples of modern physics: fermions and bosons, or the like.

In this dissertation, I examine the motivations and main commitments of Leibniz’s Mereological Nihilism. It is well-established that Leibniz has this view about aggregates.

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1 In what follows I will often use “nihilist” and “nihilism” as shorthand for “mereological nihilist” and mereological
2 In my explanation of the claims of mereological nihilism, I am relying on Van Inwagen (1990), who characterizes nihilism without endorsing it, and Sider (2013), who endorses it. There are other philosophers often grouped among nihilists or quasi-nihilists (those who accepts nihilism about certain objects, e.g., tables and chairs, but not others, e.g., humans and animals) who do not think that nihilism entails simples. Trenton Merricks is one, though he calls his view “eliminativism” and it does not, in the first instance, concern mereological relations but causal redundancy. See Merricks (2001).
However, depending on where commentators fall regarding Leibniz’s account of corporeal substances, they will see his commitment to mereological nihilism as more or less thoroughgoing. In most, if not all cases, commentators have not appreciated the full depth and nature of Leibniz’s mereological nihilism or the crucial role it plays in motivating his mature theory of substance. I think that recognizing Leibniz’s mereological nihilism will do more than just tack on a contemporary designation to Leibniz’s view; it can help to elucidate some of the crucial reasons behind Leibniz’s development of a monadological metaphysics.

Mereological Nihilism

One slightly technical way to describe mereological nihilism is to say that according to a nihilist nothing is a (proper) part of anything. Thus, a nihilist denies that composition ever occurs. Composition, if meaningful, describes a relation between some things, call them the $x$s, and some other thing, call it $y$, such that the $x$s compose $y$. For example, we often describe houses as being composed of bricks (and wood and drywall, etc. but ignore this for now). If this is in fact an example of composition, then it obtains because of certain relations that hold among the bricks (the $x$s) such that they compose a house ($y$). Pinning down the precise nature of this relation is, however, rather difficult. The nihilist simply rejects it.

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3 Van Inwagen (1990), ch. 8.
4 Some philosophers want to understand composition as a kind-of identity relation. See, e.g., Lewis (1991). This requires that identity is able to be a many-one relation, which others deny. See, e.g., Yi (1999).
5 This is not to say that nihilism is motivated solely by the difficulty giving significance to the relation of composition.
Nihilism would clearly be risking absurdity if the nihilist had no way of accounting for our experience as of composite objects. For example, I frequently perceive and interact with objects like tables and chairs, birds and trees, which are composite objects if anything is. What does the nihilist’s denial of these objects amount to? The nihilist will deny that there is some single object answering to the designation “table” or “bird” or whatever. Rather, these are merely collections of objects arranged in certain ways. Thus, the bird is a collection of objects arranged bird-wise; the table a collection of objects arranged table-wise; and so on.6

This move guards against the absurdity of nihilism only if some entities exist in order to be arranged bird-wise. The nihilist, therefore, must accept the existence of some objects in order to avoid the conclusion that nothing exists. The most straightforward response is to assert the existence of simple material objects, i.e. material objects without parts. The objects that have a chance at meeting this condition, at least presently, are the subatomic particles of contemporary physics. So the ontology of the nihilist consists in nothing more than fermions (quarks and leptons) and bosons (gauge and higgs). This is a fairly sparse ontology. Though, by virtue of the different arrangements of these subatomic particles the nihilist is able to populate the world as if with the objects of common sense.

Mereological nihilism raises a very serious philosophical question: what reason is there for supposing that over and above a collection of, for example, bricks arranged house-wise there is also a house? Or more generally: why suppose that over and above a collection of objects there is also their composite? This, it seems to me, is the right sort of question to ask, if one is interested in talking about what there is. Such a question, furthermore, does not seem decidable

6 The terminology “bird-wise”, etc. is due to Van Inwagen (1990).
by appeal to any empirical evidence. And so the nihilist need not betray our experience of the world any more than the non-nihilist does. What the nihilist does do is point out a tacit inference made by every-day ontology and rejects it. The inference is that whenever we encounter a group of objects arranged in a certain way, these objects are parts out of which another entity, a whole, is composed. The general strategy by which this inference is blocked is by appealing to the lack of decisive reasons for making it at all.

What the contemporary nihilist is most concerned with, then, is to be cautious about when the conditions for the existence of objects have been met. When can we say that an object exists? When can we say that a collection of objects has come together in the right way so as to generate the existence of a new object?

Leibniz’s nihilism is expressed by his denial that anything with parts is a substance. Or, to put it in the terms Leibniz most often does, nothing with parts is an *unum per se*. For Leibniz, true unity is mind-independent unity. This is opposed to accidental unity—*unum per accidens*—which Leibniz attributes to aggregates, and which depends on a perceiving mind. To Arnauld, Leibniz writes, “I should be permitted to differentiate between entities through aggregation and substances, since the unity of these entities exists only in our mind, which bases itself upon the connexions or modes of genuine substances” (G II, 97; Ma 121). Aggregates have only a weak sort of unity, whereas by implication substances do not.

Leibniz’s talk of substances and aggregates directly tracks the nihilist’s distinction between objects and collections of objects, between material simples (in some cases) and the bird- or horse-wise arrangement of those simples. One crucial difference is that Leibniz rejects

7 Leibniz’s notion of part is essentially the current notion of proper part, i.e. a part that is not equal to the whole.
material simples, and thus he will have to defend against the entailment that *nothing exists* after a different fashion. Leibniz does what many (or all) contemporary nihilists are unwilling to do: he asserts the existence of immaterial, simple substances. Even though Leibniz’s substances are immaterial, they are akin to what contemporary nihilists would call objects: things that really exist.

The way Leibniz articulates his denial of the existence of material objects is much the same as the contemporary nihilist’s articulation: material objects are merely collections of more fundamental entities. Now, the aim of characterizing Leibniz as a mereological nihilist is, of course, to gain some insight into Leibniz’s views that would not otherwise be possible; not to anachronistically impose a set of views on Leibniz, but to use this set of views to illumine the relationship between Leibniz’s various commitments. I think that the payoff of this attempt will be that the connection between Leibniz’s mereological commitments and his theory of substance will become explicit.

**Methodology**

There is a sustained dispute among scholars of Leibniz (primarily those in North America) concerning the development of Leibniz’s philosophical system. Due primarily to Daniel Garber’s 1985 article “Leibniz and the Foundations of Physics: The Middle Years”, all scholars of Leibniz must now consider the extent to which Leibniz’s commitments change over time, and whether his later commitments are ultimately compatible with his earlier ones. This makes any definitive claims as to Leibniz’s commitments very complicated. At minimum, it
forces scholars of Leibniz to weigh very carefully the significance of any texts on which we rely. Evidence of Leibniz’s philosophical beliefs might have only a limited range of applicability; it might not indicate an enduring commitment of Leibniz’s thought.

There are, in my view, three schools of thought concerning how to understand Leibniz’s development. First, there is the camp associated with Garber’s original insight in 1985, call it the “Realist” camp. On this reading, Leibniz has a thoroughgoing Aristotelian account of substance in the Middle Years, roughly from the early 1680s until 1704. During this time the fundamental entities are corporeal substances, composites of form and matter. This gives way, some time around the turn of the century, to a monadological metaphysics, on which the fundamental entities are simple (i.e. partless), active substances—monads—which is thoroughly incompatible with Leibniz’s previous view. Second, there is the so-called “Idealist” camp. On this reading, Leibniz expresses an at-best- ambivalent commitment to corporeal substances in the Middle Years. If we continue Leibniz’s analysis of corporeal substances to its logical conclusion, the fundamental entities are not corporeal substances, but forms, which though not monads, prefigure monads very clearly. Thus, Leibniz’s later view is not incompatible with his earlier view; it is a natural development of it. Third, there is a growing camp that accepts something like Garber’s analysis of the Middle Years, though holds that Leibniz never abandons his commitment to corporeal substances—the transition to his mature period is not much of a

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8 See, e.g., Garber (1985). Garber may change his view slightly in Garber (2009) and move towards the Corporeal Substance camp. See also Hartz (2006), who argues that two contradictory theories are present in Leibniz’s work with no attempt to reconcile them. For this reason, Hartz calls Leibniz a “theory pluralist”.

transition at all. Call this the “Corporeal Substance” camp. It is difficult to boil the interpretations in this camp down to a single view, since there are various ways in which scholars articulate the enduring aspects of Leibniz’s view. What they all share, I believe, is the conviction that Leibniz’s views do not change in any significant way from middle to late, and that in some sense or other, Leibniz is committed to corporeal substances all the way through.

One major reason for the lack of agreement among scholars of Leibniz is that Leibniz never wrote a *magnum opus*, in which his philosophical system is laid out in a systematic way. His work is scattered and fragmented, contained in correspondences with other thinkers of the period, various articles in the learned journals of his time, on scraps of paper, and even on the equivalent of the backs of napkins. We are still waiting for much of this material to be edited, let alone translated, which is a monumental and ongoing undertaking by the Academy of Sciences in Berlin, Germany.

Another feature of Leibniz’s work that makes a definitive assessment difficult is that much of Leibniz’s writing is experimental, in the sense that not even Leibniz appears to know how it will end until he gets there; he is thinking “out loud” on paper. Leibniz is not afraid of pursuing dead ends, of trying out an idea until it is shown to be unviable, of changing his mind if it is warranted. In many of his texts, the tone is tentative, cautious, though not unsure of itself. Many of the obvious transitions within Leibniz’s views are the result of a perceived instability in a view he has been developing for some time. I believe this to be the case in at least two instances that will be treated in this dissertation. The first is Leibniz’s early attempt to account for the structure of matter. The second is Leibniz Middle-Years theory of corporeal substance.

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The interpreter’s task, in these instances, is to reconstruct, to the best of his ability, an ultimately unstable view. I believe that, in these two cases at least, there is a great deal to be learned by pushing harder on the stability of each view, by attempting to maintain its coherence to the last possible moment, before admitting that it ultimately does not work.

I do not propose to resolve, or even to weigh in on the vexing question of Leibniz’s philosophical development. However, some of the results I achieve are not irrelevant to this dispute. My view does not fit neatly into any one of these camps, but contains elements from each. As I will argue, Leibniz’s commitment to mereological nihilism prevents him from having a full-blown commitment to corporeal substances, even in the Middle Years. This is not for want of trying. Leibniz tries to maintain a version of corporeal substance compatible with mereological nihilism; I believe that this attempt ultimately fails. I will also provide texts in which Leibniz appears to presume the *per se* unity of a composite substance, though he does not provide an account. Thus, I believe that there is an important shift in Leibniz’s though from a commitment to composites, though undefended, to the move to simples. However, I believe that this change is driven by an underlying and enduring commitment to mereological nihilism, and thus is not the stark transition indicated by the Realist camp.

Leibniz ends up with a metaphysical theory very congenial to the label “mereological nihilism”. In the “Monadology”, Leibniz presents the view that the most fundamental entities in his ontology are active, simple (i.e. partless) substances, what he calls “monads”. In Leibniz’s words, a “composite is nothing more than a collection, or *aggregate*, of simples” (*Monadology* 1; AG 213). For the reasons indicated above, it is less clear that Leibniz is committed to mereological nihilism during the early stages of his philosophical career in light of his apparent commitment to the *per se* unity of composites. In Leibniz’s view, something with *per se* unity is
an entity in its own right, not a collection of more fundamental entities. Nevertheless, a corporeal substance appears to be complex, i.e. to consist of more than one part. If Leibniz commits himself to the existence of bona fide corporeal substances, this is a prima facie problem for the claim that he is a mereological nihilist, at least during this period of his thought. I suggest that Leibniz is not unaware of this tension, and that when he comes to scrutinize the relationship between these two commitments, mereological nihilism wins out, and he moves to a simple-substance theory. In the sense that I do not believe Leibniz’s commitment to corporeal substances to be a deep aspect of his Middle Years though, I ally with the Idealist camp. I believe that the only fundamental entities, for Leibniz, are forms, and that this is true in the Middle Years. Where I am sympathetic to the Corporeal Substance camp is that I agree that Leibniz wants also to have corporeal substances, and that these are present in some form or other from middle to late. The sense in which Leibniz endorses corporeal substances and whether and to what extent this changes is a complicated issue beyond the scope of this thesis. The result I do arrive at is that Leibniz has no account of the per se unity of composites, which, again, tilts me towards the Idealist camp.¹¹

Though I am not primarily concerned with the development of Leibniz’s philosophy, I cannot ignore the fact that features of this development are relevant to the assessment of Leibniz’s views. I do not propose to detail the various subtle shifts in Leibniz’s thought, or to provide transitional texts that display evidence of my rather global suggestion—this will need to be left for another occasion. I do, however, provide local evidence of specific view that Leibniz

¹¹ An important contribution to this debate is McDonough (2011), in which McDonough identifies the apparently conflicting aspects of Leibniz’s theory of substances as responses to different problems in the history of thought about substance.
held, and am convinced that for systematic reasons, the story I am telling makes the best sense of Leibniz’s seemingly labyrinthine development.

The Structure of This Project

The general structure of the dissertation is as follows. Chapters 1-3 engage Leibniz’s account of matter, the structure of matter in particular. They present the various components of Leibniz’s mereological nihilism and the ways in which it impacts his analysis of material objects, whether they are substances or not. Chapter 4 turns to Leibniz’s theory of substance and engages the questions whether Leibniz’s Middle Years theory of corporeal substance is compatible with his mereological nihilism, and whether there is any room for composite substances in Leibniz’s considered ontology. Here is a bit more detail about each chapter.

Chapter 1. Perhaps the most prominent line of thought in Leibniz against the existence of material substances is that such things lack the unity required to be substances. Leibniz believes that to be an entity is to be one thing. As he writes to Antoine Arnauld, “what is not truly one entity is not truly one entity either” (G II, 97; Ma 121). What this means is that for something to exist it must have unity, in particular it must be a unum per se. “Entities” with merely accidental unity are not really entities—they are merely aggregates and they do not really exist. Aggregates, for Leibniz, are the same kind of thing, ontologically speaking, as the table is for the contemporary nihilist: we perceive them as if they are objects, but they are merely collections of objects. This line of argument has received a great deal of attention from commentators.
I suggest, however, that the most fundamental aspect of this line of thought has been overlooked. Commentators have focussed on Leibniz’s answer to the question *when do many things compose one thing, which is an unum per se?* This is an important question, and Leibniz’s answer is startling: *in no case.* Leibniz denies that there is any mechanism by which to unify a collection of parts into a single thing with *per se* unity. This is, however, the second stage of Leibniz’s argument. The first stage, which has been overlooked, is Leibniz’s answer to the following, importantly different, question: *when is it the case that there are many things?* In other words, we need to figure out why Leibniz thinks that material objects are made up (inevitably) of a plurality of parts. Without this piece of the argument, we cannot be certain that the second stage of Leibniz’s argument applies to material objects at all.

I examine Leibniz’s view about what grounds the plurality of material objects. It turns out that Leibniz has a very rich and detailed, if not altogether satisfactory account of why material objects are pluralities in need of unity. I argue that, for Leibniz, material objects are pluralities because they are discrete, i.e. they consist of non-overlapping, independently moveable parts. In effect, I argue that we need to understand Leibniz’s notion of *actual part* in this way in order to see why a material object is a plurality.

*Chapter 2.* In Chapter Two, I develop Leibniz’s response to what I call the Spinozistic Challenge. This is a major challenge to the view, common in the 17th and 18th centuries, that matter has actual parts. It is an aspect of the commitment to actual parts that the parts of matter are independent from each other and from the wholes they make up. The Spinozistic Challenge alleges that, given the impossibility of a vacuum, the parts of matter depend (for their existence) on one another. As such, the plenum does not have actual parts, but is itself a single, material substance or entity. As Chapter one argues, maintaining the plurality of matter is crucial to
Leibniz’s familiar argument against material substance, and thus to Leibniz’s mereological nihilism. It is, therefore, extremely pressing that Leibniz can adequately respond to the Spinozistic Challenge.

I argue that Leibniz adequately responds to the Spinozistic Challenge. I develop his response by first looking at two seemingly plausible ways in which Leibniz might respond that turn out to be unviable. First, it is natural to think that Leibniz’s view that matter is actually infinitely divided would establish that matter has actual parts. However, I argue that though the actually infinite division of matter establishes the independence of the parts of matter in a certain sense—independence with respect to motion—it is not the sense relevant to the Spinozistic Challenge—independence with respect to existence. Second, Leibniz cannot appeal to the presence of forces or entelechies in matter, which serve to individuate the parts. Since Leibniz relies on the plurality of matter in order to infer the existence of forces or entelechies, it would be question begging to appeal to these entelechies to establish the plurality in the first place.

I then argue that Leibniz does have a viable response to the Spinozistic Challenge, which he formulates by distinguishing between different types of independence with respect to existence. In Leibniz’s view, the Spinozistic Challenge relies on what I call “Specific Dependence (with respect to existence)”—i.e. no two parts of matter can exist or be conceived without one another. However, the plenum entails only what I call “Generic Dependence (with respect to existence)”—i.e. no two parts of matter can exist or be conceived without one another or another part that takes up the same amount of space. Generic Dependence is compatible with the type of independence required to maintain that matter has actual parts. Furthermore, since Leibniz’s response does not rely on any features peculiar to his own metaphysical system, it can be employed by other philosophers who want to uphold the material plenum, while maintaining
that matter has actual parts and without accepting the Spinozistic conclusion that there is a single material substance or entity.

Chapter 3. In this chapter, I examine an important tension between Leibniz’s view that matter is discrete and actually infinitely divided and his view that there is no infinite number. How can matter be discrete all the way down without there being an infinite number of material parts? The general consistency of Leibniz’s view on this point has been widely accepted: if the actual infinite is understood syncategorematically, then it does not violate his rejection of infinite number. Briefly, there will be more parts than any given number, but no infinite number of parts. But there is a more specific concern that has not been satisfactorily resolved. It has been suggested that Leibniz’s argument against the world soul relies on his rejection of infinite number, and, as such, Leibniz cannot assert that any body has a soul without also accepting infinite number.

I argue that attempts to address this concern have misunderstood the character of Leibniz’s rejection of infinite number; it has been construed as a claim about unity when it is in fact a claim about wholeness, and there is an important difference between the two. I develop a distinction between “genuine” and “fictional” wholes, which allows us to make sense of Leibniz’s rejection of infinite number without appealing to unity. On this basis, I conclude that Leibniz’s syncategorematic account of the infinite can answer the more specific concern as well. One important consequence of my conclusion is that Leibniz’s account of a corporeal substance is not that of a body unified by a form. In fact, a corporeal substance does not consist of parts, in a specific sense of part. This view is explored further in the next chapter.

Chapter 4. This chapter tackles the question of whether and to what extent composite substances are possible within Leibniz’s ontology. I argue that given Leibniz’s explicit
commitment to mereological nihilism, certain prominent interpretations of his commitment to corporeal substances (particularly in the Middle Years) are simply untenable. In particular, I point out problems for what I call the *Unified Body Conception* of corporeal substance. On this conception, a corporeal substance is a composite of form and body, the body of which is an *unum per se* in virtue of its relation to a form. I then develop Leibniz’s attempt to construct an account of corporeal substance that is in keeping with his commitment to mereological nihilism, what I call the *Animated Substance Conception*. On this conception, the composite of soul and body is an *unum per se*, though the body itself is a mere aggregate. Though this conception respects Leibniz’s mereological nihilism and is more textually grounded than the alternative, it ultimately fails. Its failure is due to Leibniz’s inability to account for the *per se* unity of the soul-body composite. A composite, even if a composite of only two things, the body and the soul, cannot, on Leibniz’s view, be an *unum per se*. I conclude that Leibniz’s mereological nihilism is a crucial feature motivating his later theory of simple substance.
Chapter 1. The Discreteness of Matter

1.1 Introduction

When are there many things? What notion of thing must we rely on for there to be many things as opposed to many aspects or modes of a single thing? In what way must these things be distinguished, in order for there truly to be many, and not one? For Leibniz, more than most, these are pressing questions. Leibniz builds his theory of substance—at least its negative moment—around the failure of material objects to have the unity required to be true beings, i.e. substances. A substance, argues Leibniz, must be an unum per se; but a material object is (and always will be) merely an unum per accidens—its unity is accidental rather than substantial. Leibniz presents various well-known and even plausible arguments against the possibility that a material object is, or can become, an unum per se. These arguments all rely on the presumption that a body has a plurality of parts. But why should we think that a body has a plurality of parts? And even if this is granted, in what sense are these parts distinguished? In what sense are there many parts?

My contention is that providing a ground for the plurality of bodies, i.e. why any body is inherently a plurality, is a prerequisite of Leibniz’s more familiar arguments against the substantiality of bodies, at least the ones that rely on considerations of unity. However, the

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12 Leibniz uses a cluster of terms for “matter”. In French: masse, matière. In Latin: massa, masse. He distinguishes “matter” from “body”, though not always systematically. For “body”, Leibniz uses, in Latin, corpus, corps, and in French, corps, and corps organisés, matière seconde. There is some possibility of confusion here since material objects are, for Leibniz, second matter, which is an aggregate of substances. However, what I am interested in in this chapter is Leibniz’s analysis of material objects insofar as it is philosophically prior to his view that these objects are aggregates of substances.
provision of such a ground has been altogether neglected in the literature on this topic. The presentation of Leibniz’s arguments from unity has focussed on what we might call the second stage of his argument—the failure to confer per se unity onto any collection of parts. In what follows, I will reconstruct Leibniz’s account of the first stage, namely his account of why a body is a true plurality.

I should clarify my aim in a certain respect. I am not attempting to understand why Leibniz thinks that bodies are pluralities of substances, though this is a standard aspect of his mature metaphysics.\textsuperscript{13} As he writes to De Volder, “secondary matter, i.e. mass, is not a substance, but substances” (LDV 273). This is one answer to the question when are there many things as opposed to many aspects or modes of the same thing. My view, however, is that Leibniz gives an account of the plurality of bodies that is philosophically prior to his claim that bodies are pluralities of substances. Furthermore, the account I will develop functions as a premise in Leibniz’s argument for a plurality of substances underlying matter. I focus, therefore, on the parts of bodies and the sense in which they are distinct things, i.e. things sufficiently distinct to ground the plurality of bodies, though not substances.

Interpreters have noted that, for Leibniz, bodies have actual parts.\textsuperscript{14} This is an important component of his account of the plurality of bodies, but it does not go far enough. How does Leibniz understand the notion of actual part? Why does this understanding entail that a body is a true plurality? Without addressing these deeper questions, we cannot hope fully to understand Leibniz’s position.

\textsuperscript{13} For a recent discussion of Leibniz’s argument for a plurality of substances, see Arthur (2011).

\textsuperscript{14} See, e.g., Hartz & Cover (1988), Arthur (1998)
I will argue that, for Leibniz, the ground of the plurality of bodies is found in the discreteness of matter. I will spend some time developing Leibniz’s understanding of discreteness below, but for now we might say the following: something, call it \( x \), is discrete just in case the parts of \( x \) have no common boundaries. Put simply, the parts do not overlap. Discreteness grounds plurality, or so I will argue, because it entails a certain type of independence among the parts and between the parts and the whole.

1.2 Material Objects

I begin by presenting Leibniz’s familiar arguments against the unity of material objects, what I have called the *second stage* of his argument. My primary goal is to display the role played by Leibniz’s commitment to the view that matter has actual parts. In the next section, I will examine the notion of *actual part* more thoroughly and connect it to the discreteness of matter.

In the *New System* of 1695, Leibniz presents an autobiographical sketch, which culminates in his denial that material objects are substances. His argument is presented as follows:

> After much reflection, I perceived that it is impossible to find the *principles of true unity* in matter alone, or in what is only passive, since everything in it is only a collection or aggregation of parts to infinity. Now, a multitude can derive its reality only from *true unities*, which have some other origin and are considerably different from points, which

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15 When I use the term “body”, unless I indicate otherwise, I mean Cartesian body, i.e. extended stuff, and not Leibniz’s notion of “organic body”, which he also calls “second matter” and which is an aggregate of substances.
all agree cannot make up the *continuum*. Therefore, in order to find these *real entities* I was forced to have recourse to a formal atom, since a material thing cannot be both material and, at the same time, perfectly indivisible, that is, endowed with a true unity. (G IV, 478; AG 139)

I will focus on the claims about matter and material parts, leaving aside the conclusion of Leibniz’s argument, namely that he must “have recourse to a formal atom”.¹⁶ The relevant statements, for our purposes, are the following:

1. Everything in matter is only a collection or aggregation of parts to infinity, i.e. matter is a multitude.
2. No aggregation of parts is endowed with a true unity.

A little bit about statement (2). According to Leibniz, a substance must be an *unum per se*. Though I will not provide a detailed treatment of the notion of *unum per se* here, it is worth noting that this is a notion that Leibniz inherits from the scholastics. It forms one half of the common distinction between *unum per se* and *unum per accidens*. Leibniz’s challenge to anyone committed to the substantiality of material objects, is to account for how a material object, being a collection or aggregation of parts, can be an *unum per se*.

A helpful way to formulate the driving question of Leibniz’s challenge is as follows: *in what case does a collection of things, say the xs, compose some one thing, say the y, where the y is an...*

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¹⁶ I also leave aside the connection Leibniz draws between materiality and passivity. Of course, this connection is important for Leibniz, since another major line of argument against material substance draws on the fact that what is material cannot be active, though a substance must be. For discussion of this line of argument, see Garber (2009), chs. 3-4.
unum per se? More concisely, when do the xs compose the y, where the y is an unum per se?

Leibniz’s surprising answer, entailed by this passage, is in no case. Call the view indicated by this response “mereological nihilism”. Leibniz is a mereological nihilist.

Support for this view—i.e. that no aggregation of parts is a true unity—is not provided explicitly in the New System, but it is provided in Leibniz’s correspondence with Antoine Arnauld, in which Leibniz is working out many of his views about the connection between substance and unity. In this correspondence, Leibniz offers rather plausible arguments against any mechanical means of unifying a collection of material parts.\(^{17}\) He rules out the following options:

1. **Common Reference.** A single name referring to a multiplicity of parts.

2. **Spatial proximity.** The spatial distance between the parts, ranging from spatially disjoint to overlapping, or at least “touching”.

3. **Physical bonding.** Some means of “sticking” the parts together.

4. **Functional arrangement.** The organization of the parts towards some common end or function.

All four means are, in Leibniz’s view, unsatisfactory.\(^{18}\) His reasons are presented in two rather long passages.

\(^{17}\) By “mechanical means”, I mean to indicate magnitude, figure, motion, and position.

\(^{18}\) Peter van Inwagen’s discussion of possible accounts of composition mirrors Leibniz’s and arrives at a similar conclusion. Van Inwagen notes this, though he does not discuss Leibniz’s view in any detail (1990, 15).
First, in his 28 November/8 December 1686 letter, Leibniz develops his view by considering two diamonds, at first spatially distant from one another, but subsequently moved closer and eventually joined together on a single ring. Here the language of *substantial unity* is used to characterize an *unum per se*:

For imagine there were two stones, for example the diamond of the Grand Duke and that of the Great Mogul. We can use a single collective noun to do service for both of them, and say that they are a pair of diamonds, although they are a long way apart from one another; but we would not say that they constitute a substance. Now, matters of degree play no part here. If we gradually bring them closer together, therefore, and even bring them into contact, they will not be any more substantially united. And if when they were in contact we joined them to some other body which prevented them from separating—for example, if we mounted them in a single ring—the whole thing would make up only what is called *unum per accidens*. Because it is as if by accident that they are forced to move in unison. (G II, 76; WF 117-118)

This passage speaks to options (1)-(3) of our list above. Calling the two diamonds by a single name—e.g. the Duke-Mogul—does not give the pair substantial unity, neither does placing them in the same display case, nor does mounting them on the same ring. In each case the pair makes up only an *unum per accidens* “because it is as if by accident” that they bear each type of relation to one another.

Second, in his 30 April 1687 letter, Leibniz adds an important discussion of option (4):
No regularity [règle] will ever be found which can make a true substance out of several beings by aggregation. For example, if parts fitting together in the same plan are more suitable for composing a true substance than those touching, then all the officers of the Dutch East India Company will make up a real substance, far better than a heap of stones. But what is a common plan other than a resemblance, or an order of actions and passions that our mind notices in different things? (G II, 101-102; AG 89-90)

The passage considers the Dutch East India Company as an example of functional arrangement, which no one would regard as a substance. Leibniz rejects that such an arrangement can make a real substance because it is simply “a resemblance, or an order of actions and passions that our mind notices in different things”.19

As the second passage makes clear, Leibniz rejects any rule by which a multiplicity of parts can become an unum per se. In other words, he rejects all contenders for the necessary and sufficient conditions under which we can say the xs compose the y, where y is an unum per se; he rejects that there is a rule of composition for substances. Each rule he considers is susceptible to counterexamples, and Leibniz’s argument proceeds precisely by noting a counterexample in each case. If any of these options is made into a rule of composition, then it would follow that certain collections of parts are in fact substances, collections that we have independent reason for rejecting as substances. Leibniz rejects that there is any such rule of composition, and for this reason, he is a mereological nihilist.20

19 There is a growing tendency in Leibniz scholarship to think of functional (or teleological) arrangement as something special, with a different status than what I have labelled (1)-(3). However, in this passage, Leibniz explicitly claims that such an arrangement generates nothing more than accidental unity.

20 This is all very well-trodden ground in the literature. For example, see Garber (2009), ch. 3; Levey (2003), and Sleigh (1990), ch. 6.
Moving on to statement (1): why should we think that matter is a collection or aggregation of parts to infinity? Consider the example of the two diamonds presented above. Leibniz believes that the parts of matter are like these diamonds: they are distinguished from one another in such a way that they constitute *many things*: “…the continuum is not only infinitely divisible, but every part of matter is in fact divided into other parts as different one from another as the two diamonds mentioned above” (G II, 77; LA 95). Another way to say this: for Leibniz, matter has *actual parts*. Clearly, this view plays a central role in Leibniz’s argument against material substance. Although the example of the two diamonds indicates Leibniz’s commitment to the view that matter is a collection of parts, it does not provide any reason to think he is entitled to it. Why is every part of matter as different, one from another, as two diamonds? In what sense are they different? How does their difference ground the plurality of matter? I will suggest that the answer to these questions can be found in Leibniz’s view that matter is discrete.

### 1.3 Discreteness

I now turn to the presentation of Leibniz’s view that matter is discrete. I will establish the following two claims:

1. Leibniz’s understanding of “discrete quantity” is traditional, i.e. it follows the scholastic-Aristotelian distinction between continuous and discrete quantity, though Leibniz relocates matter within this scheme.

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21 Holden (2001) calls this commitment the “actual parts doctrine” and argues that it is a prominent, though not universal commitment in the 17th- & 18th-centuries (16). However, Holden has difficulty finding arguments for this view among period thinkers.
(2) Leibniz’s commitment to discreteness predates his rehabilitation of substantial forms and his monadology.

These two claims are historical. There is a philosophical payoff, however. In my view, Leibniz’s commitment to the discreteness of matter is the best way to understand his view that matter has actual parts, which, as we have seen, plays a central role in his argument against material substance. In the next section, therefore, I will argue that

(3) Leibniz’s view that matter is discrete is what grounds the plurality of matter. Discreteness is, therefore, what drives the first stage of Leibniz’s arguments against material substance.

I will briefly examine the traditional distinction between continuous and discrete quantity, and then turn to Leibniz’s thought about matter’s discreteness.

Leibniz’s thought about matter is closely connected to the Problem of the Continuum, which Leibniz characterizes as one of the two great Labyrinths of Human Reason. As readers of Leibniz, we encounter a veritable terminological labyrinth when attempting to understand his view. For this reason, the following table will prove helpful, though its complete significance will not be apparent at first.

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22 See Grua 326; AG 95.
The distinction between discrete and continuous quantity is Aristotelian in origin. It applies to wholes, which is to say, anything with parts or capable of having parts. The type of quantity that a given whole has is a function of the relations that hold between its parts. More specifically, it is a function of whether or not the parts share boundaries with one another. Aristotle presents the distinction as follows:

Quantity is either discrete or continuous....Instances of discrete quantities are number and speech; of continuous, lines, surfaces, solids, and, besides these, time and place. In the case of the parts of a number, there is no common boundary at which they join. For example: two fives make ten, but the two fives have no common boundary, but are separate; the parts three and seven also do not join at any boundary. Nor, to generalize, would it ever be possible in the case of number that there should be a common boundary among the parts; they are always separate. Number, therefore, is a discrete quantity.... A line, on the other hand, is a continuous quantity, for it is possible to find a common boundary at which its parts join. In the case of the line, this common boundary is the point; in the case of the plane, it is the line: for the parts of the plane have also a common boundary. Similarly you can find a common boundary in the case of the parts of a solid, namely either a line or a plane. *(Categories I.6)*
I will not linger too long over Aristotle’s text. However, let me make a few comments. What constitutes the distinction itself is a rather technical feature of the relation between the parts of a given whole.

Discrete Quantity. A quantity is discrete just in case its parts have no common boundary.

Continuous Quantity. A quantity is continuous just in case its parts have a common boundary.

One example of a continuous quantity is a line. A line is divided at a point, in which case the point now lies on both resulting line segments. The point is the common boundary of the two line segments, i.e. the parts. The examples of discrete quantity are slightly more confusing. A number, say, 10, is a discrete quantity because its parts, 5 and 5, have no common boundary. It is unclear in what sense a number can have a boundary and so it seems that numbers trivially fail to have a common boundary, since they have no boundary at all. But there is some intuitive sense to be found in this example, since we are content to think of the movement between two natural numbers, from 5 to 6, for example, as a discrete step, while the slide from 0 to 1 on the Real line is more naturally thought of as continuous. I will spend the remainder of this section investigating Leibniz’s notion of discrete quantity.

My contention is that Leibniz understands the distinction between continuous and discrete quantity in Aristotelian terms. In order to substantiate this, I will examine a representative sample of Leibniz’s thought about matter. Leibniz’s development could certainly be tracked more closely; however, what is important for present purposes is showing Leibniz’s
considered account of the discreteness of matter, and this can be illuminated by looking at some early texts, which contain the origins of his view.\(^{23}\)

Leibniz formulates his doctrine of the actually infinite division of matter at least partially in response to the Cartesian account of motion in the plenum.\(^{24}\) The driving consideration is that in order for motion in the plenum to be possible, without a void being created, matter needs to be divided into smaller and smaller parts. Descartes calls the division “indefinite”, and maintains that not all parts of matter are subject to actually indefinite division. Leibniz, however, believes that the scenario calls for something stronger: the actually infinite division of each and every part of matter.

Leibniz commits himself to this view—i.e. that matter in the plenum is actually infinitely divided—as early as 1675. What is particularly interesting is that even as late as the Monadology of 1714, Leibniz claims that the actual parts of matter are distinguished by their relative motions. This connection between motion and the presence of distinct parts is rather intuitive: if things have different motions, they are distinct. As I will argue, the discreteness of matter plays an important role in this story, since it is a requirement of the different motions of the parts of matter that those parts do not share boundaries with one another.

In a 1669 letter to Jacob Thomasius, Leibniz develops an account of the discreteness of matter that relies on an explicitly Aristotelian understanding of discreteness. In this letter, Leibniz is engaged with a rather grand reconciliation project, in which he is attempting to accommodate Aristotelian principles within the framework of the then-current mechanical

\(^{23}\) For an extremely detailed discussion of what we might call the “middle years” of Leibniz’s thought about continuity, see Levey (1999).

\(^{24}\) This is well documented in Arthur (1998) and (2011). See also Descartes’s *Principles* II, 33-35 (CSM I, 237-239) and Leibniz’s comments at LoC 25.
philosophy, a project which he later abandons. Though not without some confusion, many of the views that Leibniz expresses about matter in the course of this project are not abandoned, and an examination of them can provide insight into Leibniz’s later views.

The task of Leibniz’s reconciliation project is to explain Aristotle’s principles in mechanical terms, i.e. by appeal only to magnitude, figure, motion. Leibniz begins by characterizing the Aristotelian notion of primary matter, which he understands to be “mass itself, in which there is nothing but extension and antitypy or impenetrability” (G I, 17; L 95). He argues that primary matter “is a being prior to all form, since it has its own existence. For whatever is in some space exists, and this cannot be denied of mass itself, even if it entirely lacks motion and discontinuity” (G I, 18; L 95). Primary matter, then, is a motionless, continuous, unformed mass. Leibniz notes further that primary matter “being continuous…is not cut into parts and therefore does not actually have boundaries” (G I, 18; L 95). This notion of primary matter will later be rejected by Leibniz, since, as he will later argue, continuous mass, being purely passive, cannot exist. What is noteworthy is the connection Leibniz asserts between division and boundaries: he infers the absence of boundaries from the absence of parts.

Leibniz gives a more detailed account of the ways in which matter is cut into parts, and how these parts are bounded. One especially tricky part of his reconciliation project is the attempt to account for Aristotelian forms in merely mechanical terms. Leibniz’s approach to this problem is to reduce forms to figures or shapes. For there to be figures or shapes in matter, Leibniz thinks, matter must have boundaries. Leibniz writes,
… since figure is the boundary [terminus] of a body, a boundary is needed to introduce figure into bodies. But a discontinuity of parts is necessary in order to have a variety of boundaries arising in matter. For by the very fact that parts are discontinuous, each one will have separate boundaries [terminos separatos], since Aristotle defines the continuum as things whose limits are one. (G I, 18; L 95)

This passage contains important claims about the relationship between boundaries and discontinuity. Discontinuity, in particular discontinuity of parts, just is the presence of separate boundaries—terminos separatos. This is Aristotle’s understanding of discreteness, as Leibniz notes by contrasting it with how Aristotle defines continuity. Thus, for matter to have forms—i.e. shapes—it must be discrete in the Aristotelian sense.²⁶

The most important part of this early letter is Leibniz’s account of how discontinuity is introduced into primary matter.

... discontinuity can be introduced into the formerly continuous mass in two ways – first, in such a way that contiguity is at the same time destroyed, when the parts are so pulled apart from each other that a vacuum is left; or in such a way that contiguity remains. This happens when the parts are left together but moved in different directions. For example, two spheres, one included in the other, can be moved in different directions and yet remain contiguous, though they cease to be continuous. (G I, 18; L 96)

²⁶ Of course, Leibniz comes to argue that matter has no precise shape, which he uses against the existence of material substance. See G II, 119; Ma 152.
Both of the scenarios Leibniz describes involve the motion of the parts of the “formerly continuous mass”. The second scenario seems to present more of a challenge to the introduction of discontinuity. If the parts of matter cannot be “pulled apart from each other” but instead must be “left together” in what sense are they discontinuous? Leibniz's response is that even relative motion, in which the parts remain in contact, creates boundaries in matter, which are not shared even by adjacent parts. Leibniz makes this clear by noting that the spheres are contiguous, but not continuous.

There are some conceptual issues with Leibniz’s account in this passage; however, it nonetheless contains important claims about the connection between relative motion and discontinuity. One sphere nested inside another cannot move with respect to the larger sphere unless it does not share a boundary with it. If the boundary were shared, the inner sphere would, so to speak, pull the other sphere along with it. Relative motion, therefore, even motion without gaps between the moving objects, requires discontinuity. The confusion here has to do with the temporal ordering of events: first, there is a purely continuous mass; then, parts start to move relative to one another; then, boundaries are created. It is difficult to imagine how the motion of parts can be responsible for the multiplication of boundaries, since without those boundaries already present, the parts cannot move with respect to one another. Rather than thinking, with the Leibniz of 1669, that motion creates boundaries, it is better to think that the presence of boundaries is a necessary condition of relative motion: without separate boundaries, the mass could only move as one.

27 The reason that two scenarios are considered is that in 1669, Leibniz holds that “neither a vacuum nor a plenum is necessary; the nature of things can be explained in either way” (G I, 16; L 94). Of course, since Leibniz later subscribes to a plenum view, the second scenario is the more important one for present purposes.

28 For Aristotle, contiguity is defined as “consecutive and in contact” Physics 5 (227a6).
It makes sense that the account Leibniz gives in this letter cannot be imported into his later thought. The temporal ordering of the scenario requires that we begin with a purely continuous mass. Since the very notion of such a mass is something that Leibniz will later reject, it is not plausible to suppose that this account of introducing boundaries into matter will persist. As Leibniz will later argue, every part of matter is actually (and always) infinitely divided into parts with separate boundaries; there is no time at which matter is undivided. One interesting feature of Leibniz’s later view is that though the parts are actual, they are also vanishing: every time we try to identify some portion of matter as a part, it turns out that it is in fact a collection of other parts each with their own boundaries, and so on, and so on. Nevertheless, we see clearly that at this stage of his career, as he will later, Leibniz explicitly holds that actual parts have distinct boundaries.

To round off our discussion of the Thomasius letter, here is the conclusion of Leibniz’s reduction of forms to figures: “…division comes from motion, the bounding of parts comes from division, their figures come from this bounding, and form from figures: therefore, forms come from motion” (G I, 18; L 96). Crucial for present purposes are the following two statements:

1. Division comes from motion.

2. The bounding of parts comes from division.

Though, as I mentioned, there is some confusion in thinking that an undivided mass is divided by motion, Leibniz does consistently assert a connection between motion and division, which has
been well documented in the literature. However, Leibniz also consistently asserts a connection between division and the bounding of parts, though this second point has gone altogether unnoticed. In my view, the second point is crucial to understanding why matter is a true plurality.

Here we have the first bit of terminology indicating the distinction between continuity and discreteness:

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What is helpful about looking at this early text is that it gives an explanation as to how motion is connected to actual parts: motion requires boundaries. Furthermore, the boundaries required by motion cannot be shared by adjacent parts. The reason that Leibniz’s commitment to this view has not been noticed, I suggest, is that Leibniz’s terminology changes many times between his letter to Thomasius and his mature period. Instead of talking about bounded parts, Leibniz will later speak of “determinate parts”, “distinguished parts” or simply “actual parts”. The most important feature of these parts is not their connection to motion, but the fact that they are bounded, i.e. that they have separate boundaries. Relative motion is merely a sign that there are actual parts, rather than being itself constitutive of actual parts. This specific feature of Leibniz’s notion of actual parts—the boundedness—is what provides license for the conclusion that matter is a true plurality.

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Why does Leibniz’s terminology change? I suggest that Leibniz’s evolving terminology has to do with his distinction between ideal things and actual things, which is not present in the 1660s, but comes to be a pillar of Leibniz’s philosophy in his mature period. Leibniz will come to deny the existence of a purely continuous mass, like the primary matter postulated in the Thomasius letter, instead describing true continuity as ideal, rather than actual. I believe it is due to his attempt to illuminate this contrast—between ideal and actual—that he comes to use a cluster of terms for the notion of actual part: from “bounded” to “distinguished” to “determinate”. As we will see, many of the texts in which Leibniz asserts the discreteness of matter, and in which these terms appear, concern the distinction between ideal and actual.\(^{30}\)

Though I cannot provide an exhaustive treatment of Leibniz’s terminology here, let me present some of the instances. In a May 1702 study, given the title “On Body and Force, Against the Cartesians”, Leibniz uses the term “distinguished” to express the same notion as “bounded”. Having just defined extension as “a diffusion or repetition of a certain nature”, Leibniz continues,

... every repetition (or collection of things of the same kind) is either discrete, as, for example, in things that are counted \([\text{rebus numeratus}]\), where the parts of the aggregate are distinguished \([\text{discernuntur}]\), or continuous, where the parts are indeterminate \([\text{indeterminata}]\) and one can obtain parts in an infinite number of ways. (G IV, 394; AG 251)

\(^{30}\) I will not provide a detailed treatment of this distinction itself. For the importance of this distinction in Leibniz’s thought about the Problem of the Continuum, see, e.g., Arthur (Introduction to LoC) and Garber (2008).
The contrast drawn here is between parts that are distinguished—*discernuntur*—which pertain to discrete things, and parts that are indeterminate, which pertain to continuous things. In this text, no indication is given as to what it means for the parts of an aggregate to be distinguished, but with Leibniz's understanding of discrete quantity in mind, and the asserted connection to Aristotle’s example of discrete quantity (i.e. number), the most plausible way to understand this is that the parts are bounded, i.e. they have separate boundaries.

Another instance occurs in a letter to Princess Sophie, written on 31 October 1705. Here Leibniz develops further the connection between discreteness and the presence of *distinguished* parts in matter. In this case, Leibniz more explicitly highlights the determinateness of the divisions of matter, and connects this to the sense in which matter is discrete:

...we must say that space is not at all composed of points, nor time of instants, nor mathematical motion of moments, nor intensity of extreme degrees. That is, that matter, that the course of things, that finally all actual composites, is a discrete quantity, but space, time, mathematical motion, intensity or the continual increment one conceives in speed and in other quantities, and finally all that gives an estimate which reaches as far as possibilities, is a continuous quantity which is indeterminate in itself, or indifferent to the parts one might take in it, or which could actually be found in nature. The mass of bodies is actually divided in a determinate manner, and nothing in it is precisely continuous; but space, or the perfect continuity which is in the idea, represents nothing but an indeterminate possibility of dividing it however one likes. (Letter to Sophie, 31 October 1705; G VII, 562; trans. Hartz and Cover [1988], 500-01)
Here the contrast between continuous and discrete quantity is elaborated in the context of distinguishing between actual and ideal things (here, “possibilities”). The reason Leibniz gives for attributing discrete quantity to actual things is that “[t]he mass of bodies is actually divided in a determinate manner”. In contrast, an ideal thing, which has continuous quantity, “represents nothing but an indeterminate possibility of dividing it however one likes”. So the contrast is between determinate and indeterminate parts.

From these two passages, we can add two lines to our chart:

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A mere twenty days earlier, Leibniz formulated a similar distinction in a draft of a letter to De Volder. The material in this draft can help us to understand what Leibniz means by determinate and indeterminate parts. He writes,

...[i]n fact, matter is not continuous but discrete and actually divided to infinity, even if no assignable part of space is devoid of matter. Yet space, like time, is not something substantial, but something ideal, and consists in possibilities, i.e., the order of possible coexistent at any given time. And so, there are no divisions in it, except those that the mind makes... (to de Volder, 11 October 1705; G II, 278; LDV 478)
Insofar as space and time contain an element of mere possibility, the way in which they are divided is at the discretion of the mind conceiving of them. The contrast between indeterminate divisions and determinate division, then, has to do with the role of the mind, i.e. creating versus perceiving divisions. In an actual whole, the parts are given and the whole is constructed (i.e. united) by the mind; in an ideal whole, the whole is given and the parts are constructed (i.e. divided) by the mind.

These distinctions, crucially, arise from Leibniz’s attempt to avoid the Labyrinth of the Continuum. Put rather briefly: since the continuum is infinitely divisible, it ought to have infinitely many parts. But if the parts have any magnitude whatever, then when infinitely many of them are put together, the result is an infinite magnitude: this is problematic both because there are paradoxes pertaining to infinite magnitudes and because continua can come in finite packages (think of the real line between 0 and 1). If the parts have no magnitude, i.e. they are points, then (a) how can any magnitude arise from their sum, and (b) how do they ground the existence of anything, since parts are merely modes or extrema of things and not things in their own right?

The way in which Leibniz avoids this labyrinth is, essentially, by denying that a continuum is composed at all. Continua have merely potential parts. As such, they are not actual but merely ideal. Only actual things have actual parts. But as a result, they are not continuous. This view is summarized in an oft-cited passage written in a 1706 letter to De Volder:

...[I]n actual things there is nothing but a discrete quantity, namely the multitude of monads, i.e., simple substances, which in any sensible aggregate, i.e., any aggregate

31 For a detailed discussion of this aspect of Leibniz’s thought, see Arthur (Introduction to LoC).
corresponding to the phenomena, is, indeed, greater than any number however large. But continuous quantity is something ideal that pertains to possible things and to actual things in so far as they are possible things. Of course, the continuum involves indeterminate parts, but, nevertheless, nothing is indefinite in actual things. Indeed, any division that can be made in actual things has been made. Actual things are composed as a number is composed from unities, ideal things as a number is composed from fractions. There are actually parts in a real whole, but not in an ideal whole. (19. January 1706; G II 282-83; LDV 482; emphasis added)

By reading this passage in the context of the development of Leibniz’s view that matter is discrete, we can achieve a unique perspective on it. In actual things, the parts are given. They are really there, divided from one another with motions of their own. In ideal things, the whole is given. Any parts it may have are consequent to some mental act of division. This kind of division, naturally, does not introduce boundaries, except ones that are shared by adjacent parts. Thus, even subsequent to a mental act of division, the parts of a continuum are not of the same sort as the parts of an actual body: they are not bounded, i.e. they do not have separate boundaries.

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1.4 Discreteness and Plurality

Why does the discreteness of matter ground the plurality of bodies? In other words, why does understanding actual parts as bounded, distinguished, or determinate parts give us license to conclude that there are many parts? I will restrict the answers I give to why Leibniz thinks this to be so, ignoring for the most part whether this is an answer we might like to give as well. As we can see from the account of discreteness developed above, discrete parts enjoy a certain type of independence from each other and from the whole of which they are parts. Call this independence with respect to motion.

• Two things, a and b, are independent with respect to motion just in case a can move without b moving in the same way and vice versa.

As I suggested above, though not in these terms, a necessary condition of independence with respect to motion is a lack of shared boundaries. That is, unless a and b do not share a boundary, any motion of a will also be a motion of b, and vice versa. Thus, Leibniz’s notion of actual part might be filled in as part capable of moving independently. The relevance, then, of discreteness is that discreteness is the ground of independence with respect to motion—parts that share boundaries cannot move independently. Discreteness is, therefore, the ground of the presence of actual parts and, therefore, the ground of the plurality of bodies.

It is worth noting that though I have formulated the account of actual parts in modal terms, Leibniz is explicit that not only are the parts of matter capable of independent motion, they are all in fact moving independently. One common way of explicating the notion of actual
part is to say that actual parts are *ontologically prior* to the wholes of which they are parts. For Leibniz, however, this rather general notion of *actual part* is not specific enough to ground the plurality of bodies. It is possible for parts to be ontologically prior to the wholes of which they are parts and yet not be actually distinguished, but merely capable of being distinguished. In other words, the mere divisibility of matter is not sufficient to ground the plurality of bodies. What Leibniz needs is the actual division. This is because, in Leibniz’s view, undivided parts share boundaries with one another. And where there are shared boundaries, there is no independence with respect to motion.

What this shows is that there are at least two important senses of “actual part”:

1. Actual parts are independent with respect to motion.
2. Actual parts are independent with respect to existence.  

For Leibniz, different entities answer to each sense of “actual part”. Actual parts in the first sense are the material parts of material objects; they are actually divided from one another and have different motions. Actual parts in the second sense are substances, though these are not, strictly speaking, parts at all. Substances are the ontological ground of material objects, objects which, for Leibniz, are well-founded phenomena.

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32 For discussion of the notion of actual part in the early modern period, see Holden (2000), ch. 2.
33 I return to this notion of actual part in more detail in chapter two.
34 See LDV: “substantial unities are not parts, but the foundations of phenomena” (463).
1.5 Discreteness and Monads

Some commentators suggest that Leibniz’s view about discreteness is really a claim about the discreteness of monads. Some even suggest that matter, being a phenomenon (albeit well-founded), should be considered continuous quantity. I suggest, to the contrary, that Leibniz is making a claim about matter, not the underlying monads, and that this claim is important for Leibniz’s inference to a monadological metaphysics not a consequence of such a metaphysics.

The passage to De Volder we considered above has led other interpreters to conclude that the discrete quantity in actual things is grounded in the “multitude of monads”. There is clearly a temptation to think that Leibniz’s claim about discrete quantity is just a claim about monads, especially given the way it is presented in the letter to De Volter. Monads are discrete: they do not share boundaries with other monads; they are countable; they are distinguished prior to any mental act. However, the temptation to think that the type of discreteness that pertains to monads provides an explanation for the discreteness of matter needs to be resisted. It leads to a particular mistake about the order of Leibniz’s argument. There is, in my view, a sense in which matter is discrete, which drives the argument for substances.

On the interpretation I have been developing, Leibniz’s commitment to the discreteness of matter predates, by a long time, his introduction of monads. It even predates his rehabilitation of substantial forms. Further, the way in which Leibniz understands the discreteness of matter

35 See, for example, Hartz and Cover (1988), Crockett (1999), Arthur (2011).

36 See Hartz (2006), 65; Crockett (1999). Hartz makes this claim only about what he calls the “idealistic” interpretation of Leibniz.

remains the same throughout the rehabilitation of forms and the introduction of monads. It is, therefore, very implausible to think that matter’s discreteness is only a claim about the discreteness of monads. Of course, this historical point is in itself not a conclusive argument. However, what is conclusive is that, as I will show in a moment, matter’s discreteness plays an integral role in Leibniz’s arguments for monads.

To substantiate this claim, I will examine an early argument that Leibniz develops against the claim that body is a substance. In this argument, the actually infinite division of matter, which I have understood in terms of discreteness above, is used to argue for the need for something “beyond extension in bodies”. The fact that the discreteness of matter is what requires something crucially different from matter to act as its metaphysical ground, shows that monads, even if there is a sense in which they are discrete, do not provide an account of the discreteness of matter.

In a short 1678-79 study given the title “Nullum datur unum corpus”, Leibniz provides an argument for the conclusion indicated by its title, that there is no such thing as one body. This argument is written right around the time Leibniz decides that substantial forms need to be rehabilitated. He begins with the following premise:

(P1) “What has no greater unity than the logs in a bundle of firewood or logpile, or bricks placed on top of the other, is not properly one entity, but rather entities, although one name can be supposed for them all” (LoC 257).

Further, Leibniz supposes that given an entity such as a logpile, it will have no greater unity whether “the logs in the pile are arranged together in an orderly way or not, for this does not give them greater unity; likewise the individual parts may have some motion in common, or anything
else that can be predicated of them all” (LoC 257-59). This is of course reminiscent of Leibniz’s argument about the two diamonds in the letter to Arnauld we considered above. This premise, when combined with the following two, generates the desired conclusion:

(P2) “Nothing is intelligible in a body other than extension, i.e. what has parts beyond parts”

(P3) “Every body is actually divided into several parts, which are also bodies”

From this Leibniz infers that

(C) There is no such thing as one body. Or, put differently, a body is not a substance.

Leibniz believes that the inference even reaches one step further to the view that “either bodies are mere phenomena, and not real entities, or there is something other than extension in bodies” (LoC 259). The need for “something other than extension” will become the need for unities on which matter can be well-founded. Since any material parts, no matter how small, will be subject to the same analysis as their macroscopic counterparts, and hence will not be unities, the fundamental parts of material entities will have to be non-material. As a consequence, the fundamental parts will not strictly be parts at all, but eventually immaterial substances, which are not parts but fundamental constituents of matter.39

38 Leibniz will revise this slightly in his correspondence with Arnauld, where he acknowledged that a thing can have different degrees of accidental unity (unum per accidens) on the basis of its organization, though Leibniz does not develop an account of this. The sense in which the same commitment is displayed here is that organization alone cannot make something a true unity (unum per se).

39 See LDV, 463: “substantial unities are not parts, but the foundations of phenomena.”
Notice the role of Leibniz’s commitment to actual parts. It is a premise in the argument for the need for something other than extension, i.e. something immaterial.\textsuperscript{40} This is noted in the literature already.\textsuperscript{41} What is important for the present argument is that the plurality of matter asserted in P2 relies on matter’s discreteness: matter’s discreteness is prior to the foundation of matter in monads both historically and philosophically. In my view, then, the relevant discreteness of matter cannot follow from the fact that matter is well-founded on fundamental unities. Rather, matter’s discreteness is what calls for that foundation.

Moving ahead about 20 years, the same order of argumentation can be seen in Leibniz's letters to de Volder. Leibniz, trying to convince de Volder that there is no unity in an extended body writes, “I certainly had not believed that plurality could be denied in that which is extended, especially if we admit actual parts, as you do – unless we were to deny plurality even in a herd and an army, i.e., everywhere” (6. July 1699; LDV 330; emphasis added). As we know, the fact that matter is a plurality plays a central role in Leibniz’s arguments against material substance. Important here is the connection that between actual parts and discreteness. In this light, Leibniz is seen to be arguing that the discreteness of matter precludes its unity and therefore, he will continue, matter needs to be grounded on simple substances. Thus, the presence of actual parts, which I have linked to discreteness, is a premise in the argument for simple substances both in 1678 and in 1698.

This result straightens out our understanding of the relationship between matter’s discreteness and the monads that underlie matter. Monads are \textit{required} by matter, in order to

\textsuperscript{40}Interestingly, Leibniz thinks that the same conclusion can be inferred without the actually \textit{infinite} division of bodies as a premise (LoC 259). The thought is that even atoms joined by position or common motion will not thereby achieve the requisite unity. So Leibniz is really arguing that this conclusion cannot be avoided by a move to atomism, were it a coherent view. This does not affect the role of actual division in generating the need for fundamental parts.

\textsuperscript{41}See Arthur (Introduction to LoC) and (2011).
provide it with a foundation; matter can then be a *well-founded phenomena* as opposed to a mere appearance. The reason that matter requires monads is that matter is a plurality that cannot be unified; the monads are the *unities* that matter requires in order to exist. Thus, monads ground the existence of discrete matter—there must be monads for there to be discrete matter—but matter’s discreteness is not reducible to the discreteness of monads.

### 1.6 Conclusion

Leibniz’s view that matter is discrete is a view about the nature of the parts of matter. Matter has actual parts, which are actually infinitely divided one from another, and which all have motions of their own. Crucially, then, actual parts are *independent with respect to motion*. I have argued that a necessary condition of this independence is the discreteness of matter, i.e. the fact that the parts of matter have separate boundaries. Without separate boundaries, there would be no independence of motion. This is the basis for Leibniz’s view that matter is a true plurality. Without this part of the story, what I call the *first stage*, the more familiar parts of Leibniz’s argument against material objects from the absence of unity, what I call the *second stage*, remain ungrounded.

Further, these conclusions about discreteness tell us a great deal about how Leibniz understands the notion of *actual part*. An actual part is one that can move independently. Leibniz makes a further claim: an actual part is in fact moving independently. Leibniz believes that matter is discrete *all the way down*, so to speak: no matter how small a part we consider, it is actually divided into discrete parts. Nonetheless, these discrete parts do not have any “gaps” between them; there is no empty space. It is commonplace in the 17th century to believe that
wholes ontologically depend on their parts. Leibniz shares this commitment in some sense, though ultimately the things on which material wholes depend are not parts at all, but substances. It is the infinitely descending structure of matter that entails that if matter is to exist at all, it requires a foundation in something non-material. Thus Leibniz’s understanding of actual parts as discrete parts drives his argument—or one of his arguments—for forms and later monads.

But, as I indicated above, Leibniz’s way of understanding actual parts is rather strong. For other thinkers in the period, actual parts are understood as ontologically prior to the whole of which they are parts. Though Leibniz clearly agrees that, as he puts it, “[i]n actual things, simples are prior to aggregates” (LDB 141), this is not the sense of actual part relevant for grounding the plurality of bodies. The relevant sense is a part independent with respect to motion. Not everyone in the period agrees that the parts of matter are actually divided and have distinct motion, at least not all of them. Descartes, for example, claims that though some of matter is subject to what he calls “indefinite” division, it is simply not the case that all parts of matter are indefinitely divided: some parts remain undivided. Nevertheless, one could argue that even undivided bits of matter have actual parts in a different sense, parts that are ontologically prior to the whole even if not yet actually divided.

Not so for Leibniz. In his hands, the philosophical role of actual parts is subject to a division of labour: there are actual material parts, which are prior to the wholes they make up.

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42 This is what Holden (2000) calls the “actual parts doctrine” (16).
43 I purposely do not specify the sense of “exist” that applies to matter. For a recent argument that Leibniz’s view requires the reality of bodies, see Arthur (2011).
44 That is, it drives the arguments based on unity. Leibniz also argues for forms and monads in other ways; for example, he argues that extension alone cannot account for motion, since it lacks force. For discussion, see Garber (2009), chs. 4-5.
45 See Principles II, 35 (CSM I, 239).
(these wholes are the result of unification by some mind) in the sense that they are actually given and independent (with respect to motion). But every such part is subject to the same analysis: it is actually infinitely divided into discrete parts. Matter is, so to speak, discrete all the way down. Thus the parts of matter, though actual, are vanishing. In fact, given Leibniz’s argument that as a result of the actually infinite division of matter, no part of matter has a precise shape, the boundaries themselves are vanishing. Try to point to a boundary that individuates a certain part of matter and it disappears: it is divided into so many smaller boundaries, which are, in turn, also divided. The parts of matter cannot, therefore, be ontologically fundamental. This role is allocated to substances. Substances play the second role typically allocated to actual parts: they ground the existence of bodies. But, for Leibniz, they are not parts of bodies.

For Leibniz, the ground of plurality is the discreteness of matter. This is what calls for an ontological foundation in unity. This is the neglected first stage of Leibniz’s familiar arguments against material substance.
Chapter 2. The Spinozistic Challenge

2.1 Introduction

It is a common view in 17th & 18th century metaphysics that material wholes ontologically depend on their parts. That is, the parts of matter (in some way or other) provide a metaphysical ground for the existence of the whole. This view has been called the actual parts doctrine.46 There are different ways to spell out the nature of an actual part. As I discussed in the previous chapter, one important sense of actual part is being able to move independently. There is also another important sense of actual part: being able to exist independently.47 The first sense of actual part—independence with respect to motion—is especially important to Leibniz and Descartes. Both of these thinkers argue that matter must be physically divided into smaller and smaller parts in order for motion to be possible. For Descartes, the division is “indefinite” while for Leibniz, the division is “actually infinite”.48 The reason that indefinite or infinite division of matter is required for motion is that both thinkers claim that the physical world is a plenum, everywhere full of matter. Thus without indefinite or infinite division, matter would get stuck when attempting to move through corridors of certain dimensions (not unlike how many of us get stuck trying to navigate the 401 corridor near Toronto at rush hour).

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46 For detailed discussion, see Holden (2004), ch. 2.
47 There are complications surrounding whether motions is the cause of division or merely a sign of division. For discussion, see Chapter 1.
48 See Principles II 31-35 (CSM I, 239); LoC 25.
However, there is a major challenge to the view that matter has actual parts arising from the Cartesian commitment to the plenum, which relies on the second sense of actual part—
independent existence. The challenge is this: is it possible for the parts of matter to exist without one another? If the parts of matter cannot exist without one another, is the plenum really made up of a plurality of things? Or is it in fact just a single thing? I will call the problem indicated by these questions the “Spinozistic Challenge”, since it results in the conclusion that there is only one material entity or substance, and because a version of this challenge is developed by Spinoza against the Cartesians.\(^{49}\)

These questions are especially important to sort out for two reasons. First, there is a growing body of literature suggesting that Descartes in fact held that there is only a single, material substance. The Spinozistic Challenge contends that it is ultimately impossible both to hold a plenum view and to assert the existence of a plurality of material substances. So, if the Spinozistic Challenge cannot be answered, a one-material-substance view looks, philosophically, like a good option. Second, though Leibniz does not assert the existence of a plurality of material \textit{substances}, he does rely on this aspect of the Cartesian view to argue against the existence of material substance. That is, he relies on the \textit{plurality} of matter (whether the parts are substances or not) to argue that matter is a plurality incapable of being an \textit{unum per se}, and, therefore, not a substance. How can Leibniz maintain the plurality of matter in light of the dependence between the parts of matter that arises from the plenum?

The implications of the Spinozistic Challenge reach beyond Descartes and Leibniz. It is a challenge to any thinker who upholds both a commitment to many material substances (or even

\(^{49}\) See \textit{Ethics} 1p15s (C 423).
parts of matter, substances or no) and to the material plenum. I will argue that Leibniz provides a plausible and original solution to this problem. Importantly, his response does not presume any features of his own metaphysical system. As such, Leibniz is able to maintain the plurality of matter as a premise in his argument for his own theory of substance. Further, Leibniz’s solution can also be employed by others committed to the plenum but hesitant to accept any Spinozistic consequences of this commitment. I will also show that Descartes provides a version of Leibniz’s solution, though he is never presented with the Spinozistic Challenge directly. I will suggest that this gives us reason to resist a one-substance reading of Descartes, at least if such a view is developed in response to considerations such as those motivating the Spinozistic Challenge.

2.2 Real Distinction and the Parts of Matter

I will begin by presenting the Cartesian background required to formulate the Spinozistic Challenge, to which I turn in the following section. For Descartes, a vacuum is impossible because there is no difference between the extension which is “the nature of corporeal substance”, and the extension “normally attributed to space, however ‘empty’” (Principles 19; CSM I, 231). Furthermore, the fact that the extension of all bodies is the same precludes the possibility that some portion of matter could “occupy more space at one time than at another”, i.e. rarify, since “the quantity of the parts of matter does not depend on their heaviness or

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50 As I will discuss below, Descartes presents a view very similar to Leibniz’s, though Descartes was never presented with the Spinozistic Challenge directly. See Principles II, 18 (CSM I, 230-231). Also, I will not be discussing Spinoza’s view that the physical world is merely the single substance, i.e. God, seen under the attribute of extension. I am only interested in the conclusion that there is a single, material substance.
hardness, but solely on their extension, which is always the same for a given vessel” (*Principles* 19; CSM I, 231). The impossibility of a vacuum combined with the impossibility of rarefaction has significant consequences for the motion of bodies. Descartes continues:

I noted above that every place is full of bodies, and that the same portion of matter always takes up the same amount of space. It follows from this that each body can move only in a circle: a body entering a given place expels another, and the expelled body moves on and expels another, and so on, until the body at the end of the sequence enters the place left by the first body at the precise moment when the first body is leaving it. (CSM I, 238)

Motion, as described, is a rather delicate operation. And Descartes is aware that the account he has given only works straightforwardly in the case of motion in what he calls a “perfect circle”, or what might be described as nested, concentric circles. Though with some further explanation, motion in “an imperfect circle however irregular it may be” is intelligible also, “provided we notice how all the variations in the spaces can be compensated for by variations in speed” (CSM I, 238). This scenario might be described as motion through a corridor created by nested non-concentric circles, such that at its widest the corridor is, in Descartes’s example, four times as wide as it is at its narrowest. Descartes’s account is fairly simple. In order to account

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51 See Fig. 3 (CSM I, 238).

52 See Fig. 4 (CSM I, 238).
for motion in this scenario “without the need for any condensation or vacuum”, the speed of the motion at the widest part of the corridor must be four times greater than the speed of the motion at the narrowest part (CSM I, 238-9).

But even with this variation in speed, how can enough matter pass through the narrowest part of the corridor in order to fill the widest part of the corridor “at the precise moment when the first body is leaving it”? On Descartes’s account,

...what happens is an infinite, or indefinite, division of the various particles of matter.... For it is impossible for the matter which now fills space G [the widest space] successively to fill all the spaces between G and E [the narrowest space]...unless some part of that matter adjusts its shape to the innumerable different volumes of those spaces. And for this to come about, it is necessary that all its imaginable particles, which are in fact innumerable, should shift their relative positions to some tiny extent. This minute shifting of position is a true case of division. (CSM I, 239)

Here we have innumerable particles being truly divided from one another. Descartes is hesitant to call this a case of infinite division, using the term “indefinite” instead, since “...in the case of this motion we come upon something the truth of which our mind perceives, while at the same

53 For further discussion, see Garber (1992), 124ff.; Arthur (1998); Levey (1998).
time being unable to grasp exactly how it occurs” (CSM I, 239).  

Descartes exercises further caution with his qualification that “...I am not here speaking of the whole of this matter, but merely some part of it” (CSM I, 239). On his account, there are several parts of matter which remain undivided. So it is not the case that the entirety of matter is indefinitely divided, just the subtle matter that “fill[s] all the crevices that the former do not occupy” (CSM I, 239).

Leibniz sees a great deal of truth in Descartes' analysis. However, in typical fashion, he is eager to draw a different conclusion. The first text in which Leibniz's engages Descartes’s view is the Theoria Motus Abstracti of 1671. This text, dedicated to the French Academy, is part of a larger work, Hypothesis Physica Nova, which sets out a comprehensive, though somewhat unviable program for physics and cosmology. Here we find intimations of Leibniz's later view that matter is actually infinitely divided, though this version lacks much of the sophistication of his later position. Leibniz states his view in contrast to Descartes’s: “There are actually parts in a continuum...and these are actually infinite, for the indefinite of Descartes is not in the thing but in the thinker” (L 139). This remark is somewhat enigmatic, but it betrays a certain optimism in Leibniz that Descartes does not share. Leibniz sees Descartes’s analysis as committing him to the fact of an infinite division, whether he thinks we can understand how this occurs or not.

In fact, it seems that Descartes says as much. He claims both that “...in the case of this

54 Descartes has made his position on the infinite clear in Part One of the Principles: “[o]ur reason for using the term ‘indefinite’ rather than ‘infinite in these cases is, in the first place, so as to reserve the term ‘infinite’ for God alone” (CSM I, 202). The outcome of this caution is that “...in the case of anything in which, from some point of view, we are unable to discover a limit, we shall avoid asserting that it is infinite, and instead regard it as indefinite... [H]owever many parts a body is divided into, each of the parts can still be understood to be divisible and so we shall hold that quantity is indefinitely divisible” (CSM I, 202).

55 L 139; LoC 339.
motion we come upon something the truth of which our mind perceives...” and that “...we clearly perceive that it necessarily follows from what we know most evidently of the nature of matter...” (CSM I, 239). By Leibniz's lights, whether or not the mind can grasp how an infinite division occurs, that it follows from something clearly known is enough to commit him to the fact of such a division, the details of which will be worked out later. We also have a record of Leibniz's reading notes on Descartes' *Principles* from the Fall of 1675. The comments found here shed further light on how Leibniz sees actually infinite division as related to motion in the plenum. Though his comments are brief, they are helpful in developing an understanding of how Leibniz moves from the scenario that Descartes describes to his doctrine of actually infinite division. He writes,

[i]instead of 'infinite' he recommends that we use the term 'indefinite', i.e. that whose limits cannot be found by us, and that the term 'true infinity' be reserved for God alone. But contrary to this...matter is admitted to be really divided by motion into parts that are smaller than any assignable, and therefore actually infinite. (LoC 25)

While Descartes sees our inability to impose a limit on the divisions of matter as reason to withhold judgement concerning the infinitude of these divisions, Leibniz makes just the opposite inference. It is precisely this inability that warrants the conclusion that the division is actually infinite. We know, given the scenario under consideration, that at any alleged stopping point in the sequence of divisions matter will be *in fact* divided further in order to accommodate the need
for a certain amount of matter to pass through the given space. That for any degree of smallness we suppose there are in fact smaller parts is sufficient, in Leibniz's mind, to conclude that the parts are actually infinite. Thus, in his appraisal of Descartes, we find an early version of Leibniz's *syncategorematic* construal of actual division, which will only take its full shape once Leibniz has reached certain mathematical conclusions concerning the sums of infinite series about a year later.\(^56\)

Both Leibniz and Descartes are committed to the physical division of matter in order for motion in the plenum to be intelligible. So both are committed to the existence of actual parts in the sense described above: the parts of matter are independent with respect to motion.

There is another sense in which, for Descartes at any rate, the parts of matter are independent. Every part of matter is a substance in its own right. This is because it is really distinct from every other part.\(^57\) The notion of *being really distinct* has both a metaphysical and an epistemological aspect. It is a sign of a real distinction between A and B that A can be understood apart from B and vice versa. As Descartes puts it,

> [s]trictly speaking, a real distinction exists only between two or more substances; and we can perceive that two substances are really distinct simply from the fact that we can clearly and distinctly understand one apart from the other. (CSM I, 213)

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\(^{56}\) For discussion of Leibniz’s syncategorematic account of the actual infinite, see Arthur (1999); Levey (2000) and (2008).

\(^{57}\) Interpreters of Descartes have focused more on the real distinction between mind and body than on that between the parts of matter. For the former, see Hoffman (2009); for the latter, see Rozemond (2011).
This is the epistemological aspect. The metaphysical aspect is a little more difficult to pin down.

The real distinction has a modal aspect: if A can exist without B and vice versa, then A and B are really distinct. This appears to be because some people think that *substance* is a modal notion: a substance is what can exist without anything else.\(^{58}\) This way of understanding real distinction might gain support from passages like the following: “...things which God has the power to separate, or to keep in being separately, are really distinct” (CSM I, 213). This appears to say that the *possibility of separate existence* indicates a real distinction.\(^{59}\) If correct, this entails that every region of matter, however small, is a really distinct substance. Descartes claims that “…if there were any atoms, no matter how small we imagined them to be, they would necessarily have to be extended; and hence we could in our thought divide each of them into two or more smaller parts, and hence recognize their divisibility” (CSM I, 231). Regions of matter that are not in fact divided, or even ones that cannot be divided by physical means still consist of really distinct parts, since even if God decided to make a certain particle of matter indivisible by us, this would not make it indivisible *per se*:

...by making it indivisible by any of his creatures, God certainly could not thereby take away his own power of dividing it, since it is quite impossible for him to diminish his

\(^{58}\) Just how to understand the sense of real distinction is a disputed issue. For a non-modal reading, see, e.g. Rozemond (2011).

\(^{59}\) The term “indicates” falls short of “constitutes”, which has led some commentators to reject the modal reading of real distinction. See, e.g., Rozemond (2011).
own power.... Hence, strictly speaking, the particle will remain divisible, since it is divisible by its very nature. (CSM I, 231-32)

That God can divide a particle even if it is indivisible by any finite creature is sufficient to ground a real distinction between its parts. Since this argument can be run on any particle of matter whatsoever, there will be a real distinction between any two parts of matter. Thus, the conceivability of one putative part of matter in isolation from its neighbour entails the divisibility of these parts (at least by God), and hence their real distinction.

Descartes’s formulation of the real distinction between the parts of matter is given in terms of divisibility. This might appear to indicate that if any parts of matter are actually divided they will be *a fortiori* really distinct, since *being divided* seems clearly to entail *being divisible*. And it is a feature of Descartes’s view that motion in the plenum requires the actually indefinite division of matter, as we have seen.

Now consider the Spinozsitic Challenge. Though motion in the plenum requires the actual division of matter, the parts that result from that division may still fail to be really distinct, or so the Spinozistic Challenge contends. The is because, according to the Spinozistic Challenge, the parts of matter may fail to be able to exist without one another. There could be an important difference, then, between the divisibility of matter, and the ability of the parts to exist (or be conceived) without one another. One interesting feature of the Spinozistic Challenge is that it pulls these two things apart: matter might be divided into parts with independent motion, yet these parts might still depend on one another in a way that prevents their independent existence (or conception).
If the parts are not really distinct, then Descartes faces a challenge in accounting for how these parts can be substances in their own right. As such, he might be forced into the conclusion that there is only a single material substance: the entire plenum. Though Leibniz does not agree with Descartes that the parts of matter are substances in their own right, he does need the parts to be distinct enough that they entail the plurality of matter, without which Leibniz’s arguments from unity against material substance cannot get up and running. So there is indeed some common ground between Leibniz and Descartes on this point. And there is a common interest in meeting the Spinozistic Challenge.

2.3 The Spinozistic Challenge

I now turn to the Spinozistic Challenge itself. I will provide Spinoza’s formulation, though not linger too much on it. The version of the Spinozistic Challenge that Leibniz confronts, and on which I will focus, is developed by his long-time correspondent and professor at the University of Leiden, Burcher de Volder.

Spinoza presents the following argument, which he directs against the view that a corporeal substance has parts:

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60 Some current scholars of Descartes argue that he held a one-material-substance view. See Nelson and Smith (2010). For discussion, and an alternative view, see Rozemond (2011).
For if corporeal substance could be so divided that its parts were really distinct, why, then, could one part not be annihilated, the rest remaining connected with one another as before? And why must they all be so fitted together that there is no vacuum? Truly, of things which are really distinct from one another, one can be, and remain in its condition, without the other. Since, therefore, there is no vacuum in nature (a subject I discuss elsewhere), but all its parts must so concur that there is no vacuum, it follows also that they cannot be really distinguished, i.e., that corporeal substance, insofar as it is a substance, cannot be divided. (*Ethics* 1p15s; C 423)

What is it about a plenum that prevents the parts of matter from meeting Spinoza’s condition? It seems that a plenum is not just a plenum by accident. That is, it is not the case that the physical world is everywhere full of matter simply because, as it happens, no empty space has opened up. Built into the plenum view is the principle that *natura abhorret vacuum*—nature abhors a vacuum. Thus, there is some sense in which the parts of matter depend on one another. We can distinguish:

*Independence with respect to motion:* A and B are independent with respect to motion just in case A can move without B moving in the same way, and vice versa.

*Independence with respect to existence:* A and B are independent with respect to existence just in case the existence of A does not entail the existence of B, and vice versa.
Though the parts of matter can have independent motions (and achieve some sort of individuation in this way), Spinoza contends that the parts of matter are not independent with respect to existence: one part of matter cannot exist without the other parts existing. Independence with respect to motion requires actual parts in the sense described in chapter one. However, it is possible to have actual parts in this sense, yet fail to have actual parts in a second sense: the parts are not independent with respect to existence. Spinoza’s argument is that given such a dependence, the parts cannot be really distinguished.

The conclusion of this line of thought is that there cannot be a plurality of material substances, but only a single material substance. Of course, in Spinoza’s case, things are more complicated, since extension itself is not a substance in its own right, but merely one attribute of God. Nevertheless, the challenge is clear: given the plenum, the parts of matter are not really distinct because no part of matter can be annihilated. Thus, all the parts of matter depend on one another and none can exist without all the others. Thus, the parts are not really distinct, and so they are not substances. Since Descartes is never presented with this challenge directly, I will now develop Leibniz’s response, and after that I will connect this to some remarks by Descartes that indicate a similar line of thought.

Leibniz meets the Spinozistic Challenge in the context of his long-standing correspondence with Burcher de Volder, a professor at the University of Leiden and a well-known Cartesian

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61 In fact, Spinoza does not develop this argument in service of the conclusion that there is one unique material substance, but against the objection that God cannot be material since everything material is divisible and God cannot be divisible.
sympathizer. Leibniz has been attempting to convince De Volder that the notion of *extension* presupposes (among other things) *plurality*. Here is De Volder:

> I would not so readily say that they are many things, since, on the definition just given, there is a necessary and reciprocal connection between these things (if you wish to speak of them as things). For whatever plurality you suppose here, it is certain that part A of the extension cannot be conceived and cannot exist without part B, and vice versa. (LDV 408-9)

De Volder is suspicious of the claim that extension is in fact made up of many things. Notice his hesitation even to call the parts of extension “things”. The reason for this is that any given part, call it A, *cannot be conceived and cannot exist* without any other part, call it B. Based on the formulation in this passage, De Volder understands Descartes’s real distinction in modal terms. De Volder emphasizes that a real distinction holds only between different substances. For De Volder, a substance is both conceptually and metaphysically independent of all other things (except God). By De Volder’s lights, the fact that the parts of matter do not meet this criterion indicates that they are not really distinct from each other and thus not things, i.e. substances, in their own right.

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62 The background on this point is quite rich. Though I cannot develop it fully here, it is worth noting that Leibniz is attempting to convince De Volder that *extension* is not suited to be the essence of substance because it is a “relative and resolvable notion”; it is resolvable into “plurality, continuity, and coexistence” (LDV 312). Here I am picking up Leibniz’s defense of the claim that the notion of extension presupposes plurality. For discussion of the larger argument see Hartz (2006), 64. For a discussion of De Volder’s hesitation to accept it, see Lodge (1998) and (2001).
Why should we think, with De Volder, that the parts of matter are not independently conceivable and cannot exist apart? It seems that I can very well conceive some part in absence from some other part; I can, for example, conceive of my desk independently of my chair, or of my car independently of the moon, or even the left half of my laptop independently of the right half. It seems, furthermore, that each of these things can exist in isolation from the other.

The basis for De Volder’s assertion that there is a “necessary and reciprocal connection between these things” is that the physical world is a plenum. He clarifies,

For if there is indeed no empty space, as you submit, it will not be possible for one part, which anyone might imagine for themselves, to be conceived without the others. From this it seems to follow that there is no real distinction between them, but that the distinction between parts that is imagined in these things consists not so much in a difference of substance as in a difference of modes. (De Volder to Leibniz, 18 Feb 1699; LDV 305)

The “necessary and reciprocal connection”, then, indicates that one part of matter cannot exist or be conceived without the others. And the reason for this is that there can be no empty space, a view that Leibniz shares with De Volder and many other thinkers in the period.

De Volder, like Descartes and Leibniz, accepts that the physical world is a plenum. As we have seen above, motion in the plenum requires the actually indefinite (for Descartes) or infinite (for Leibniz) division of matter. Another way to put this point is to say that for Descartes
and Leibniz, the parts of matter are independent with respect to motion. However, the fact that there is no empty space, and cannot be, puts certain constraints on our ability truly to conceive one part of matter in isolation from another. Though we can, as De Volder says, *imagine for ourselves* one part of matter in isolation, we cannot truly conceive it without also conceiving of *the entire physical plenum*, given the impossibility of the void. This, in De Volder’s view, indicates that the parts of matter are not really distinct—are not independent with respect to existence—they are at best modally distinct. 63

As I argued in chapter 1, the parts of matter constitute a true plurality, in Leibniz’s view, because matter is discrete. That is, the parts of matter are actually divided and in relative motion. It seems as though the fact that matter has actual parts in this sense would entail that these parts are really distinct. In what way, then, is Leibniz susceptible to the Spinozistic Challenge, given that matter is discrete? In light of the distinction drawn above between the two types of independence, we can see how Leibniz might still be vulnerable. Though the discreteness involves the independence of the parts of matter with respect to motion, it does not involve independence with respect to existence. De Volder makes this point explicit. He argues that the Spinozistic Challenge can be leveled against Leibniz, even if it is ceded that matter has actual parts “moving around in different ways” (LDV 324). Though Leibniz attempts to argue that matter is heterogeneous, and thus *many*, because its parts are in constant relative motion, De Volder gives the following reply:

63 Though De Volder does not use the term “modally distinct”, this is how I read his phrase “difference in modes”. He does, however, explicitly use the phrase “real distinction”, so the reading is natural. For Leibniz, of course, extended things are not understood in the Cartesian way as distinct corporeal substances. This is all very complicated. I will leave it aside for now, as Leibniz does. He is concerned here with establishing a plurality of things and not with the question whether these things are substances or not.
You are of the opinion that, “that which is extended has no unity except in the abstract.”
But I think that I perceive it even if we suppose that that which is extended is divided into
parts that are moving around in different ways. As far as I am concerned, where one thing
can neither exist nor be conceived of without another, and vice versa, they are one thing.
Moreover, since it is inconsistent for a vacuum either to exist or be conceived of, it is
inconsistent, if we are willing to speak this way, for one part of matter to be conceived of
or to exist without all the rest. (De Volder to Leibniz, 13 May 1699; LDV 324)

The important part of this version of the challenge is that, according to De Volder, even if what
is extended is divided into parts that are moving around in different ways, this does not entail
that matter is a plurality. So De Volder is granting that the parts of matter are independent with
respect to motion, but denying that they are independent with respect to existence, in light of the
impossibility of a vacuum. De Volder insists that given our inability truly to conceive the parts of
matter without each other, there is no real distinction between them.

What are the consequences of the Spinozistic Challenge? For De Volder, the most
plausible conclusion to draw is that the physical plenum is a single substance, and the parts of
matter are merely modes. This is not a ridiculous view, and De Volder is not merely being
argumentative for its own sake. The one-material-thing view that De Volder develops here is an
interpretation of Descartes still present among scholars, and, mutatis mutandis, Spinoza held a
version of this view: he denied a plurality of material substances. In fact, given De Volder’s formulation of the Spinozistic Challenge, it might seem like a one-substance interpretation of Descartes will avoid many of Leibniz’s objections to the Cartesian theory of material substance, at least those that rely on considerations of unity. Perhaps a plurality of *modes* is not sufficient to generate the type of plurality Leibniz needs in order to run his familiar arguments that a plurality of material parts cannot have the unity required to be a substance. Given that so many of Leibniz’s arguments for his own theory of substance are developed in response to Descartes’s view, it is extremely pressing for Leibniz to provide some response to the Spinozistic Challenge.

### 2.4 Leibniz’s Response to the Spinozistic Challenge

It is natural to suppose that, for Leibniz, what grounds the distinction between any two parts of matter is the activity of the substances *in* that matter. Leibniz appears to take that road in a 1699 letter to De Volder: “nor do the parts of matter differ only modally if they are divided by souls and entelechies, which always persist” (3 April 1699; LDV 313). Entelechies are the primitive forces, from which the phenomena result. There is, therefore, a sense in which the plurality of parts found in any body is explained by the presence of entelechies, which is the ground for the existence of divided matter.

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64 As mentioned, though Spinoza does assert that there is a single unique material substance, he does not argue for this view in the passage that articulates the Spinozistic Challenge. See footnote 61.

65 The sense in which substances are *in* matter for Leibniz is a difficult issue. For a literal reading of *in* see Arthur (Introduction to LoC). For an alternative, see Adams (1994), 253-255.
Though this may express a clear commitment of Leibniz’s philosophical system, it does not, and cannot, play a legitimate dialectical role. Though Leibniz will certainly come to hold that “secondary matter, i.e., mass, is not a substance, but substances” (LDV 273), this is not the sense of plurality that is at stake in his engagement with the Spinozistic Challenge. Much like Leibniz’s attempt to explain why matter is a true plurality in terms of discrete quantity (see chapter 1), Leibniz’s commitment to the plurality of anything extended is a premise in his argument for simple, active substances that underlie matter, and so the existence of such substances cannot be relied on to establish that plurality. If Leibniz wants any of his arguments from unity to compel Cartesians (not to mention others), he needs to formulate them in a way that does not rely on his conclusion.

What Leibniz needs, then, is a way to maintain the plurality of extension that does not rely on the presence of entelechies in matter, a sense of the plurality of matter that is not a plurality of substances. In the letters that Leibniz actually sent to De Volder, he provides no explicit response to this challenge. However, in a draft that Leibniz did not send, he formulates a response that, in my view, successfully meets the Spinozistic Challenge. He meets the challenge, or so I will argue, by appealing to different notions of dependence with respect to existence. This is a further distinction, within the category of independence with respect to existence. (Recall that independence with respect to existence was contrasted with independence with respect to motion above.)

Leibniz develops a distinction between two types of independence with respect to existence, which I will formulate in terms of dependence. I will call these generic dependence and specific dependence. Leibniz presents this distinction in a drafted letter that he did not send to De Volder:
Generic Dependence: For every part of matter \( x \) and every part of matter \( y \), \( x \) different from \( y \), the existence or conception of \( x \) entails the existence or conception of \( y \), or some other part, call it \( z \), that occupies the space of \( y \).\(^{66}\)

Specific Dependence: For every part of matter \( x \) and every part of matter \( y \), \( x \) different from \( y \), the existence or conception of \( x \) entails the existence or conception of \( y \).\(^{67}\)

For example, if two things, say, my desk and my chair, generically depend on each other, God could annihilate my desk without issue, so long as he replaced my desk with another desk of the same size. Or, as Spinoza might put it, God could annihilate a body, so long as he replaced it at that very moment with one that occupies the same space. So, applying this to the case of matter in the plenum, the parts of matter generically depend on one another, but do not specifically depend on one another: the existence or conception of each part of matter requires some other part, but not any particular part, so long as the plenum is maintained.

Here is the passage in which Leibniz presents his view:

\(^{66}\) The term “generic dependence” is due to Simons (1987), 294-304. He develops a distinction between generic and rigid dependence that is very much like Leibniz’s. Thanks to Stephan Schmid for alerting me to this similarity.

\(^{67}\) See Rozemond (2011), 255 for an alternative formulation of this distinction in terms of separability rather than dependence.
You say that the unity of that which is extended is perceived even if it is divided into parts moving around in different ways, because given parts can neither exist nor be conceived without the others. And so you assume two things that I could not bring myself to concede: that one part of what is extended cannot exist or be conceived of without the others, and that things of this sort are one. From this you show that a vacuum is impossible. But your arguments did not accomplish this. *If it is conceded that a vacuum is impossible, it indeed follows that one part of matter cannot exist without some other part, but it does not follow at all that it cannot exist without this part or that part.*

Besides, unless I am mistaken, this argument proves too much. For according to it, things that are scattered here and there will also be one thing. As I understand unity, such things are more properly called many and do not constitute one thing except as an aggregate when they are grasped with one thought. (draft of 23. June 1699; LDV 334-35; emphasis added)

There are various features of this passage that are important:

1. Leibniz denies that one part of matter cannot exist or be conceived without the others, even in a plenum.
2. He denies that a failure of independent conceivability (in any sense) entails unity.
3. He claims that De Volder’s argument entails the existence of scattered objects.

Both the view that matter has actual parts (with respect to motion) and the rejection of a vacuum are held by Leibniz and De Volder, so no arguments are provided in support of these views. We
have already discussed what drives the commitment to actual parts. On the topic of the vacuum, it is worth noting that De Volder’s phrase, “it is inconsistent for a vacuum either to exist or be conceived” is emended slightly by Leibniz to the phrase “a vacuum is impossible”. In Leibniz’s view a vacuum is not inconceivable per se, though it is morally certain that God will not leave any space void of matter. It is therefore, to use Leibniz’s phrase, morally necessary that there is no vacuum, though it is not absolutely necessary.

So much for their agreement. The three features listed above are all points of disagreement. I will focus mainly on (1).

The distinction between generic and specific dependence allows Leibniz to observe a faulty inference within De Volder’s argument. According to De Volder (or, at least, in order for his argument to work), the parts of matter in the plenum specifically depend on one another. This means that the existence or conception of each part of matter does require the existence of another specific part, more than one in fact—it requires a plenum’s worth of specific parts.

What differentiates generic from specific dependence, as the terminology is meant to indicate, is the specificity of the dependence relation. If we think, following De Volder, that the plenum entails a specific dependence among the parts, there has to be something specific about each part that accounts for the dependence. Otherwise, there is no reason why the replacement of one part with a relevantly similar part should affect the condition of the plenum. This case seems difficult to make. It seems more natural to think that the

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68 He asserts this view in his 4th letter to Clarke: “to admit a vacuum in nature is ascribing to God a very imperfect work” (G VII, 378; AG 332).

69 Once again, the likely significance of “relatively similar” here is “takes up the same amount of space”.
dependence holding between the parts of matter arises in virtue of some kind of global
constraint on the physical world, namely that a vacuum may not be created. As such,
generic dependence will do. This appears to be Leibniz’s point: though the plenum (i.e. the
impossibility of a vacuum) does entail generic dependence, it does not entail specific
dependence.

What does this mean for the viability of the Spinozistic Challenge? Leibniz sees
generic dependence as compatible with a plurality of things, or to use Descartes’s terms,
with real distinction.\footnote{Though De Volder’s view does not emphasize the Cartesian terminology, De Volder uses the term “real
distinction” at least once. See LDV 305.} That is to say, two parts of matter can be really distinct, although
they generically depend on one another. Recall that De Volder understands Descartes’s
notion of real distinction in modal terms: A and B are really distinct just in case A can exist
without B, and vice versa. If A and B are two parts of matter in the plenum, and generically
depend on each other, then they will still meet this condition of real distinction. A can exist
without B, so long as B is replaced with some bit of matter sufficient to maintain the
plenum. The only way for A and B to fail the condition of real distinction is if they
specifically depend on each other. In this case, A could not exist without B, or vice versa.
Since the plenum entails only generic dependence between the parts of matter, it does not
undermine real distinction in the way that De Volder supposes. There is, therefore, no
reason to infer that the plenum is a single material substance, and the plurality of matter
established by the independence of the parts with respect to motion remains intact.

Let me say a little bit about items (2) and (3) above. In the long passage above,
Leibniz appears to assert that even if the parts of matter specifically depended on one
another, this would not entail that they formed a unity. His argument appears to proceed by
reduction ad absurdum. Leibniz claims that if specific dependence did in fact entail the unity of the parts that so depend, this would entail the unity of any scattered object, i.e. an object with spatially disjoint parts. As Leibniz writes,

Besides, unless I am mistaken, this argument proves too much. For according to it, things that are scattered here and there will also be one thing. As I understand unity, such things are more properly called many and do not constitute one thing except as an aggregate when they are grasped with one thought. (Draft of 23. June 1699; LDV 335-336)

It is worth asking: why would scattered parts be one thing? Leibniz seems to think that this is because, according to De Volder, no collection of (even randomly chosen) parts of matter in the plenum can exist or be conceived without each other. This follows from the fact that the existence or conception of one part entails the existence or conception of all others. As such, it entails the existence or conception of whatever specific others we consider, or so Leibniz’s argument goes. For example, Leibniz would argue, if the parts of matter are specifically dependent, my desk cannot exist or be conceived without the Eiffel Tower. And if specific dependence entails unity, then the aggregate of my desk + the Eiffel Tower will be one thing.

Though this would appear to be an unwelcome result—it certainly rails against Leibniz’s distinction between aggregates and substances—it is not clear that De Volder would have accepted Leibniz’s reasoning as it stands. Though there is a certain sense in which, in virtue of the fact that any collection of material parts is specifically dependent on one another, that collection is thereby one thing, the collection is not thereby one substance. Whatever collection
we consider as one thing will also specifically depend on, and thus be only modally distinct from, the rest of the plenum. The only thing that is really one substance, on De Volder’s view is the entire plenum itself.

Though perhaps not susceptible to Leibniz’s attempt at *reductio ad absurdum* by means of scattered objects, De Volder is still vulnerable to Leibniz’s distinction between types of dependence. It seems plausible to think, with Leibniz, that the plenum entails generic dependence, not specific dependence.

### 2.5 Conclusion

Interestingly, Descartes formulates a similar distinction to Leibniz’s distinction between generic and specific dependence, though not in response to the Spinozistic Challenge. Descartes considers the type of connection between a vessel and the extension within it:

Almost all of us fell into this error in our early childhood. Seeing no necessary connection between a vessel and the body contained in it, we reckoned there was nothing to stop God, at least, removing the body which filled the vessel, and preventing any other body from taking its place. But to correct this error we should consider that, *although there is no connection between a vessel and this or that particular body contained in it, there is a very strong and wholly necessary connection between the concave shape of the vessel and the extension, taken in its general sense*, which must be contained in the concave shape. (CSM I, 230; emphasis added)

Here, Descartes makes almost exactly the same point that Leibniz does in his draft to De Volder.
There is a connection between the shape of the vessel and the extension within it in a general sense, though there is no connection between this or that particular body contained within it. Though Descartes does not put this distinction to the same use as Leibniz does—namely, in responding to the Spinozistic Challenge—it appears from this passage that he is nonetheless committed to the same distinction, or at least one like it.71

Though not conclusive, Descartes’s espousal of something like the distinction between generic and specific dependence indicates that he would be unmoved by the Spinozistic Challenge. For Descartes, the parts of matter—in this case, a vessel and the bodies within it—are not reduced to merely a difference in modes by virtue of the existence of a plenum. They are, as ever, really distinct, and therefore substances in their own right. The text we already considered above give us reason to think that, for Descartes, every part of matter—physically divided or no—is really distinct from every other part. And as Descartes makes clear, “strictly speaking, a real distinction exists only between two or more substances” (CSM I, 213). It follows directly that, in Descartes’s view, there is a plurality of material substances. This gives some cause to resist the one-substance reading of Descartes, at least if it is developed by means of something like the Spinozistic Challenge.72

More broadly, the distinction between generic and specific dependence provides a way for any thinker committed both to the actual parts doctrine and to the plenum to resist the inference to a single material substance. In Leibniz’s case, it allows him to maintain the plurality of matter that drives his familiar arguments from unity against material substance.

71 For further discussion, see Rozemond (2011).
72 For an argument that appeals to the inability to individuate the parts of matter by motion in order to promote a one-material-substance reading of Descartes, see Nelson and Smith (2010). For the view that the individuation of parts is, for Descartes as for Ockham, brute, see Normore (2008).
Chapter 3. Infinite Numbers and Infinite Wholes

3.1 Introduction

Leibniz accepts the actual infinite in nature but rejects infinite number. Are his mathematical commitments out of step with his metaphysical ones? Call the problem indicated by this question the general concern. The general concern has received a great deal of attention from scholars. It is generally agreed that Leibniz has a viable response to it. His response, in outline, goes like this: there are infinitely many created substances, but no infinite number of them. What it means to say that there are infinitely many substances is simply that there are more than any number we specify, however large.

Despite the viability of Leibniz’s response to the general concern, in recent scholarship the following, more specific question has been raised: is Leibniz’s account of corporeal substance—a soul united to an infinitely divided body—inconsistent with his rejection of infinite number? Call the problem indicated by this question the specific concern. Some commentators think that Leibniz faces difficulty responding to the specific concern in light of how he seems to use the impossibility of infinite number to argue against the world soul.

The connection between the world soul and infinite number might seem obscure, but many commentators have read Leibniz as arguing in the following way:
1. If the world were to have a soul, then this would entail the existence of an infinite number (since the world is infinite).

2. Infinite number is impossible.

3. Therefore, the world does not (and cannot) have a soul.\textsuperscript{73}

If a world soul is ruled out on the grounds that infinite number is impossible, then it seems that the soul of any body will be ruled out in the same way, since in Leibniz’s view, all bodies are actually infinitely divided, and thus have infinitely many parts. As a result, it has been suggested that Leibniz’s widely accepted response to the general concern will not work as a response to the specific concern; if it did, then, by simply turning the reasoning around, it would also provide a rejoinder to Leibniz’s own argument against a world soul.

In what follows, I will argue, to the contrary, that Leibniz’s widely accepted solution to the general concern can be used to respond to the specific concern as well. To see this, I will first present Leibniz’s familiar response to the general concern (§1). I will then argue that formulating the specific concern in the context of Leibniz’s argument against the world soul has led to a misunderstanding of the character of Leibniz’s rejection of infinite number (§2). I then develop a more plausible way to understand Leibniz’s rejection of infinite number, on which the specific concern no longer has any force (§3). Finally, I suggest that, in light of these results, Leibniz’s argument against the world soul is not \textit{mathematical} in the way that other commentators have supposed.

\textsuperscript{73} For this reading of Leibniz’s argument see Carlin (1997), Brown (1998), (2001), and (2005), Arthur (1999) and (2001).
3.2 The General Concern

I will now present Leibniz’s response to what I have called the general concern, i.e. the worry that Leibniz’s acceptance of the actual infinite is straightforwardly incompatible with his rejection of infinite number.

Here is a passage in which Leibniz asserts his commitment to the actual infinite in nature:

I am so much in favour of the actual infinite [l’infini actuel], that, instead of admitting that nature abhors it, as is commonly said, I hold that nature affects it everywhere, in order the better to mark the perfections of its author. So I believe that there is no part of matter [il n’y a aucune partie de la matière] which is not, I do not say divisible, but actually divided [actuellement divisée]; and consequently the least particle [la moindre particelle] must be regarded as a world full of an infinity [une infinité] of creatures. (G I, 416)

The actual infinitude of nature is asserted both in terms of the actual division of the parts of matter and in terms of the fact that there is an infinity of creatures in every part of matter, no matter how small that part is. In light of this passage, one might expect Leibniz to be sympathetic to the notion of an infinite number. However, this is not the case. Leibniz believes he can demonstrate that the very notion of infinite number is contradictory.
A standard demonstration of the impossibility of infinite number, according to Leibniz, is known as Galileo’s Paradox. Here is the paradox, in Leibniz’s formulation:

The number of all squares is less than the number of all numbers, since there are some numbers which are non-square. On the other hand, the number of all squares is equal to the number of all numbers, which I show as follows: there is no number which does not have its own corresponding square, therefore the number of numbers is not greater than the number of squares; on the other hand, every square number has a number as its side: therefore the number of squares is not greater than the number of numbers. Therefore the number of all numbers (square and non-square) will be neither greater than nor less than, but equal to the number of all squares: the whole will be equal to the part, which is absurd. (A VI 4, 550-551; LoC 177)  

From the fact that the even numbers can be set up in a one-to-one correspondence with the natural numbers, Leibniz infers the following conclusion:

74 This argument is discussed at length in Arthur (1999), Brown (2000), and Arthur (2001). Arthur and Brown disagree about what one can legitimately conclude from Galileo’s Paradox. Arthur suggests that neither upholding (as Leibniz does) nor denying (as Cantor does) the part-whole axiom is strictly entailed by the argument itself, but that either option is a legitimate responses to the paradox (103). Brown suggests that Leibniz’s commitment to the part-whole axiom results in an equivocation within this argument, relying on different senses of “less than” (22). A similar argument has been made by Benardete (1964), 46-47, Levey (1998), 61, and finally, Van Atten (2009), 3.
I believe it to be the nature of certain notions that they are incapable of perfection and completion, and also of having a greatest of their kind. Number is such a thing. (A VI 4, 551; LoC 179)\textsuperscript{75}

According to Leibniz, the *number of all numbers* is equivalent to *the number of unities* and to *the greatest number*.\textsuperscript{76} These are the three terms Leibniz typically uses when discussing *infinite number* rather than the term “infinite number”. His remark in the *New Essays* that he can demonstrate that there is no infinite number should be understood as applying to infinite number in all three of these guises.\textsuperscript{77}

Leibniz himself makes very clear that the rejection of infinite number can be squared with his acceptance of the actual infinite. In the *New Essays*, he writes,

> [i]t is perfectly correct to say that there is an infinity of things, i.e. that there are always more of them than one can specify. But it is easy to demonstrate that there is no infinite number, nor any infinite line or other infinite quantity, if these are taken to be genuine

\textsuperscript{75} Leibniz begins the *Discourse on Metaphysics* with the same observation and contrasts the notions of power, knowledge and benevolence, which are capable of perfection, with that of number and motion, which are not (G IV, 427; AG 35). In the *Discourse* this is the basis for why these notions—power and knowledge—count among God’s perfections. For a discussion of the difference between notions that are capable of a greatest of their kind and notions that are not, see Nachtomy (2005).

\textsuperscript{76} See LoC: “But the number of all numbers is the same as the number of all unities (since a new unity added to the preceding ones always makes a new number), and the number of all unities is nothing other than the greatest number” (A VI 4, 552; LoC 179).

\textsuperscript{77} Of course, we need not agree with Leibniz that these three characterizations express equivalent notions. Georg Cantor, notably, does not, as demonstrated in his diagonal argument that the cardinality of the real numbers is uncountable, while that of the natural numbers and rational numbers is countable.
wholes. The Scholastics were taking that view, or should have been doing so, when they allowed a ‘syncategorematic’ infinite, as they called it, but not a ‘categorematic’ one. (NE 157)

So the question is now: how can these two claims be reconciled? In this passage, Leibniz relies on a distinction between the syncategorematic and the categorematic infinite. This distinction can be formulated as follows:

Syncategorematic versus Categorematic Infinite:

There is an infinity of xs just in case:

(1) Syncategorematic: for every finite number \( n \), there is some number \( k \) of xs such that \( k \) exceeds \( n \).

\textit{or}

(2) Categorematic: there is some number \( k \) of xs such that for every finite number \( n \), \( k \) exceeds \( n \).

Leibniz’s view is that an actual infinite is permitted in the sense of (1), but not (2). Furthermore, in his view, (1) does not commit him to an infinite number. It merely states that for any number

\footnote{This type of formulation is standard in the literature on this topic. See, for example, Arthur (2001), 107. This particular formulation is very close to one given in Levey (2008), 109-110.}
we choose, there is a bigger one out there. (2) on the other hand, does express a commitment to an infinite number, i.e. a number bigger than all others. The idea here is that, in Leibniz’s view, there is no *greatest number*. In fact, for Leibniz the implications are more general: there is no *greatest quantity*.

As I have mentioned, it is generally agreed that Leibniz’s view is plausible, and the view itself has been well documented in the literature on this topic. I would like to add the following two observations:

1) Leibniz’s syncategorematic understanding of the infinite tells us something about how he understands the relationship between quantity and the natural world: quantity is not a fundamental metaphysical feature of the world but a feature of our conceptions and descriptions of it. To turn Nicholas Rescher’s phrase: “‘the vast storehouse of nature…cannot be contained by any [quantitative] limit whatever’” (1955, 113).

2) Leibniz understands the infinite as essentially *unending* or *incomplete*, but also actual. This is crucially different from a merely potential infinite, which consists in the possibility or potential to go further, but which is, at any given stage, merely finite. The actual infinite *does* go further, *is already further* than any value one can specify. In this sense, Leibniz’s rejection of an infinite quantity is in keeping with his acceptance of the

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79 Quantity is defined by Leibniz as the number of homogeneous parts. For discussion, see Rescher (1955), 108ff.

actual infinite: if the infinite could be contained by some quantity, it would be in some way limited, and thus not actually infinite.

3.3 The Specific Concern

In this section I will formulate what I have called the specific concern. The specific concern alleges that Leibniz’s theory of corporeal substance is inconsistent with his rejection of infinite number. The reason for this has to do with how Leibniz argues against a world soul. Consider the following passage from Leibniz’s Theodicy:

[T]here is an infinite number of creatures in the smallest particle of matter, because of the actual division of the continuum to infinity. And infinity, that is to say, the accumulation of an infinite number of substances, is, properly speaking, not a whole [un tout] any more than the infinite number itself, whereof one cannot say whether it is even or uneven. That is just what serves to confute those who make of the world a God, or who think of God as the Soul of the world; for the world or the universe cannot be regarded as an animal or as a substance. (T §195; Carlin 1997, 6)

81 I will not discuss Leibniz’s argument against the world soul in any detail; I will focus on the way that the context of this argument has affected how scholars understand Leibniz’s rejection of infinite number. I believe, however, that Leibniz’s argument against the world soul does not rely on Leibniz’s rejection of infinite number in the way that most commentators suppose.
Carlin (1997) is the first to formulate the difficulty. In his view, Leibniz’s rejection of a world soul in this passage relies on the impossibility of infinite number. Carlin finds in this passage the claim that *if the world had a soul, then there would be an infinite number*. Given Leibniz’s rejection of infinite number, it is a short *modus tollens* inference to the impossibility of a world soul. Based on this reading of the passage, Carlin perceives a problem for Leibniz theory of substance. He asks the following question:

> But why, we may ask, should we admit that infinite aggregates, like the world, cannot admit of a soul? After all, organic bodies, according to Leibniz, just are an accumulation of infinitely many substances, yet he clearly thought they had souls (better: dominant monads). (Carlin, 7)

By parity of reasoning, if the world soul entails infinite number, then so does the soul of any organic body. The question is, then, is Leibniz’s account of corporeal substance inconsistent with his rejection of infinite number?

Most commentators think the answer to this question is “no”. I agree, but I think that nobody has provided the proper reason for this answer. Previous commentators all attempt to develop an account as to why a world soul entails infinite number, but the soul of an organic body does not. The usual approach is to distinguish the type of *unity* that an organic body has (or can have) from the type of *unity* that the world has (or can have). This, they suggest, accounts for why the world cannot have a soul—on pain of infinite number—but an organic body can have a
soul without entailing infinite number. In my view, however, all attempts to distinguish the body of a substance from the world in terms of unity fail.

I will examine two attempts:

(1) **The Carlin-Arthur Solution:** an organic body is an arithmetical unity, but the world is not.\(^\text{82}\)

(2) **Brown’s Solution:** an organic body is an *unum per se*, but the world is not.\(^\text{83}\)

Each view faces difficulties on its own terms. Arthur (2001), developing Carlin (1997)’s view, suggests that the world (in its entirety) differs from an organic body in that the latter has arithmetical unity, which the former lacks. In Arthur’s view, this means that an organic body is like an infinite *converging* numerical series—e.g. the Dichotomy series: \(\frac{1}{2} + \frac{1}{4} + \ldots\)—while the world is like an infinite *diverging* numerical series—e.g. \(1 + 2 + \ldots\). What Arthur is attempting to capture here is rather intuitive: while an organic body has a merely finite magnitude (like the sum of a converging series), the world has an infinite magnitude (like the sum of a diverging series).\(^\text{84}\)

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\(^{82}\) Here is Arthur: “I claim that for Leibniz a body is a whole in distributive mode, although, unlike the universe, its parts can sum to an arithmetical unity….Thus a converging infinite series can be regarded as a whole, since it (more accurately, the sequence of its partial sums) is limited by a finite number. But a diverging series cannot, since it is not limited by any finite number” (Arthur 2001, 110-112).

\(^{83}\) Here is Brown: “Leibniz’s argument against a world soul is precisely the argument that…the world does not possess a soul because it is not one per se” (Brown 2005, 454).

\(^{84}\) Carlin also explicitly links the ability to have a soul with being an arithmetical unity (1997, 12).
Intuitive though it may be, I do not think that the Carlin-Arthur solution is sustained by Leibniz’s texts. The text that Arthur and Carlin rely on, in order to formulate the notion of *arithmetical unity* is the following:

A fraction of an animal, or a half-animal, therefore, is not one being per se, since this can be understood only of the body of the animal, which is not one being per se but an *aggregate*, and has an *arithmetical unity* and not a *metaphysical unity*. But just as matter itself, if it lacks an adequate entelechy, does not make one being, so neither does a part of it. Nor do I see what would prevent many things from actually being subject to one entelechy; on the contrary, this is necessarily so. Matter (that is, secondary matter), or a part of matter, exists in the same manner as a herd or a house, that is, as a *being by aggregation*. (LDB 31; emphasis added)

Notice the following about this passage:\(^{85}\)

1) “Arithmetical unity” is contrasted with “metaphysical unity”.

2) “Arithmetical unity” is used synonymously with “aggregate” and “being by aggregation”.

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\(^{85}\) Notice also that Leibniz seems to deny that the body of an animal is one per se. This will be relevant below, though I will not discuss this passage again.
The contrast Leibniz is developing, therefore, is his standard distinction between *unum per se* and *unum per accidens*. There is no indication that arithmetical unity has any significance other than the standard meaning of *unum per accidens*. And though Leibniz will acknowledge that accidental unity can come in degrees, there is no basis for concluding either that “arithmetical unity” tracks a certain degree of accidental unity or that a difference in degree of accidental unity can account for why some collections—i.e. organic bodies—can have souls while others—i.e. the world—cannot.

Of course, Leibniz believes that there is an important difference between converging and diverging numerical series. There is a sense in which the former has a sum while the latter does not. Perhaps this difference provides the basis for a relevant notion of arithmetical unity? Leibniz provides an account of the sum of an infinite converging numerical series as the limit of partial sums:

> Whenever it is said that a certain infinite series of numbers has a sum, I am of the opinion that all that is being said is that any finite series with the same rule has a sum, and that the error always diminishes as the series increases, so that it becomes as small as we would like. (A VI 3, 503; LoC 99)

There is, therefore, a sense in which a converging infinite series has a sum: the sums of finite series with the same law approach, with any degree of accuracy we like, some number—this

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86 See the 30 April 1687 letter to Arnauld (G II, 100; Ma 126).
number is the sum of the infinite series. A diverging series on the other hand, whose partial sums have no limit, will not have a finite sum.

However, when we consider the unity that an infinite converging series has, it cannot be differentiated from the unity that an infinite diverging series has. For Leibniz, as is well known, accidental unity is not intrinsic unity, but arises from some mind grouping a collection of things together. As such, Leibniz will often characterize an ens per accidens as “semi-mental”. Consider Leibniz’s remark about the infinite converging series known as Leibniz’s Series:

\[ \sum_{n=1}^{\infty} \frac{1}{2n-1} = \frac{\pi}{4} \]

Here, Leibniz provides an account of how, though there are infinitely many terms, the mind can perceive the whole infinite series. In virtue of grasping its law of progression, the mind is able to group the terms of the series into a whole. This whole is, as a result, semi-mental and has merely accidental unity. This provides no means by which to distinguish converging from diverging series, however, since an infinite diverging series will equally have a law of progression.

\[ \text{GM V, 120; trans. Arthur 1998, 31.} \]

\[ \text{I.e., the series } 1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \frac{1}{9} - \ldots = \frac{\pi}{4} \]
The conclusion that we should draw from this is as follows: though the distinction between converging and diverging infinite series appears to track a plausible difference between organic bodies and the world (in its entirety), it cannot provide any grounds for attributing one sort of unity to an organic body and another sort of unity to the world. Thus, it cannot provide the basis for why the world soul would entail infinite number, but the soul of an organic body does not.

Brown’s solution is also developed as an account of the different types of unity that apply to the world (in its entirety) and an organic body. In Brown’s view, an organic body is an unum per se, but the world is not (and cannot be). There are two problems with Brown’s solution. First, it is not at all clear that, on Leibniz’s view, an organic body is an unum per se, even when considered as one constituent of a soul-body composite. Brown’s only direct evidence that Leibniz holds this view is a passage from a short piece “On the Present World”, in which Leibniz writes:

In an entity per se some real union is required, consisting not in the situation and motion of parts, as in a chain, a house, or a ship, but in some unique individual principle and subject of its attributes and operations, which in us is called a soul, and in every body a substantial form, provided the body is a unity in itself [in omni corpore forma substantialis modo id sit unum per se]. (A VI, 4 1506; LoC 283)

This apparent evidence is complicated, however, by a claim Leibniz makes mere pages later:
In every substantial form there is a kind of cognition, that is, an expression or representation of external things in a certain individual thing, according to which the body is a unity in itself, namely, in the substantial form itself [secundum quam corpus est unum per se, nempe in ipsa forma substantiali]. (A VI 4, 1508; LoC 285-287)

The notion of being an unum per se in the substantial form is notably different from simply being an unum per se. It is at best unclear, on the basis of these texts, just what Leibniz thinks of the bodies of substances. We should hesitate, therefore, to conclude that an organic body is an unum per se.

Furthermore, there is some fairly strong evidence that Leibniz would deny that an organic body is an unum per se. Though the substance to which the matter belongs is certainly one per se, the matter of that substance—its body—is not. This is true whether we consider the body as so much matter—i.e., mass—or whether we consider it, as Leibniz does, as an aggregate of substances—i.e., second matter. On the unity of matter, consider the following passage to Arnauld:

...[i]t is the animated substance to which the matter belongs that is truly one being, and the matter taken as a mass in itself [prise pour la masse en elle même] is only a pure
phenomenon or well-founded appearance, as also are space and time. (G II, 118; WF 131)\textsuperscript{90}

On the unity of second matter, consider this passage from the *New Essays*:

So we must acknowledge that organic bodies as well as others remain ‘the same’ only in appearance, and not strictly speaking. It is rather like a river whose water is continually changing, or like Theseus’s ship which the Athenians were constantly repairing. (NE 231)

Organic bodies do not persist, and thus cannot be *per se* unities.\textsuperscript{91}

Neither the Carlin-Arthur solution nor Brown’s solution works on its own terms. But there is a more important reason to resist these solutions: they inaccurately construe Leibniz’s rejection of infinite number as a result about unity.\textsuperscript{92} As I will argue in the following section,

\textsuperscript{90} One feature of this passage that makes a definitive interpretation difficult is Leibniz’s use of “matter” [“masse”] instead of “body”. But if the point is being made only about *masse*, then see the passage from the *New Essays* below for Leibniz’s view of second matter and in particular, organic bodies.

\textsuperscript{91} Brown’s argument is more complicated: he tries to account for how an organic body can both be an *unum per se* and have parts (since, as we have seen, Leibniz denies that an *unum per se* has parts). Brown offers a distinction between *wholes in multitude* and *wholes in magnitude*, the latter of which is supposed to be compatible with being an *unum per se* (2005, 469). I do not think Brown’s distinction is textually grounded, but it need not concern us in any case, since by virtue of the fact that an organic body (on my reading) is not an *unum per se*, there is no need to reconcile this with the fact that a body has parts.

\textsuperscript{92} To be clear, the Carlin-Arthur solution connects a certain type of unity—arithmetical unity—with *being a whole*, then connects *being a whole* with having a soul. The point is that a certain type of unity is being linked to
Leibniz’s rejection of infinite number is concerned with *wholeness* rather than unity. And there are important differences, in Leibniz’s view, between wholeness and unity.\(^\text{93}\) Once I have developed these two claims, I will return to the question of whether Leibniz’s account of corporeal substance is inconsistent with his rejection of infinite number.

### 3.4 Infinite Number and Infinite Wholes

If we look at a sampling of texts in which Leibniz formulates his rejection of infinite number, we see that though the notion of *unity* is present, he formulates his position in terms of *wholes* as well. Here is a sampling, spanning about thirty years:

1) Hence it follows either that in the infinite the whole is not greater than the part, which is the opinion of Galileo and Gregory of St. Vincent, and which I cannot accept; or that infinity itself is nothing, i.e. that it is not one and not a whole [*non esse Unum nec totum*]. (A VI 3, 168; trans. Arthur 1999, 107)

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\(^{93}\) The distinction between wholeness and unity has been noticed by others, but not developed in a satisfactory way. See, e.g., Carlin (1997), 12; Brown (2005), 462ff.
2) I concede an infinite multitude, but this multitude forms \( \textit{facit} \) neither a number nor one whole \( \textit{unum totum} \). It only means that there are more elements than can be designated by a number, just as there is a multitude or complex of all numbers; but this multitude is neither a number nor one whole. (GM III, 575; LoC, lxiii)

3) I maintain, strictly speaking, that an infinite composed from parts \( \textit{ex partibus constans} \) is neither one nor a whole \( \textit{neque unum esse, neque totum} \), and it is not conceived as a quantity except through a fiction of the mind \( \textit{nec nisi per fictionem mentis concipi ut quantitatem} \). The indivisible infinite alone is one, but it is not a whole; that infinite is God. (LDB 53)

4) It is perfectly correct to say that there is an infinity of things \( \textit{une infinité de choses} \), i.e. that there are always more of them than one can specify. But it is easy to demonstrate that there is no infinite number \( \textit{nombre infini} \), nor any infinite line or other infinite quantity, if these are taken to be genuine wholes \( \textit{des veritables Touts} \). (G V, 144; NE 157)

In these texts, we find a collection of different terms in which Leibniz’s rejection of infinite number is expressed: \textit{not one and not a whole, not one whole, neither one nor whole, not a genuine whole}. Certainly both unity and wholeness are present in these texts, but Leibniz clearly distinguishes between the two.
There is a feature of Leibniz’s broader philosophical commitments that, in conjunction with this textual evidence, indicates that Leibniz means to reject infinite wholes in particular and not infinite unities. For Leibniz, no whole, not even one with finitely many parts, is a true unity.

Consider the following passage in which Leibniz characterizes wholes and parts:

If, when several things are posited, by that very fact some unity [unum] is immediately understood to be posited, then the former are called parts [partes], the latter a whole [totum]. Nor is it even necessary that they exist at the same time, or at the same place; it suffices that they be considered at the same time [eodem tempore considerentur]. Thus from all the Roman emperors together, we construct [conficimus] one aggregate [aggregatum]. But actually no entity that is really one [Ens vere Unum] is composed of a plurality of parts (A VI 4, 627; LoC 271).

It is a sufficient condition of being a whole that some collection of things is considered at the same time. Notice also that Leibniz immediately clarifies that nothing with a plurality of parts is really one. This asserts an important distinction between wholes and unities.\(^\text{94}\) That is, since wholes are essentially collections of parts, no whole is really one, i.e. a true unity. Not even collections of only finitely many parts are really one. All wholes, therefore, are merely accidental unities. This is evidence that Leibniz sees a stark contrast between wholes and unities, but it also gives us something more important; it provides a rationale for reading Leibniz’s rejection of

\(^{94}\) This is also noticed by Carlin (1997) and Brown (2005), though they do not fully develop its significance.
infinite number as concerned primarily with wholeness. Consider: both finite and infinite wholes are merely accidental unities. It would be trivial, therefore, for Leibniz to deny that an infinite collection is *one* because he denies that even finite collections are *one*.\(^{95}\) This, to my mind, confirms what the textual evidence points at, namely that we should understand Leibniz's rejection of infinite number as a rejection of infinite wholes in particular.

### 3.5 Genuine versus Fictional Wholes

Leibniz draws a distinction between two different types of wholes that allows us to make sense of the various phrases in the texts presented above—*not one and not a whole, not one whole, neither one nor whole, not a genuine whole*—without distinguishing between different types of unity, as both the Carlin-Arthur solution and Brown's solution do. The distinction is rather intuitive, though its precise formulation can be elusive. Leibniz characterizes the difference in various ways, each of which brings out certain features. Here is a basic formulation:

*Genuine Whole:* A collection of parts that can be treated as a single thing.

*Fictional Whole:* A collection of parts that can be treated only as many things.\(^{96}\)

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\(^{95}\) This observation is also made by Russell (1900) and Brown (2005), though they do not see the significance in the same way I do.

\(^{96}\) “Genuine whole” is Leibniz’s term. “Fictional whole” is not, though this terminology is grounded in what Leibniz says about wholes of this sort, and it provides a nice analog to his treatment of infinitesimals as “fictions”. For discussion and terminology relating to Leibniz’s view of infinitesimals, see Goldenbaum & Jeseph (2008). As
Two notes about this distinction: first, this is a distinction between wholes, which is to say collections of things with merely accidental unity. When I characterize genuine wholes as collections that can be treated as a single thing, the sense of “single thing” here is not the sense of being really one or being a true entity. I will return to this point below. Second, Leibniz’s own terminology varies, but I think that from the context it is clear that the following equivalences hold:

<table>
<thead>
<tr>
<th>Genuine Whole</th>
<th>Fictional Whole</th>
</tr>
</thead>
<tbody>
<tr>
<td>= one whole</td>
<td>= multitude/complex</td>
</tr>
<tr>
<td>= collective whole</td>
<td>= distributive whole</td>
</tr>
<tr>
<td>= finitely many parts</td>
<td>= infinitely many parts</td>
</tr>
</tbody>
</table>

The cluster of terms Leibniz uses to capture this distinction indicates what my formulation attempts to capture: some collections can somehow be one thing while others are strictly multitudes. This is not an unfamiliar distinction in the post-Leibniz history of mathematics. It is what drives Cantor’s distinction between sets and inconsistent multiplicities, and Von far as I know, the use of the term “fictional whole” with respect to infinite wholes in Leibniz is due to Richard Arthur. See, e.g., Arthur (2011), 93.
Neumann’s distinction between sets and proper classes: the intuition is that for whatever reason (typically it has to do with size), some collections cannot be *one thing*.\(^{97}\)

Why is it that some collections of parts can be referred to *as a single thing* while others can be referred to *only as many things*? Leibniz’s answer is that some collections must be treated *as many things* because they have no quantity, strictly speaking, and so are not really wholes at all.

Consider the letter to Bernoulli from above.

2) I concede an infinite multitude, but this multitude forms [*facit*] neither a number nor one whole [*unum totum*]. It only means that there are more elements than can be designated by a number, just as there is a multitude or complex of all numbers; but this multitude is neither a number nor one whole. (GM III, 575; LoC lxiii)

In Leibniz’s view, when there are infinitely many elements in a collection, that collection is not strictly speaking *one thing*. The use of “one” does not signal any sort of unity but rather whether we can treat the collection as a single collection or only as so many parts.

Further, the ability to treat a collection as *one thing* is connected to whether the collection has a determinate number of parts. In order to treat the collection as a single thing, it must have some specific quantity. But, in light of the impossibility of infinite number, a collection with

\(^{97}\) For discussion of the relation between size and the set-theoretical paradoxes, see Hallett (1986).
infinitely many parts does not have a quantity, strictly speaking, since its quantity would be greater than any finite number. This has interesting consequences for Leibniz’s view of bodies. For Leibniz, bodies have actual parts, which is to say, parts actually divided from one another and moving with respect to each other. But for Leibniz, a body can have actual parts without having a determinate number of parts.

If a collection does not have a determinate number of parts, it cannot be treated as a single thing, and furthermore it does not have a quantity, strictly speaking. Leibniz makes this point in a letter to Des Bosses:

3) I maintain, strictly speaking, that an infinite composed from parts [ex partibus constans] is neither one nor a whole [neque unum esse, neque totum], and it is not conceived as a quantity except through a fiction of the mind [nec nisi per fictionem mentis concipi ut quantitatem]. The indivisible infinite alone is one, but it is not a whole; that infinite is God. (LDB 53)

In this passage, Leibniz makes it explicit that a collection of infinitely many parts does not have quantity. He also adds something important: such a collection can be conceived as a quantity in a certain sense, namely through a fiction of the mind. So there is a sense in which we can fabricate it as a quantity through a mental fiction. For this reason, such a collection is a fictional whole.

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98 See Monadology 65 (AG 221).
99 I will return to this point in section 6. Cf. Holden (2000), 81. Holden suggests that for many period thinkers, having actual parts entails having some determinate number of parts (90).
How does this fabrication work? Some help is found by looking to Leibniz’s account of infinite series, since these are wholes in some sense, but consist of infinitely many terms. Consider, once more, Leibniz’s remarks about the infinite series known as Leibniz’s Series:

even though […] the series is produced to infinity, nevertheless, since it consists of one law of progression [una lege progressionis constat], the whole is sufficiently perceived by the mind [tota satis mente percipitur]” (GM V, 120; trans. Arthur 1998, 31).

The notion of a “law of progression” explicated in this passage in terms of infinite series can be generalized. It is, essentially, a description that picks out all and only the members of a particular collection. Thus, for example, we can use the description being a term in Leibniz’s Series to pick out all and only the terms in Leibniz’s Series. (Or we could use the formula \((-1)^n/(2n + 1)\)). We can also use the description being a Roman emperor to pick out all and only the Roman emperors. In the latter case—that of the Roman emperors—the description picks out a genuine whole. However, in the former case—that of being at term in Leibniz’s Series—the description picks out a fictional whole.

In both cases the whole is the product of a mental act: the difference is that in one case, we conceive of a genuine whole, while in the other, merely of a fictional one. This accounts for the sense in which, for example, the terms of Leibniz’s Series are conceived as a quantity only through a fiction of the mind. The same mental act—considering things that answer to a certain description—that often leads us to genuine wholes, leads us, in some cases, to merely fictional wholes. In these cases, there is, strictly speaking, no whole that answers to the description; there
is merely a collection of parts that remains *many*. This is because, since the collection has infinitely many parts, there is, strictly speaking, no such thing as the collection of all the parts.\footnote{Leibniz’s view on this point prefigures, in a sense, the restrictions of the so-called comprehension axiom of naïve set theory in order to avoid certain set-theoretical paradoxes, Russell’s Paradox being one example. Leibniz’s idea is that not all predicates pick out a genuine whole. A similar insight is employed by Cantor in his notion of *inconsistent multiplicities* and Von Neumann in his notion of *proper classes*. See Cantor (1899), 114. For discussion of Von Neumann’s view, see Hallett (1986), ch. 8.}

There is an additional way Leibniz characterizes the distinction between genuine and fictional wholes, which is not already contained in the passages from above. He also draws the distinction in terms of the type of reference that is possible in each case. In the following passage, Leibniz draws the distinction in terms of distributive and collective wholes:\footnote{Arthur (2001), 110 develops the distinction between distributive and collective wholes. Arthur rightly notes that both the world and an organic body are distributive wholes, but given the context in which he is considering the problem (that of the world soul), the distinction between distributive and collective wholes doesn’t provide a solution and so Arthur does not give it the centrality that I do.}

There is also an actual infinite in the sense of a distributive whole [*totius distributivi*] but not a collective one [*collectivi*]. Thus, something can be stated [*enuntiari potest*] about all numbers, though not collectively. In this way it can be said that for every even number there is a corresponding odd number, and vice versa; but it is not therefore accurately said that there is an equal multitude of even and odd numbers. (Leibniz to Des Bosses 1 September 1706; LDB 53)

Distributive wholes are what I have called “fictional wholes” and collective wholes are what I have called “genuine wholes”. Leibniz draws the distinction in terms of what can be accurately
said of each type of whole, or perhaps better how something can be said about each type. In distributive wholes, though something can be stated of each part individually, it is not possible to say something about all the parts together, at least not accurately. Collective wholes, by contrast, can be referred to as wholes.102

It is tempting to think that Leibniz is making a general point about part-whole predication here. For example, we might take his point to be that in some cases (distributive wholes) but not in others (collective wholes), when we attempt to predicate something of the whole, this reduces to a predication of each part individually. But this is not the case. Leibniz is clear that all predication of wholes is reducible to predication of their parts individually. Consider the following:

It is worth investigating in what way an entity through aggregation, such as an army or even a disorganized multitude of men, is one; and in what way its unity and reality differ from the unity and reality of a man. It seems that the chief difference is to be observed in their attributes and operations. Some attributes are said equally of the whole as of its parts, as, for example, that the army is located in the fields of Marathon, which is true of each individual soldier. Other attributes can be said only of the whole, as, for example, that the army is 30,000 strong, and that it is disposed in a lunar-shaped battle line. Nevertheless, all these things can be stated and expressed

102 Although, importantly, Leibniz does not treat a collective whole as an entity over and above its parts. Thus, for example, Leibniz’s distinction between distributive and collective wholes does not track Russell’s distinction between the class as many and the class as one, though it has certain similarities to it. See Russell (1903), 68-69. Leibniz does disagree with Russell’s claim that no predicates define classes that cannot be treated as a single logical subject. Being a term in Leibniz’s Series is one such example, and in general, any predicate that picks out a collection with infinitely many parts.
even if the multitude is not viewed as a single entity. Thus, I can say that 30,000 soldiers are present and that one soldier is situated with respect to another just as the battle line mentioned requires, so that certain ones are distanced from a fixed point by so much, others by so much. (A VI 4, 555-556; trans. Sleigh [1990], 123)

The point, then, is that all reference to wholes is reducible to reference to their parts. This is as much true of genuine wholes as it is of fictional wholes. Even though genuine wholes admit of collective reference, the information contained in such acts of reference is ultimately reducible to reference only to the parts. The important contrast in this regard is between wholes on the one hand and substances on the other. With substances, i.e. true beings, predication cannot be reduced to predication of their parts. In terms of predication, then, we have a three-fold distinction:

<table>
<thead>
<tr>
<th>True beings</th>
<th>Genuine Wholes</th>
<th>Distributive Wholes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Predication of entity is not reducible to predication of parts.</td>
<td>Predication of whole is reducible to predication of the parts</td>
<td></td>
</tr>
</tbody>
</table>

For these reasons, it is more accurate to construe the distinction between collective and distributive reference as pertaining to *predications of quantity only*. That is to say, in a fictional context...

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103 For a contemporary view that shares a great deal with Leibniz on this point, see Merricks (2001).
whole, if we try to say something about the quantity of the whole, we cannot do so directly, since there is, strictly speaking, no quantity. But we can speak as though it has a quantity by means of distributive reference. This allows us to say the sorts of things we would like to say about various collections being “equal” without getting ourselves into problems such as the one indicated by Galileo’s Paradox. On the other hand, if we try to refer to an infinite collection of parts collectively, we encounter paradox.

To summarize, the notion of collective reference should not be confused with what we might call irreducible reference, which pertains only to substances. The point of Leibniz’s distinction between collective and distributive reference is not that collective reference is irreducible reference, but simply that some wholes permit collective reference with respect to quantity, while others do not.

The results so far can be summarized on the following table:

<table>
<thead>
<tr>
<th>Type of Whole:</th>
<th>Fictional</th>
<th>Genuine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Parts:</td>
<td>Infinitely Many (i.e. no determinate number)</td>
<td>Finitely Many (i.e. some specific number)</td>
</tr>
<tr>
<td>Predications of quantity:</td>
<td>Distributive</td>
<td>Collective</td>
</tr>
</tbody>
</table>

There is an interesting connection between Leibniz’s view and the recent developments in the logic of plurals. The linking question is this: must the subject of predication be singular or can we predicate of many things as many? Leibniz is, in a sense, not sensitive to this question, since in his view, when predicating of a collection, there is no single entity that is the subject of predication, but the predication of the whole is reducible to predication to the parts individually. Thus, although Leibniz does not require a singularizing device (e.g. a set or a mereological fusion) for predications of many things, he does not endorse full-blown plural predication either. For discussion of plural logic, see Yi (2005) and (2006), McKay (2006).
<table>
<thead>
<tr>
<th>Quantity:</th>
<th>No quantity, strictly speaking, but can be fabricated via some description</th>
<th>Some finite quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unity:</td>
<td>Accidental</td>
<td>Accidental</td>
</tr>
</tbody>
</table>

To reiterate, the distinction between genuine and fictional wholes is not concerned with considerations of unity. Both types of wholes have merely accidental unity. Furthermore, all of the texts in which Leibniz expresses his rejection of infinite number concern genuine wholes (or a terminological variant). This means that Leibniz’s view amounts to the following: there are no infinite genuine wholes.

With this distinction in mind, it is more natural to read Leibniz’s expression of his rejection of infinite number in the passages above as a rejection of infinite genuine wholes. The occurrence of the term “unity” (*unum*) can then be understood as designating a genuine whole, i.e. a collection of parts that can be treated as a single thing (i.e. as *one whole*) without entailing a contradiction.

### 3.6 Corporeal Substances

I now return to the driving question of what I have called “the specific concern”: is Leibniz’s account of corporeal substance inconsistent with his rejection of infinite number? In light of the conclusions about the nature of Leibniz’s rejection of infinite number arrived at in the previous section, we are now in a position to provide a more definitive answer to this question.
The answer is “no”. The reason for this answer is that Leibniz’s rejection of infinite number is a result about wholes or quantities, not about unities or entities. As such, the existence of entities (or unities) that appear to have infinitely many parts or infinitely many constituent substances in no way threatens Leibniz’s rejection of infinite number.

As I mentioned in section 2, the specific concern is motivated by the way Leibniz seems to employ the impossibility of infinite number in his argument against the world soul. This has led commentators to look for a relevant difference between the world and an organic body according to which the latter can have a soul without entailing infinite number, but the former cannot. The solutions on offer all suggest that the difference ought to be explained by the type of unity that each thing has (or can have). However, there appears to be no textual basis for attributing a different type of unity to an organic body than to the world (in its entirety).

Once we divorce Leibniz’s rejection of infinite number from the context of his argument against the world soul, we see clearly that his rejection of infinite number is concerned with rejecting infinite wholes, not infinite unities. In light of this result, we can reformulate the question driving the specific concern as follows: does the fact that an organic body has a soul entail that it (the organic body) is an infinite genuine whole?

A corporeal substance *qua substance* is an *unum per se*, which means, given Leibniz’s distinction between wholes and unities, it is not really a whole at all. The sense in which a corporeal substance is a whole is that we can *consider together* the collection of substances that make up the corporeal substance. We can do this in a variety of ways. We might consider the collection of substances that constitute the organic body of the corporeal substance under the description *the substances contained in the body of this substance*. We might also consider the collection of all of these substances plus the form of the substance, which, in Leibniz’s later
writing, he will call a “dominant monad”. Such acts of consideration generate wholes, but there is no basis for thinking that these are (or must be) genuine wholes.

Precisely in virtue of having infinitely many parts, each collection will be merely a multitude, not one whole. Similarly, it will not have a quantity, except fictionally, in virtue of the similarity between the mental act of considering the collection under a certain description and the act of considering a collection that really does have quantity. Finally, we can think of the collection by employing some rule for inclusion in the collection, though we are not thinking of a single thing, but merely a fictional whole. The fact that the form of the substance (or dominant monad) bears a unique relation to the substances constituting the body of the substance, such that the form-body composite is a substance, has no effect whatsoever on the quantity of any collection we might consider. The body of a corporeal substance is not a genuine whole, not one whole; it is merely a fictional whole. Even though it is united to a form, the body is actually infinitely divided and, therefore, has infinitely many parts. On this basis alone, the body is merely a fictional whole. Bodies are only multitudes and nothing more.

This is clearly true of bodies without forms. The slab of marble, for example, is not a substance, but a multitude of substances. What is less often noted in the literature is that it is also true of bodies with forms. The bodies of corporeal substances are still only multitudes. A corporeal substance is an unum per se, but as we have seen, this does not entail that its body is an unum per se. Leibniz is clear that the body of a corporeal substance is merely an unum per accidens. It is, in this respect, no different from a body without a form. A similar case can be made with respect to wholeness. A body without a form is merely a fictional whole; this is also true of bodies with forms.
The difference between genuine and fictional wholes is that genuine wholes have a determinate number of parts, and thus a quantity, while fictional wholes do not. Being united with a form does not affect the number of parts that a body has. Therefore, it cannot affect the type of whole that a body is. The presence of a form does provide us with a way to conceive of a certain body as a whole. For example, we can rely on the description the body of Albert Einstein in order to conceive of some particular body. However, taking that particular collection of parts as a whole involves a kind of fiction. As we have noted, that body—as all bodies do—has infinitely many parts.

Because it has infinitely many parts, it cannot be taken as a genuine whole, but only as a fictional whole. This may be surprising, since a body certainly seems to be more of a genuine whole than, for example, the collection of Roman Emperors. But recall that, as I have argued, the designation “genuine” is based on whether a collection of parts really has a quantity. The collection of Roman Emperors, having only finitely many parts, really has a quantity; a body, even the body of a corporeal substance, having infinitely many parts, does not. The distinction between genuine and fictional wholes tracks a specific feature of the collection of parts that make up a whole, namely whether there is or is not a determinate number of parts, and the presence of a soul does not change the type of whole that a body is.

Thus, the solution presented in section 1—the solution to the general concern—can be used to respond to the specific concern as well. Any actual infinity in nature, even the actual infinity of the constituent substances of the body of a corporeal substance is to be understood syncategorematically: there are more than can be designated by number.
3.7 Conclusion

Let me summarize the main results of the chapter. First, I presented Leibniz’s response to what I call the general concern, the worry that Leibniz’s rejection of infinite number directly violates his acceptance of the actual infinite. Leibniz’s response is that so long as reference to the actual infinity in nature is understood syncategorematically, this engenders no commitment to infinite number. In other words, Leibniz’s view is that to be actually infinite is to be more than any number rather than to be infinite in number. Second, I developed what I call the “specific concern”, which alleges that there is a tension between Leibniz’s account of corporeal substance and his rejection of infinite number in light of how Leibniz relies on the impossibility of infinite number in his argument against the world soul. I noted that previous attempts to address this problem have mistaken Leibniz’s rejection of infinite number as a claim about unity, when in fact it is a claim about wholeness. Third, I developed an important distinction between types of wholes, genuine and fictional, and argued that Leibniz’s rejection of infinite number is a rejection of infinite genuine wholes in particular. Finally, I suggested that once we are clear about the nature of Leibniz’s rejection of infinite number, we can use Leibniz’s solution to the general concern to address the specific concern as well.

In order to arrive at this conclusion, I have divorced the specific concern from the context in which it was originally formulated, namely Leibniz’s argument against the world soul. I have done this because, as I have argued, I think that investigating the specific concern in this context has led other scholars to misconstrue the nature of Leibniz’s rejection of infinite number. Now that, in my view, we have achieved some clarity about the nature of Leibniz’s rejection of infinite number, I will conclude with some remarks concerning the implications of this result for
our understanding of Leibniz’s argument against the world soul. Though I will not develop an interpretation of Leibniz’s argument against the world soul here, since my conclusions bear directly on it, something ought to be said.

One significant implication of my argument is that Leibniz’s argument against the world soul is not mathematical in the way that previous commentators have supposed. Leibniz’s rejection of infinite number concerns wholeness and there is no basis for distinguishing an organic body from the world in terms of wholeness: both are fictional wholes, multitudes with infinitely many parts. (Even if we follow previous commentators and understand Leibniz’s rejection of infinite number in terms of unity, there is no textually grounded basis on which to distinguish the unity of the world from the unity of an organic body: both are accidental unities.)

Finally, we might note that of all the passages in which we find Leibniz’s argument against the world soul together with his rejection of infinite number, only one appears to argue that the world cannot have a soul because it would have an infinite body, and that such a body cannot be one thing.\(^{105}\) This type of argument certainly appears to lead to the question driving the specific concern. More often, however, Leibniz mentions his rejection of infinite number alongside his argument against the world soul, though his argument does not obviously rely on it. This suggests that Leibniz’s argument against the world soul does not involve his rejection of infinite number in the way that other commentators have proposed. If correct, this suggestion would fit nicely with the results I have arrived at above.

Sorting out in detail Leibniz’s argument against the world soul is, however, a separate endeavour and must be left for another occasion. For now, the conclusion I draw is that, at least

\(^{105}\) See A VI 4, 1509; Loc 287.
with respect to his theory of corporeal substance, Leibniz the mathematician is not out of step
with Leibniz the metaphysician.
Chapter 4. Composite Unities

4.1 Introduction

Leibniz is well known for his theory of monads, i.e. simple, partless substances. Recently, there has been a great deal of attention paid to Leibniz’s theory of animals, which are not simple but composite. This growing body of literature suggests that animals occupy an important place in Leibniz’s ontology even into his mature—often called his monadological—period. The presence of animals opens the following question: does Leibniz accept only simple substances, or composite ones too? Leibniz himself appears to make room for this contention, since he opens both Principles of Nature and Grace and Monadology with the apparent assertion of the existence of both simples and composites. But in what way can Leibniz really accommodate the presence of composites in his ontology? Are composites substances at all? If not, how do they differ from mere aggregates?\(^\text{106}\)

I will begin to address one aspect of this rather large issue by asking the following questions: assuming that Leibniz at some time allows for composite substances, what is his account of their structure? Given that, for Leibniz, a substance must be an unum per se, can a composite substance be an unum per se? My discussion will focus primarily on texts from the

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\(^{106}\) These questions connect with an ongoing dispute in Leibniz Studies concerning the status of corporeal substances during Leibniz’s so-called Middle Years. See Garber (2009) for a detailed argument for how to categorize the different phases of Leibniz’s development. I do not intend to settle this dispute here; rather my aim is to gain a fresh perspective on Leibniz’s theory of substance by approaching it from a different angle.
1680s through 1704. However, I am not concerned to make any specific claims about Leibniz’s philosophical development. Rather, I will defend the following thesis:

(T) No account of the structure of a composite substance can explain how a composite substance is an *unum per se*. Thus, a composite substance is a “substance” in name only; there are no composite substances, strictly speaking, in Leibniz’s ontology.

§§4.1-4.3 examine Leibniz’s early attempt to accommodate composite substances (at the time he uses the term “corporeal substances”) within his philosophical system. I argue that though this attempt is interesting, it ultimately fails. Nonetheless, there is a philosophical payoff in looking at Leibniz’s failed attempt. §4.4 argues that in light of how Leibniz’s early attempt fails, we can rule out the only contenders for a robust account of composite substances in Leibniz’s mature period. I conclude that composites are not substances, but teleologically organized aggregates.

### 4.2 Corporeal Substances

I will begin with Leibniz’s Letters to Arnauld, in which the language of corporeal substances is still very much in play. A corporeal substance is a composite of a soul or form and a body. It is especially important when looking at this early-middle correspondence to figure out
where Leibniz intends to locate the *unity* of a corporeal substance.\textsuperscript{107} Does Leibniz think that the composite is an *unum per se*, or only the soul or form? I will argue that Leibniz attributes unity to the *composite*. This view is not without difficulty; I will explore the best way to understand how Leibniz understand the unity of the composite in the following section.

What is a corporeal substance? For some thinkers in the seventeenth century, a corporeal substance is simply a body. But for Leibniz, the paradigmatic example of a corporeal substance (at least in the middle years\textsuperscript{108}) is a human being, which, in his view is a composite of a soul and a body. In fact, in his correspondence with Arnauld, Leibniz expresses hesitation about asserting that there are any corporeal substances other than human beings. Nevertheless, he argues, if there are other corporeal substances, they should be modelled after the human being. However, it is difficult to understand how a human being can meet all of the necessary conditions of *being a substance*. In particular, how can a human being be a true unity—an *unum per se*—given its apparent complexity?

This problem is not peculiar to Leibniz. Descartes, for example, has trouble accounting for the unity of the human being. Despite the fact that Descartes clearly asserts the substantiality of the soul (in its own right) and of the body (in its own right), he does not explicitly call the human being a substance, though he does say that the human being is a “true *ens per se*” and that the soul is “united in a real and substantial manner to the body” (CS III, 206).\textsuperscript{109} In Leibniz’s hands, the problem of the substantiality of the human being, and thus of any corporeal substance,

\textsuperscript{107} See Baxter (1995) for the view that even in this correspondence, composites are not substances for Leibniz, and the unity is unity of the form (or monad) alone.

\textsuperscript{108} Roughly the period from the late 1670s until 1704. For discussion, see Garber (1985). In Garber (2009) the years 1695 until 1704 are considered to be a transitional period.

\textsuperscript{109} For discussion, see Hoffman (1986) and Rozemond (2009), ch. 5.
takes on a peculiar shape. Leibniz is a mereological nihilist,\textsuperscript{110} which means that, in his view, no true being is composed of parts. Thus, Leibniz’s standard of unity, of being an \textit{unum per se}, is more stringent than most, if not all of his predecessors; it is, in fact, as stringent as it can get. This puts pressure on his account of corporeal substance, since to be corporeal is to have (at least in some sense) more than one part.

Leibniz endorses fairly typical criteria of what it takes to be a substance. In his view, a substance must (at least) have more than accidental unity and persist over time.\textsuperscript{111} I start with the type of unity a substance has. In Leibniz’s view, a human being is an \textit{unum per se}, despite its complexity. Writing to Arnauld, Leibniz notes,

Supposing that there is a soul or \textit{substantial form} in beasts or other corporeal substances, one must reason with respect to them on this point as we all reason with respect to man, who is an entity endowed with a true unity that his soul gives to him, not withstanding the fact that the mass of his body is divided into organs, vessels, humors, spirits, and that the parts are undoubtedly full of an infinite number of other corporeal substances endowed with their own forms. (G II, 120; Ma 154)

\textsuperscript{110} For this terminology, see Van Inwagen (1990) and Sider (2013).

\textsuperscript{111} For discussion of the different traditions of thought about substance that Leibniz is drawing one, see McDonough (2011).
In this passage, Leibniz claims that a human is a true unity, in virtue of his soul. This is true despite the fact that his body is divided into a multiplicity of parts. The fact that the soul gives true unity to the human being is especially important. This makes it clear that the substance is the composite as opposed to, say, just the soul. It is also important to note that no explanation, no account of this true unity is given in this passage. Leibniz appears to take it for granted that there is an acceptable account in the case of human beings and that this account can be extended to other corporeal substances.

Human beings also persist over time:

It is true that the whole that has a true unity can remain the same individual in rigor, even though it loses or gains parts as we experience in ourselves. (G II, 120; Ma 153)

Several aspects of this short passage are noteworthy. First, Leibniz characterizes human beings as wholes with true unity. Second, he claims that such wholes can remain strictly the same despite the fact that parts come and go. Finally, as before there is no account of the unity that we possess; rather it appears to be based on the privileged access we have to ourselves and our own persistence. As above, true unity is attributed to the whole, i.e. the composite, not to the soul alone.

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112 For an alternative view, see Baxter (1995).
These two aspects of corporeal substances are fairly standard. However, they become more troubling when placed alongside Leibniz’s commitment to mereological nihilism. The most explicit assertion of this view is found in a paper from the mid-1680s:

(MN) No entity that is really one [Ens vere Unum] is composed of a plurality of parts.
(A VI 4, 627; LoC 271)\textsuperscript{113}

What this passage asserts, in effect, is that no substance has parts. This is difficult, at least at first glance, to square with Leibniz’s assertions above that a corporeal substance is complex, and that it loses and gains parts over time.

Nevertheless, it seems clear that Leibniz understands corporeal substances to be composites of soul and body, and that he attributes true unity to these composites. Given Leibniz’s commitment to mereological nihilism, how can it be that a composite, any composite, has true unity?

4.3 The Unified Body Conception

I will now examine one way to understand Leibniz’s attribution of true unity to a composite substance, what I call the Unified Body Conception of corporeal substance. I will

\textsuperscript{113} Though Leibniz does not use the familiar phrase unum per se, I believe that Ens vere Unum expresses the same commitment, especially since the remainder of the passage consists of a discussion of substances.
argue that this conception is mistaken, but that the reasons why this view is false will prove helpful in constructing a more plausible model of a corporeal substance in the next section.

There are two main reasons why the Unified Body Conception is false. First, it is not sustained by Leibniz’s texts. Second, it runs into philosophical problems given Leibniz’s mereological nihilism. The reason for singling out this view is that there appears to be a lack of clarity about this point that is fairly pervasive in the literature. Even if other scholars are not explicitly endorsing this conception of corporeal substance, Leibniz’s view is often formulated in ways consistent with it, or that even imply it.¹¹⁴

Here are two versions of the Unified Body Conception:

(1) A corporeal substance is a body, which, in virtue of a form, is an *unum per se*.

(2) A corporeal substance is a composite of body and form, the body of which is an *unum per se* in virtue of the form.

The essential idea is that a substantial form acts as a *unifying mechanism* for a body. Thus a body, which is, in the absence of a form, a mere aggregate, ascends to the status of an *unum per se* by means of its relation to a form.

This view is expressed, or at least implied, by various commentators, either as the view they believe Leibniz held, or as something he was considering. Though he doesn’t think this is

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¹¹⁴ See Sleigh (1990), 98; Rutherford (1995), 156; Brown (2005), 458; Levey (2007); Garber (2009), 83; Smith (2011), 122. Some commentators are sensitive to the problems with this view. See, for example, Arthur (2011) and Arthur (forthcoming).
ultimately Leibniz’s view, Robert C. Sleigh gives the following explanation of what Leibniz’s commitment to corporeal substances would look like:  

each corporeal substance is a complete entity, consisting of an aggregate of (other) corporeal substances (that is, its organic body), all of which are combined into a single individual with true, substantial unity by a soul-like entity—the substantial form of that corporeal substance. (Sleigh 98)

Note that in Sleigh’s formulation, the aggregate of other corporeal substances is made into a true unity by a soul. Sleigh does not defend this view. Brown (2005), however, does. In Brown’s view, “Leibniz is willing to allow the possibility that a finitely extended body that is infinite in multitude when considered apart from soul may nonetheless be an unum per se in fact and hence actually possess a soul” (470). The most explicit evidence for the Unified Body Conception of corporeal substance is the following passage:

Every real entity is either a unity in itself [unum per se], or an accidental entity [Ens per Accidens]. An entity (unity) in itself is, for instance, a man: an accidental entity (unity) –

\footnote{Sleigh calls this the “Corporeal Substance Theory (Modified or Unmodified)” (98). The “modified or unmodified” refers to whether one treats the form of the substance as a substance in its own right (modified) or not (unmodified). Sleigh notes that while the texts Leibniz sent Arnauld lean towards the Corporeal Substance Theory, the drafts of his letters lean towards a Monadological Theory (109).}

\footnote{Though Brown is also sensitive to the ambiguity in Leibniz’s texts.}
for instance, a woodpile, a machine – is what is only a unity be aggregation, and there is
no real union in it other than a connection: perhaps a contact or even a running together
into the same thing, or at least an agreement observed by a mind gathering it into a unity.
But in an entity per se some real union is required, consisting not in the situation and
motion of parts, as in a chain, a house, or a ship, but in some unique individual principle
and subject of its attributes and operations, which in us is called a soul, and in every body
a substantial form, provided the body is a unity in itself [in omni corpore forma
substantialis modo id sit unum per se]. (A VI, 4 1506; LoC 283)

This passage is from a text called De Mundo Praesenti, which is roughly contemporary with
Leibniz’s correspondence with Arnauld. The final claim of this passage is the main evidence for
Brown’s contention that the body of a substance is itself an unum per se. Let me note the
following things about this passage:

(1) Leibniz distinguishes an ens (unum) per se from an ens (unum) per accidens.

(2) He claims that an ens per accidens is formed merely by contact, running together, or
agreement observed by a mind gathering it into a unity.

(3) He claims that an ens per se requires real union [realis unio], which consists in some
unique individual principle that acts as the subject of the “attributes and operations” of
the entity.

(4) He seems to claim that, for humans, this individual principle is the soul, and that for other
bodies it is a substantial form, provided the body is a unity in itself.
The first reason that we should be hesitant to take this evidence at face value is that though many of the claims listed above are found in other texts—even contemporary ones such as the letters to Arnauld—the entire work is rather idiosyncratic. Throughout, Leibniz uses terminology in ways that he will not in other, more canonical texts. This should give us some pause when attempting to marshal evidence from this text for central Leibnizian views. This is not conclusive, however, since a view can be expressed only once and yet be the view Leibniz really holds.

The second, and more decisive reason we should not trust this text is that only a page later, Leibniz seems to express his view in a way that disagrees with (4): “in every substantial form there is a kind of cognition, that is, an expression or representation of external things in a certain individual thing, according to which the body is a unity in itself, namely, in the substantial form itself \[secundum quam corpus est unum per se, nempe in ipsa forma substantiali\]” (A VI 4, 1508; LoC 285-287). The important claim is this:

(5) The body is a unity in itself, namely, in the substantial form itself.

What could this mean? It appears to mean that the body is a unity in the substantial form itself and not in the body itself.

Not only does this diverge from the previous text, it is a surprising claim in its own right. Recall that in the previous passage from “On the Present World”—noted in (2) above—Leibniz claimed that an ens per accidens is formed by “agreement observed by a mind gathering it into a
unity”. How is it, then, that a body can be an unum per se in virtue of being represented by a substantial form? Leibniz’s qualification that the body is an unum per se in the substantial form confuses things more than it explains them. It also gives us reason to doubt that the earlier passage from De Mundo Praesenti provides secure evidence for the Unified Body Conception. Furthermore, there is ample textual evidence for the alternative view, namely that the no body is an unum per se, not even the body of a corporeal substance.

It is universally accepted that, on Leibniz’s view, a body that is not united to a form is merely an unum per accidens. One familiar illustration of this point is given by considering two diamonds—Leibniz considers the diamonds of the Grand Duke and the Great Mogul, but any two diamonds will do (G II, 76; Ma 94). First, imagine these two diamonds each in their own display case, located some thousands of miles from one another. If we give a common name to the pair, say, the Duke-Mogul, this does not confer any intrinsic unity onto them. They are still merely two diamonds and not one being. Next, imagine bringing the Grand Duke from its location and placing it in the same display case as the Great Mogul. Imagine that the two diamonds are even placed immediately adjacent to one another inside the case so that their sides are touching. The spatial proximity between the two diamonds does not give them intrinsic unity any more than the name Duke-Mogul does. Finally, imagine that the diamonds are mounted onto a single ring, to be worn by some 17th-century Duchess. The fact that the two diamonds now come as a physically bonded unit does not given them intrinsic unity any more than the common name or the spatial proximity did. This is because, in Leibniz’s words, “it is as though by accident that they are forced into one and the same movement” (G II, 76; Ma 94). This accidental arrangement signals that the diamond ring is merely an unum per accidens and not an unum per se—it is an aggregate and not a substance.
As I said, this is a universally accepted aspect of Leibniz’s view. What is less often noted is that Leibniz also denies that a substantial form can give substantial unity to a collection of parts. While this may initially seem surprising, some consideration of this point shows that it is in keeping with his discussion of the two diamonds. Consider, what relationship does a substantial form bear to a collection of material parts? Is it the kind of relationship that can confer intrinsic or substantial unity? It seems not. A substantial form can group material parts. It can, perhaps, even require that certain parts be grouped at a certain time. But the grouping is neither permanent—the parts come and go continually—nor is it grounded in the parts themselves. The substantial form merely provides a rationale for a relation between certain parts at a certain time. But this relation is not internal to the parts themselves; it is external, since it originates in the form. The unity it creates in the body, therefore, is not intrinsic unity, and so the body itself is not a substance.

Antoine Arnauld draws Leibniz’s attention to this point:

if a parcel of matter is not one thing but many things, I do not see how a substantial form, which is really distinct from it and so could give it nothing but an extrinsic denomination, could make it cease to be many things, and become one thing by an intrinsic denomination. (G II, 107; WF 128)

Surprisingly, perhaps, Leibniz agrees. He writes,
Now for another objection that you raise, sir, namely that when the soul is joined to matter it does not make it into a being which is truly one, because matter is not truly one being in itself, and the soul, as you see it, gives it only an extrinsic denomination. I reply that it is the animated substance to which the matter belongs that is truly one being, and the matter taken as a mass in itself is only a pure phenomenon or well-founded appearance, as also are space and time. (G II, 118; WF 131)

When presented with an opportunity to disclose how the introduction of substantial forms is supposed to unify bodies in the way that physical processes simply cannot, Leibniz explicitly denies that the form does this.\textsuperscript{117}

Some commentators have been frustrated by Leibniz’s response.\textsuperscript{118} Indeed, from a certain point of view, their frustration is warranted: Leibniz answers Arnauld’s question, but not the question that he (and we too) may have liked to ask: namely, how can a form and a body combine to make up an entity that is an \textit{unum per se}, when the body is an aggregate made up of infinitely many parts? But this frustration has obscured the fact that Leibniz gives a very direct and informative answer to the question that Arnauld does ask: the substantial form is not a way of \textit{unifying the parts of the body}.

Though the form grounds the unity of the “animated substance”, it does not give unity to the body. It provides, in Arnauld’s words, “an extrinsic denomination”: it groups the parts

\textsuperscript{117} This is noticed and discussed at some length by Sleigh (1990), 125ff.

\textsuperscript{118} See, for example, Sleigh (1990), 107 and Adams (1994), 343.
together from the outside, so to speak. The body, even the body of a corporeal substance, is therefore merely an *unum per accidens* and not an *unum per se*.

Some might hesitate to conclude on the basis of Leibniz’s response to Arnauld that the body of a substance is not an *unum per se*. Leibniz’s wording in that passage is “matter taken as mass itself”. This is different from the kind of matter that makes up the body of a substance, which Leibniz calls “second matter”. Here is how Leibniz explains the distinction:

If one considers as matter of bodily substance not formless mass but a second matter which is the multiplicity of substances of which the mass is that of the total body, it may be said that these substances are parts of this matter. (G II, 119; Ma 153)

Though this observation may appear to restrict the significance of his remarks to Arnauld, Leibniz explicitly makes the same point with respect to the body of a substance understood as second matter in the *New Essays*. In this text, Leibniz denies that the body of a substance persists over time:

So we must acknowledge that organic bodies as well as others remain ‘the same’ only in appearance, and not strictly speaking. It is rather like a river whose water is continually

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119 The *New Essays* is a later text, though still in the Middle Period. It is, in a more fine-grained periodization, from the transition to the later period. See Garber (2009) for discussion.
changing, or like Theseus’s ship which the Athenians were constantly repairing. But as for substances which possess in themselves a genuine, real, substantial unity, and which are capable of actions which can properly be called ‘vital’; and as for substantial beings, *quaes uno spiritu continentur* as one of the ancient jurists says, meaning that a certain indivisible spirit animates them: one can rightly say that they remain perfectly ‘the same individual’ in virtue of this soul or spirit which makes the *I* in substances which think.

(NE 231)

The substance persists, thought the organic body does not.

I draw two conclusions from these texts:

1. Leibniz thinks that an account of the unity (persistence) of a composite substance does not require an account of the unity (persistence) of the body of the substance.

2. Leibniz rejects that the body of a substance is an *unum per se*.

In light of this evidence, I do not believe that the Unified Body Conception, in any of its guises, can be sustained by Leibniz’s texts.

Beyond the absence of convincing textual evidence, there are other problems with attributing the Unified Body Conception to Leibniz. Foremost among them is Leibniz’s commitment to mereological nihilism, the view that nothing with a plurality of parts is an *unum per se*. We have seen this commitment in the first section.
In my view, the Unified Body Conception cannot be reconciled with Leibniz’s mereological nihilism. Brown (2005) is somewhat sensitive to this point. But his attempt to give an account falls into some confusion. For if, as Brown claims, a body—at least, a body that is a corporeal substance—is an *unum per se*, how can this be reconciled with the fact that a body has parts?

Brown attempts to effect this reconciliation by drawing the following distinction: a body considered *apart from a soul* has parts—is, in fact, an infinite multitude—but a body considered *as it really is* (i.e. as united with a soul) has no parts (Brown 2005, 457). In my view, this distinction is not convincing. First, the distinction itself is not clearly supported by Leibniz’s texts. Second, it is not clear to me that a body can sustain this kind of dual analysis. In what way can a body cease to have parts when it is united to a soul? On Brown’s view, the rationale for claiming that the body, when united to a soul, has no parts is that in such case the body is an *unum per se* and no *unum per se* has parts. But this, I think, serves as an effective *reductio ad absurdum* of the Unified Body Conception. The conclusion we should draw from Brown’s argument is that since a body clearly has parts, it cannot be an *unum per se*.

### 4.4 The Animated Substance Conception

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120 This is the basis of Baxter (1995)’s argument that substances are never composites for Leibniz. Though Baxter does not put it in these terms, or rely on the same texts as I do.

121 The textual basis for the distinction between the body *considered in isolation* and *considered as it really is* is G II, 75; Ma 93: “in my opinion our body in itself, leaving the soul aside, i.e. the corpse, cannot be correctly called a substance, like a machine or a heap of stones, which are only entities through aggregation.”. I disagree with Brown’s reading of this text. Further, Brown’s claim about under what guise a body has parts is, so far as I can tell, not textually grounded, which Brown all but admits. See Brown (2005), footnote 11.
I will now develop a more plausible way to understand Leibniz’s account of corporeal substance, one that is more sensitive to the tension between the complexity of corporeal substances and Leibniz’s expressed commitment to mereological nihilism. Baxter (1995) argues that in light of Leibniz’s mereological nihilism, the most sensible option is to conclude that he rejects all composite unities, and thus all composite substances. In Baxter’s view, the souls or forms are the substances even in the 1680s. I think, however, that Leibniz attempts to maintain an account of composite substance that respects his commitment to mereological nihilism. My account has three stages: First, I provide a rationale for distinguishing talk of the substance from talk of the body of the substance. Next, I suggest that the complexity found in the passages we have considered is complexity of the body, not of the substance. Finally, I argue that the only complexity of the substance is to be found in the fact that it is a composite of form and matter. A substance is not the mereological sum of its form and its matter, and as such, this type of complexity stands a chance of respecting Leibniz’s mereological nihilism. However, I will suggest (following many others) that Leibniz has no viable account of the unity of a composite substance, even at this level of consideration.

Let me present a sketch of the basic picture, before filling it out by appealing to the textual evidence. On Leibniz’s view, a human being—and so a corporeal substance—is neither a form nor a body, but an animated substance, which is to say a composite of a form and a body. Thus, a substance has a form and has a body, but is identical to neither. The animated substance is an unum per se, maintains its identity over time, and meets all the other requirements of a substance. The body, on the other hand, is divided, does not endure for more than a moment, &c.
The first step in this direction is to note that the substance and its body are different and require different philosophical analyses. Both Leibniz’s 9 October 1687 letter to Arnauld and a text from the New Essays display this. To Arnauld, Leibniz writes,

it is the animated substance to which the matter belongs that is truly one being, and the matter taken as a mass in itself is only a pure phenomenon or well-founded appearance, as also are space and time. (G II, 118; WF 131)

Here, the “animated substance” is distinguished from the matter that “belongs” to it. And furthermore, the former is “truly one” while the latter is not. The New Essays passage makes the point in terms of persistence:

So we must acknowledge that organic bodies as well as others remain ‘the same’ only in appearance, and not strictly speaking…. [A]s for substantial beings, quae uno spiritu continentur as one of the ancient jurists says, meaning that a certain indivisible spirit animates them: one can rightly say that they remain perfectly ‘the same individual’ in virtue of this soul or spirit which makes the I in substances which think. (NE 231)
Importantly, “organic bodies” are distinguished from “substantial beings”. The former do not persist while the latter do. This provides reason to distinguish the animated substance from its body.

The next thing to notice is that the complexity attributed to corporeal substances is primarily complexity of the body. Also in the 9 October letter to Arnauld, Leibniz writes,

man...is an entity endowed with a genuine unity conferred on him by his soul, not withstanding the fact that the mass of his body is divided into organs, vessels, humors, spirits, and that the parts are undoubtedly full of an infinite number of other bodily substances endowed with their own entelechies. (G II, 120; Ma 154; emphasis added)

Leibniz is careful to characterize the body, not the substance, as divided. The soul gives unity to the substance despite the fact that its body is divided. Further, note that the body is divided into “organs, vessels, humors, spirits”, which is to say, material parts. In this passage, Leibniz is not concerned with the fact that the body is in fact an aggregate of other corporeal substances. The type of analysis he is concerned with is a mereological one. In light of the passages considered so far, when Leibniz writes that “it is true that the whole that has a true unity can remain strictly the same individual, although it loses or gains parts, as we experience in ourselves” (G II, 120; Ma 153), we should not take him to mean that the substance loses or gains parts; rather it is the body

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122 For discussion, see Smith (2011).
of the substance that loses and gains parts, and the parts that he has in mind are things like fingernails, skin cells, and so on.\textsuperscript{123}

Putting this all together, we might distinguish the following:

1. \textit{The substance}: a composite of form and matter

2. \textit{The body of the substance qua material parts}: a collection of limbs, organs, cells, chunks of matter, etc.\textsuperscript{124}

3. \textit{The body of the substance qua aggregate of corporeal substances}: a collection of corporeal substances; what Leibniz calls “second matter”.

Leibniz’s view is ultimately rather intuitive. On Leibniz’s view, the body of a substance—understood either as a collection of material parts or as an aggregate of corporeal substances—has no unity and does not persist. This makes sense. My body is changing all the time. It consists of an almost entirely different set of cells (and in Leibniz’s terms, other corporeal substances) than it did six years ago. However, I am the same human being as I was then. Leibniz’s view tracks this intuitive difference. My substance (i.e. the composite of form and matter) is the same, even though my body (i.e. the matter, mass or second) is different. A substance requires \textit{some body}, but it is not important just what body it has.\textsuperscript{125} The substance will

\textsuperscript{123} The substance, strictly speaking, does not have parts. Cf. Baxter (1995).

\textsuperscript{124} It is possible to make a finer distinction between the body \textit{qua} organs and the body \textit{qua} chunk of matter, though Leibniz does not make this explicit. I will ignore this complication here.

\textsuperscript{125} It is not altogether arbitrary, though. It seems that I cannot be a human being without an appropriate set of organs, functioning together, etc. Leibniz does not explicitly discuss the issue of what parts of the body are essential for it to be a \textit{human body}. Note also that Leibniz thinks the soul is never without a body and that apparent death
be the same substance so long as it has some body. The body itself, however, is a different body, strictly speaking, every time it loses or gains parts.

The Animated Substance Conception, therefore, succeeds where the Unified Body Conception fails. By understanding the structure of corporeal substances in this way, Leibniz is better able to sustain the “dual analysis” that is not sustained by the Unified Body Conception. The substance can be an unum per se, the body an unum per accidens. The substance can be indivisible, the body divisible (and in fact divided), i.e. having parts. The substance can persist, the body become a different body every moment. Further, this model respects Leibniz’s mereological nihilism. The parts of the body of the substance are not themselves parts of the substance. Strictly speaking, the substance does not have parts. Having parts, strictly speaking, entails being no more than the sum of those parts. This is not true of substances, and so substances do not have parts in this sense. A composite substance, strangely perhaps, is not compositionally complex, and this, for the moment, insulates it from Leibniz’s denial that substances have parts.

However, a composite substance is still complex in some sense. It is complex insofar as it is a composite of form and matter. In the case of a human being, the matter of the substance is the body and the form is the soul: “[a]s our body is the matter, and the soul is the form of our substance, it is the same with other bodily substances” (G II, 119; Ma 153).

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consists in a shrinking of the body, which is then presumably not a recognizably human body. See New System (AG 140).
Despite the preliminary success of the Animated Substance Conception, it ultimately fails as an account of how a composite can also be an *unum per se*. Although a composite substance does not have parts (in the same sense that the body does), it still falls victim to Leibniz’s mereological nihilism. For how can Leibniz account for the *per se* unity of form and matter? As we saw above, in the very passages in which this unity is crucial to Leibniz’s view, he presents no account but merely presumes it.

### 4.5 Conclusion

What are we to conclude about Leibniz’s attempt to account for the unity, and thus substantiality, of composites? I believe that he never has such an account. Some commentators have suggested that Leibniz initially thought his system of pre-established harmony would account for the *per se* unity of corporeal substances. This has some degree of plausibility simply because Leibniz presents no other options. Pre-established Harmony is the only explicit account Leibniz gives as to the relation between the soul and the body. However, if we take Leibniz at his word, he never intended that pre-established harmony would account for the *per se* unity of body and soul, but merely for their interaction, i.e. for the appearance of their interaction, what Leibniz calls “the phenomena”:

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126 For a plausible defense of this view, see Rozemond (1997).
127 For example, Garber (2009) and Rutherford (1995).
128 Adams (1994) explores the possibility of accounting for soul-body unity in Leibniz by means of the scholastic notion of incompleteness, which Leibniz appears to mention on occasion. See Adams (1994), 292ff. However, Rozemond (1997) provides compelling reasons why this option is not viable for Leibniz.
My intent was to explain naturally what they explain by perpetual miracles, and I tried to account only for the phenomena, that is, for the relation that is perceived between soul and body. But since the metaphysical union one adds is not a phenomenon, and since no one has ever given an intelligible notion of it, I did not take it upon myself to seek a reason for it. (AG 197)

Rozemond (1997) has argued convincingly that though Leibniz intended his account of pre-established harmony to account for the interaction of soul and body, he did not intend to thereby account for the per se unity of soul and body.129

If we consider once more Leibniz’s views about extrinsic denominations, as elaborated in his discussion of the two diamonds, it is not difficult to see why pre-established harmony will not suffice to account for the per se unity of corporeal substance. Pre-established harmony is a relation of mutual representation. As such, given Leibniz’s own standards of unity, pre-established harmony can create at best accidental unity between the two relata, the body and the soul. This is not the substantial unity that Leibniz requires.130

In recent literature, Leibniz’s account of the metaphysical structure of animals is presented as a single, dominant monad activating a teleologically organized machine of nature,

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129 The term “union” as in the title to Leibniz’s New System is often used in the period to mean “interaction”. Descartes, for example, uses the term this way. This is a notably different sense of “union” from unum per se. For discussion, see Rozemond (1997), 1ff.

130 A great deal of attention has been paid to the poor prospects of accounting for the unity of composite substance through perceptual relations, so I pass over this option here. See, e.g., Adams (1994), 293; Levey (2007), 64ff.
i.e. an organic body. However, it is not usually emphasized that not even this kind of functional arrangement is sufficient, by Leibniz’s own lights, to establish the per se unity of a composite substance. As he writes in the New Essays, configuration cannot be the principle of identity, since things can alter their configuration yet remain in the same species, or of the same kind, yet cease to be the same individual. As Leibniz puts it, "configuration can continue specifically without continuing individually" (NE 231). Furthermore, when arguing, in his letters to Arnauld, against any physical means of conferring unity onto a collection of parts, Leibniz explicitly claims that functional arrangement achieves merely accidental unity:

No regularity [règle] will ever be found which can make a true substance out of several beings by aggregation. For example, if parts fitting together in the same plan are more suitable for composing a true substance than those touching, then all the officers of the Dutch East India Company will make up a real substance, far better than a heap of stones. But what is a common plan other than a resemblance, or an order of actions and passions that our mind notices in different things? (G II, 101-102; AG 89-90)

Though arrangement, even teleological arrangement might account for why something remains of the same kind it cannot account for why it is the very same thing.

Although teleological arrangement provides a plausible way to distinguish animals from mere aggregates, it does not and cannot account for the substantiality of animals, understood as

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composites. Given Leibniz’s commitment to mereological nihilism, there is simply no room for composite substances in his considered ontology.
Conclusion

I have reached quite a few conclusions, but have also, by necessity, left some issues to the side. In these concluding remarks, I will discuss some of the residual questions left unanswered by the preceding chapters, as well as indications for future research.

I have focused primarily on Leibniz’s arguments from unity against material objects and the way in which Leibniz’s developing theory of substance is constrained by his commitment to unity. But it seems clear that in Leibniz’s mind there is a connection between materiality and passivity. In fact, there appears to be a connection between plurality and passivity. In the New System, a passage I examined in chapter one, Leibniz makes this fairly clear:

After much reflection, I perceived that it is impossible to find the principles of true unity in matter alone, or in what is only passive, since everything in it is only a collection or aggregation of parts to infinity. (G IV, 478; AG 139)

Matter is by its nature only passive, and this is closely linked with the fact that everything in matter is merely a collection or aggregation. Of course, Leibniz also develops arguments against material objects that appeal to force, more specifically to the fact that what is only material cannot be active, and that activity is required by substances.

Though I have not developed the connection in this dissertation, I believe that Leibniz’s mereological nihilism is relevant to his arguments from force as well. Leibniz makes it clear that
aggregates or collections can be eliminated from our descriptions and explanations of phenomena in favour of appeal only to their constituents. That is to say, there is no ineliminable subject of predication over and above the constituents that make up the collections. The corollary is that collections do not really do anything in the world; they are not things that act. The case is different with substances. Substances cannot be eliminated from our descriptions or explanations of phenomena. Consider Leibniz’s discussion of the army, which we have already considered in chapter three:

It is worth investigating in what way an entity through aggregation, such as an army or even a disorganized multitude of men, is one; and in what way its unity and reality differ from the unity and reality of a man. It seems that the chief difference is to be observed in their attributes and operations. Some attributes are said equally of the whole as of its parts, as, for example, that the army is located in the fields of Marathon, which is true of each individual soldier. Other attributes can be said only of the whole, as, for example, that the army is 30,000 strong, and that it is disposed in a lunar-shaped battle line. Nevertheless, all these things can be stated and expressed even if the multitude is not viewed as a single entity. Thus, I can say that 30,000 soldiers are present and that one soldier is situated with respect to another just as the battle line mentioned requires, so that certain ones are distanced from a fixed point by so much, others by so much. (A VI 4, 555-556; trans. Sleigh [1990], 123)

Aggregates differ from substances, e.g. human beings, in their “attributes and operations”, which is to say, in what can be said of them and in what they do. The operations of aggregates can be
reduced to their constituents. Not so with substances. Substances are irreducible agents, which really act. Leibniz’s view on this point has important similarities to the view developed by Trenton Merricks, which he calls “eliminativism”. The linking idea is that whatever can be eliminated from our descriptions and causal explanations is not really an entity after all. Along these lines, the condition for being an entity is the absence of causal reducibility (or, in Merricks’ phrase, “causal redundancy”).

What, then, is the connection for Leibniz between unity and activity? Does activity entail unity? Or, is it the other way around: must something act in order to be a unity? Considering these questions in light of Leibniz’s mereological nihilism provides a preliminary response: something must be a unity in order to act. Whatever is not a unity is merely a collection or aggregate and, as such, any of its actions will be reducible to its constituents. However, more research is needed to turn this preliminary response into a definitive assessment.

I have also provided the evidence to tell the overarching story presented in the Introduction, but I have not traced the textual evidence of the transitions indicated by this story. Thus, I have for systematic reasons suggested that Leibniz’s transition from a tentative commitment to corporeal substances to a full-blown simple-substance theory is driven by his mereological nihilism, at least when it is coupled with the failure of his attempt to model corporeal substances in a way that respects it. Some very important work along these lines has been carried out by Samuel Levey in his 2007 paper “On Unity and Simple Substance in Leibniz”. However, Levey arrives at conclusions slightly different from those indicated by my overarching story. In order to bolster the plausibility of my suggestions, a detailed study of the texts in which Leibniz’s commitment to simple substances first appears is needed. I cannot provide such a study here.
Finally, I have suggested that Leibniz’s commitment to mereological nihilism plays a central role in his developing theory of substance. This is, however, only one among many of Leibniz’s mereological commitments. I believe that by investigating Leibniz’s other views about parts and wholes, further insight can be achieved. In particular, Leibniz’s analysis of aggregates relies on implicit commitments about the relation between a whole and its parts. Leibniz appears to be a “mereological essentialist” about aggregates. That is, he claims that an aggregate is only the same aggregate so long as it has all of the same parts, i.e. the parts are essential to the identity of an aggregate. In fact, Leibniz is what has been called a “positional mereological essentialist”: he argues that even a change in the configuration of the parts of an aggregate results in, strictly speaking, a different aggregate.\(^\text{132}\) These views are relevant to the relationship between substances and aggregates, as well as Leibniz’s views about the persistence of substances and its connection to unity and activity. I cannot engage these interesting topics here.

\(^\text{132}\) This terminology is due to Van Inwagen (1990), ch. 8.
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