

To appear in: *The Oxford Handbook of Leibniz*, ed. Maria Rosa Antognazza (Oxford University Press)

Chapter 19

Monads

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The monad is Leibniz's most brilliant piece of theorizing and an idea of enduring importance for metaphysics. Leibniz conceives of the monad as a mind-like substance, giving it a superficial resemblance to Descartes's conception of mind as *res cogitans*, an immaterial thinking thing. Yet Leibniz develops the idea of a monad in ways that go well beyond Descartes's theory. The monad is not just a subject of thought and volition, but a fundamental constituent of all reality. Further, while all monads are endowed with basic mental properties—perception and appetite—in most monads these properties do not rise to the level of consciousness. Some monads are endowed with perceptual and appetitive powers adequate for animal souls; in other, so-called “bare” monads, perception and appetite are construed in ways that have only a minimal connection to familiar psychological functions.

According to Leibniz's final metaphysics, the created world consists only of monads and of things whose existence and properties can be explained in terms of monads.¹ Leibniz thus

¹ “True substances are only simple substances, or what I call *monads*. And I believe that there are only monads in nature, the rest being only phenomena that result from them” (1716; Dutens, III, 499). Related statements are found in “Conversation of Philarète and Ariste” (ca. 1712-15; GP VI 590/AG 265); “Against Barbaric Physics” (ca. 1710-16; GP VII 344/AG 319); and in late letters to Burcher De Volder, 1704-6 (GP II 262; GP II 270/AG 181; GP II 275-6/AG

assigns to monads an explanatory role not unlike that of elementary particles in modern physics: monads are the “true atoms” of nature.² Nevertheless, there remains this important difference: the monad is not a physical entity in any familiar sense. It does not have parts or interact causally with other monads. It is, in Leibniz’s words, a “formal atom,” with properties akin to those of Aristotelian substantial forms, rather than a material atom.³

Leibniz’s theory of monads is nothing if not audacious. For this reason, it is crucial to understand how he argues for the theory, the conclusions he draws from it, and the problems that remain in interpreting it. In the end, even if we are not persuaded by Leibniz’s account, we should see it as a profound attempt to establish a comprehensive theory of nature that links the domains of the mental and the physical, grounding both in the fundamental reality of monads.

181-2; GP II 282/AG 185); Giambattista Tolomei, 1705 (GP VII 467-8); the Electress Sophie, 1706 (Klopp III 173); Louis Bourguet, 1714 (GP III 566, 575); Nicholas Remond, 1714-15 (GP III 606/L 655; GP III 622; GP III 636/L 659); and Samuel Masson, 1716 (GP VI 625/AG 227).

For defenses of this reading of Leibniz’s late metaphysics, see Robert Adams, *Leibniz: Determinist, Theist, Idealist* (New York: Oxford University Press, 1994); Donald Rutherford, *Leibniz and the Rational Order of Nature* (Cambridge: Cambridge University Press, 1995), and Rutherford, “Leibniz as Idealist,” *Oxford Studies in Early Modern Philosophy* 4 (2008), 141-90.

² “Monadology,” §3 (hereafter cited as Mon, followed by section number, according to the text in GP VI 607-23/AG 213-25).

³ See the “New System” (GP IV 478-9/AG 139), and his comment to Bierling from 1712: “Monads should not be confused with atoms. Atoms (as they are imagined) have shape. Monads no more have shape than do souls” (GP VII 503).

1. Why Monads?

Leibniz’s most famous argument for the existence of monads is summarized in the opening sections of the “Monadology”:

1. The *MONAD*, which we shall discuss here, is nothing but a simple substance that enters into composites—simple, that is, without parts.
2. And there must be simple substances, since there are composites; for the composite is nothing more than a collection, or *aggregate*, of simples.
3. But where there are no parts, neither extension, nor shape, nor divisibility is possible. These monads are the true atoms of nature and, in brief, the elements of things. (GP VI 607/AG 213)

Section 1 stipulates that a monad is a “simple substance,” that is, a substance lacking parts.

Section 2 asserts that, given the existence of composites (things having parts), there must be simples (things lacking parts), from which composites arise as aggregates. Because simples by definition lack parts, they must be unextended and indivisible (section 3). Hence, these properties must belong to monads, which are the “true atoms of nature” and the “elements of things.”

Leibniz’s argument for monads rests on a particular understanding of the requirements of ontological grounding, that is, of which things must exist as a condition for the existence of other things.⁴ As he sees it, whatever is “many,” or composed of parts, depends for its existence on what is essentially “one,” and not composed of parts, the property in terms of which he defines the monad. Two lines of reasoning, with deep roots in his thought, come together in this

⁴ The topic has undergone a recent revival in philosophy. See *Metaphysical Grounding: Understanding the Structure of Reality*, ed. Fabrice Correia and Benjamin Schnieder (Cambridge: Cambridge University Press, 2012).

inference.⁵ First, whatever is many, or a multitude, presupposes the existence of unities, for a multitude can only come to be through the multiplication of unity.⁶ Second, whatever is a composite or aggregate has a reality that is derivative from that of the things from which it is composed; hence, on pain of regress, for a composite to have any reality, its existence must be explained in terms of its composition from things whose reality is not derivative.⁷ Leibniz identifies the latter class of things with that of *substance*. By definition, a substance is both a *per se* real being, depending on nothing for its existence except God, and a *per se* unity.⁸ Thus, the existence of anything composite must be grounded in the existence of substances, which Leibniz identifies with monads.

⁵ For a careful analysis, see Samuel Levey, “On Unity, Borrowed Reality and Multitude in Leibniz,” *The Leibniz Review* 22 (2012), 97-134.

⁶ This claim is ubiquitous in Leibniz’s writings. It is extensively aired, for example, in his correspondence with the Electress Sophie. See Leibniz’s letters to her of September 1695 (GP VII 540); 12 June 1700 (GP VII 552-3); and 30 November 1701 (GP VII 557).

⁷ This emerges as a central theme in the Arnauld correspondence. See Leibniz’s letter to Arnauld of 30 April 1687 (A II.2, 184-6/LA 120-22).

⁸ Famously he asserts to Arnauld, “To be brief, I hold as axiomatic this identical proposition which is varied only by the emphasis: namely, that *what is not truly ONE being is not truly one BEING*” (A II.2, 186).

Leibniz applies this conclusion to all material things. Any body consisting of extended matter is divisible into parts *ad infinitum*.⁹ Because the division of matter never comes to an end, no principle of unity can be found in extended matter as such. Yet if bodies are real, or have a mind-independent existence, they must have a ground in some *per se* reality. Given this, Leibniz concludes that the reality of bodies must be located in monads: real unities, which are not composed of parts. Expanding on the argument of the “Monadology,” he writes to De Volder:

I have undertaken to prove these [true and real unities] from the fact that otherwise there would be nothing in bodies. I have established the following consequences: first, those things which can be divided into many things are things consisting of many things or aggregates. Now, second, whatever are aggregates of many things are not one except by virtue of the mind, nor have they any reality except that which is derivative or which belongs to the things from which they are aggregated. Therefore, third, things which can be divided into parts have no reality unless there are in them things which cannot be divided into parts. Indeed, they have no reality except that of the unities which are in them. (GP II 261)

A thing divisible into parts is an aggregate, whose unity depends on the relations among its parts. But Leibniz holds that relations are not existing things in their own right; all relations are merely mental or ideal. Hence, any aggregate owes its existence to a mind’s representation (in thought or perception) of the unity of some plurality of things.¹⁰ At the same time, if an

⁹ Though the argument does not depend on it, Leibniz, in fact, makes the stronger claim that any portion of matter is not just infinitely divisible, but infinitely divided, by virtue of the motion of its parts. See his letter to De Volder of 30 June 1704 (GP II 268/AG 178-9).

¹⁰ Cf. *New Essays*, II.xii.6 (RB 146); II.xxiv.1 (RB 226).

aggregate is real at all, its reality must be explained in terms of the *per se* reality of substance. That is the weight of the grounding argument described above. If matter is infinitely divisible, however, nowhere in it do we find parts that are true unities: parts that are not themselves further divisible. It is just here that Leibniz invokes the existence of monads. By his lights, *something* must ground the reality of bodies and this can only be something that has a *per se* unity and reality. Thus, monads must exist as a condition for the existence of bodies.¹¹

Leibniz advances a structurally similar argument for the existence of monads based on the need for an intrinsic principle of change. Change is observed to occur in bodies, but nowhere in extended matter do we find a ground for change, that is, a principle that explains why bodies change as they do. According to Leibniz, such a ground is supplied by substance, which by nature is an *entelechy*, or principle of action: a spontaneous source of change (Mon 18). This second grounding argument reaches the same conclusion as the first: for material things to exist as they do—in this case, as things that change—they must be grounded in monads, which are both *per se* unities and intrinsic sources of change. The close relation between these arguments is

¹¹ Leibniz restates the argument in a subsequent letter to De Volder (GP II 267-8). The exact nature of the dependence of matter on monads remains obscure. Leibniz insists that the grounding relation is not mereological or compositional. Monads, he says, are not parts but *requisites* of matter (GP VII 503). He must say this because the spatial division of matter proceeds *ad infinitum*; never in the division do we arrive at indivisible monads, and conversely no extended matter can be built up from unextended simples. These conclusions are the basis of Leibniz's resolution of the "labyrinth of the continuum" (see Arthur, Chap. 16 in this volume). To the extent that monads serve as "requisites," or ontological grounds, for the existence of matter, the grounding relation must be understood differently. I return to this point in section 4.

observed in the draft of a 1702 letter to Pierre Bayle in which Leibniz successively asserts their conclusions:

There must be simple beings, otherwise there would be no compound beings, or beings by aggregation, which are phenomena rather than substances, and exist (to use the language of Democritus) by *nomos* rather than *physis*, that is, notionally or conceptually, rather than physically. And if there was no change in simple things, there would be none in compound things either, for all their reality consists only in that of their simple things. (GP III 69/WFN 129-30)¹²

At bottom, then, Leibniz's arguments for the existence of monads rest on the demand for an ultimate ground for the existence and properties of bodies—a ground he claims must be sought in the *per se* reality, unity and activity of substance.

Such grounding arguments involve a significant set of assumptions. They require that we accept that the existence of some things depends on the existence of ontologically prior things, which serve as ultimate grounds to the extent that they themselves do not depend for their existence on anything else (except God). Further, they assume that such grounding relations are governed by the principle of sufficient reason; thus we can reason our way from the existence of one thing to the existence of prior things on which it depends. On Leibniz's account, we can conclude that unities must exist because only they render intelligible the existence of a multitude or aggregate. Finally, all such arguments are only conditional in form. They establish that *if* anything exists or involves change, then this existence or change must be accounted for in terms of the prior existence and change of substances, for only substances are *per se* unities and sources of change. Arguments of this form invite the skeptical response that perhaps no

¹² Cf. GP II 252/AG 177; GP III 67/WFN 128.

composite things really exist or exhibit real change. Perhaps all composite things are merely appearances: things we take to be real, but about which we are mistaken. The consequences for Leibniz's grounding arguments are clear: if there is nothing whose existence and properties stand in need of grounding, then there is no case for the existence of monads as the necessary grounds of such things.¹³

Even if we accept the soundness of Leibniz's grounding arguments, a further challenge confronts the claim that they establish the existence of monads. What these arguments prove at most, a critic may object, is the existence of *substances*: true unities that are intrinsic sources of change. The arguments do not show that these substances must be monads, substances that are

¹³ Leibniz concedes that we have only a moral certainty that external bodies exist, based on the presumptive wisdom God exercises in creating the world of greatest perfection (see his letter to Des Bosses of 29 April 1715, Look-Rutherford 338-9). His arguments for the existence of monads as grounds for the existence of bodies hinge on this premise. However, this qualification is less significant for Leibniz than it might otherwise be. As we shall see in the next section, he also holds that monads are necessary as substantial grounds for perceptual change, that is, change that occurs within us as we experience the changing states of physical things. Thus, even if the latter were purely phenomenal, with no ground in an external reality of monads, there would have to be an internal ground for change in the soul itself. Summarizing these two explanatory roles of monads, he writes: "Consequently, it must be admitted that something besides matter is both the principle of perception or internal action, and of motion or external action. And such a principle we call substantial, and also primitive force, primary entelechy, and in a word, soul, since the active conjoined with the passive constitutes a complete substance" ("Reflections on the Souls of Beasts," 1710; Dutens II, 1, 230).

simple or without parts. The basis for the critic's objection is that the same grounding arguments appear prominently in Leibniz's writings from the 1680s, particularly in his correspondence with Arnauld, where he appears to accept that the substances grounding bodies are themselves corporeal. They are "quasi-Aristotelian" hylomorphic substances: living bodies, whose substantiality is founded on the unity given to them by a soul-like substantial form.¹⁴ In contrast to material things in general, living bodies *are* true unities, capable of serving as the grounds of the reality of other material things. Consequently, the critic claims, the grounding arguments do not establish the existence of monads as against corporeal substances. Either is qualified to serve as the ultimate ground for the existence of other things.¹⁵

One of the most contentious issues in Leibniz scholarship over the last several decades has been when and why Leibniz abandoned a basic ontology of corporeal substances in favor of the theory of monads.¹⁶ The term 'monad' itself means simply *one* or *unity*.¹⁷ When Leibniz

¹⁴ For an influential account, see Daniel Garber, *Leibniz: Body, Substance, Monad* (Oxford: Oxford University Press, 2009).

¹⁵ This objection has been effectively pressed by Samuel Levey, "On Unity and Simple Substance in Leibniz," *The Leibniz Review* 17 (2007), 61-107; and "On Unity, Borrowed Reality and Multitude in Leibniz," *op. cit.*

¹⁶ For some commentators, the pertinent question is *whether* Leibniz abandons an ontology of corporeal substances in favor of one that ascribes an ultimate reality to monads alone. See, e.g., the readings offered in: Pauline Phemister, *Leibniz and the Natural World* (Dordrecht: Springer, 2005); Peter Loftson and R. T. W. Arthur, "Leibniz's Body Realism: Two Interpretations," *The Leibniz Review* 16 (2006), 1-42; Glenn Hartz, *Leibniz's Final System* (New York: Routledge, 2007).

begins to use the word as a technical term around 1695, he sometimes includes corporeal substances within its scope.¹⁸ Fairly quickly, however, this usage is abandoned in favor of one that restricts the reference of the term to unextended, soul-like substances. Thus, by the early 1700s Leibniz often speaks of “unities or simple substances,” implying that he regards the terms as coextensional.¹⁹

¹⁷ “*Monas* is a Greek word signifying unity, or what is one.” “Principles of Nature and of Grace” (hereafter: PNG), §1 (GP VI 598/AG 207). In an earlier (1698) letter to Johann Bernoulli, he writes: “By monad I understand a substance truly one, namely one which is not an aggregate of substances” (GM III 537/AG 167).

¹⁸ The first dated occurrence of the term is in a 1695 letter to the Marquis de l’Hospital, where Leibniz identifies a monad with “what is genuinely a real unity” (A III.6, 451/WFN 57). In several contemporary texts he extends the term to embodied creatures: “What I call a complete monad or individual substance is not so much the soul as it is the animal itself, or something analogous to it, endowed with a soul or form and an organic body” (GM III 542/AG 168; cf. GM III 552/L 512). Note, however, that in the 1695 “New System,” he appears to commit himself to a monadic conception of substance: “There are only *atoms of substance*, that is, real unities absolutely destitute of parts, which are the source of actions, the first absolute principles of the composition of things, and, as it were, the final elements in the analysis of substances” (GP IV 482/AG 142). Where Gerhardt gives the final words of the sentence as “des choses substantielles” (“of substantial things”), the published version of the text reads “des substances.”

¹⁹ His writings contain many examples of similar expressions: “this simple substance, this unity of substance or this *monad*” (1700, GP VII 552); “unities or simple things” (1702, GP VI

What accounts for Leibniz's conversion to the view that the only true substances are monads? The matter remains controversial, but the following is one plausible explanation.²⁰ By Leibniz's lights, the soul or mind—an immaterial, active being—is a prime candidate for being a substance. Lacking extended parts, the soul qualifies as a true unity, and the power of volition is evidence of its capacity for spontaneous action. Thus, souls or minds by themselves count as substances, a view Leibniz appears to hold in common with Descartes.²¹ Yet Leibniz's intellectual commitments are diverse. While recognizing the attractions of the soul-as-substance view, he also is drawn to the Aristotelian model of hylomorphic substance, exemplified by living bodies, such as plants and animals. This view, which holds that a soul or substantial form does not naturally exist apart from the body with which it is united, is compelling on intellectual grounds for Leibniz and an element of Catholic theology that he seeks to uphold.²²

538/L 559); “unities or simple substances” (1706, Grua 64); “unities or monads” (1714, GP III 622).

²⁰ For a fuller rehearsal of the argument, see Donald Rutherford, “Unity, Reality and Simple Substances: A Reply to Samuel Levey,” *The Leibniz Review* 18 (2008), 207-224.

²¹ See, e.g., “Discourse on Metaphysics,” §§32-33 (A VI.4, 1581-2/AG 64-5).

²² On Leibniz's understanding of corporeal substance, see Garber's chapter in this volume. Leibniz's ambivalence concerning the extension of the term ‘substance’ (whether it includes souls or corporeal substances, or both) is apparent in works from the 1680s and early 1690s. In response to Arnauld's objection that if the soul and the body are distinct substances, then one cannot be the substantial form of the other, Leibniz says only that the body by itself is not a substance, but a being by aggregation, and then adds: “Besides, the last [Fifth] Lateran Council asserts that the soul is truly the substantial form of our body” (A II.2, 119/LA 93). For a careful

Problems arise when Leibniz attempts to put these views together. If the soul is a substance in its own right, as he seems to affirm in the “New System,” then any corporeal substance must be a composite being, consisting of a soul, or form, and so-called “secondary matter,” which itself is composed of an infinite envelopment of living bodies within living bodies. Whether Leibniz was struck by the problem in quite this way, it is difficult to see how the soul could unite the matter of its body—by hypothesis, an aggregate of independently existing substances—in a *per se* unity. Leibniz believes that no particular matter is essential to the identity of a corporeal substance; the soul alone is the ground of its identity. Moreover, his own preferred explanation of the relation of the soul and its body is in terms of their preestablished harmony—a relation which he admits does not support an understanding of the composite as a *per se* unity. Consequently, when challenged by Catholic defenders of the unity of the complete human being, Leibniz falls back on the claim that he “does not deny” the real or metaphysical union of soul and body—the sort of union necessary to produce a *per se* unity of them—but that it must be accepted on the basis of faith rather than reason.²³

assessment of Leibniz’s view of substance during the period, see R. C. Sleigh, Jr., *Leibniz and Arnauld: A Commentary on Their Correspondence* (New Haven: Yale University Press, 1990).

²³ Leibniz’s remarks on the metaphysical union of soul and body fall into two distinct groups. In his reply to Tournemine (GP VI 595/AG 196–7) and in the *Theodicy* (Preface, GP VI 45; “Preliminary Discourse,” §55, GP VI 81; Part I, §59, GP VI 135), he appears quite concessive. By contrast in letters to the Electress Sophie (GP VII 555; Klopp III 174-5) and to De Volder, he challenges whether there is anything intelligible to be said beyond the doctrine of preestablished harmony: “In the schools they commonly look for things that are not so much ultramundane as utopian. Recently the clever French Jesuit Tournemine supplied me with an

Whatever Leibniz's final position on the union of soul and body, he was strongly drawn to the thesis that reality ultimately consists only of monads and their internal modifications. It appealed to him for reasons of ontological parsimony,²⁴ and it supported the intuition, on which he acknowledged his debt to Plato, that what is fully real is not the world given to our senses—even the mathematically representable world of extended material things—but a world fully intelligible to the mind, which he identifies with monads.²⁵ Monads are entities that most clearly satisfy the conditions that define a substance or *per se* real being: true unities that are spontaneous sources of change. If the existence of all other things can be explained in terms of monads and their properties, then Leibniz has made a strong case for the latter as a foundational ontology. Before judging his success in this regard, we must look more closely at the properties he ascribes to monads.

elegant example of this. When he had praised somewhat my preestablished harmony, which seemed to explain the agreement that we perceive between the soul and the body, he said that he still desired one thing, namely, the reason for the union, which certainly differs from the agreement. I answered that whatever that metaphysical union is that the schools add over and above agreement, it is not a phenomenon, and we do not have any notion of it or acquaintance with it. Thus I could not have intended to explain it” (GP II 281/AG 184).

²⁴ “Indeed, everywhere and throughout everything, I place nothing but what we all acknowledge in our souls on many occasions, namely, internal and spontaneous changes. And so, with one stroke of mind, I draw out the entirety of things” (GP II 276/AG 182).

²⁵ See his strong statement of this position in his 1702 letter to Queen Sophie Charlotte, “On What is Independent of Sense and Matter” (GP VI 502-3/AG 189).

2. What is a Monad?

Leibniz's inspiration for the monad is an immaterial soul or soul-like substantial form. In developing this idea, however, he arrives at a conception of the monad as a theoretical entity in its own right. He categorizes both human minds and animal souls as instances of monads, but the concept itself is free of any essential connection to Christian theology or Aristotelian metaphysics. It is the product of Leibniz's attempt to think through the notion of a substantial ground of all created existence.

As we have seen, Leibniz defines the monad as a "simple substance"—one without parts into which it can be divided—and hence a "true unity." The simplicity and indivisibility of the monad support its claim to be foundational in an ontological sense: monads are the ultimate constituents—but not ultimate parts—of all existing things. The simplicity of monads entails that they are *immaterial* beings, for anything material, according to Leibniz, contains parts into which it can be divided.²⁶ It further implies that there is no conceivable way in which a monad can come to be or cease to be naturally: it can "only begin by creation or end by annihilation, whereas composites begin or end through their parts" (Mon 6); and there is no way of explaining

²⁶ "I don't admit simple bodies. There is nothing simple, in my opinion, but true monads which have neither parts nor extension. Simple bodies, and even perfectly similar ones, are a consequence of the false hypothesis of the void and atoms, or of lazy philosophy, which does not sufficiently carry out the analysis of things and fancies it can attain to the first material elements of nature, because our imagination would be therewith satisfied" (Fifth Letter to Clarke, §24; GP VII 394/AG 333-4). Note the distinction between the false conception of elements (material atoms) that satisfies the imagination, and the true conception (monads) to which intellectual analysis leads us.

how a monad can be changed internally by anything external to it, since there are no parts to be rearranged, added to, or subtracted from. In Leibniz's famous phrase monads are "without windows" through which they can be affected by external things (Mon 7).

The simplicity of monads, however, does not preclude them from having qualities in the form of a multiplicity of internal modifications. Indeed, Leibniz argues that monads must have such modifications. First, it follows from the principle of the identity of indiscernibles (and ultimately the principle of sufficient reason), that if any two monads are non-identical, there must be a qualitative distinction between them, one founded on an "intrinsic denomination" (Mon 9). Second, if monads are to play a fundamental explanatory role, accounting for the difference and change in other things (e.g. bodies), there must be variations in monads, which are grounds of change insofar as they are enduring subjects of a succession of states (Mon 8). To fulfill this role, it is not enough for monads to be *subject* to change; they must be sources of the changes in themselves: "The monad's natural changes come from an *internal principle*, since no external cause can influence it interally" (Mon 11). Thus, every monad must be, in the term Leibniz borrows from Aristotle, an *entelechy*: a principle of action, in which change is continually actualized in a succession of different states (Mon 18).

The picture Leibniz constructs of the monad is highly abstract. What we are presented with in the opening sections of the "Monadology" is a model of what a fundamental entity would have to be like. In every monad:

besides the principle of change, there must be *diversity in that which changes*,
which produces, so to speak, the specification and variety of simple substances.

This diversity must involve a multitude in the unity or in the simple. For, since all natural change is produced by degrees, something changes and something

remains. As a result, there must be a plurality of properties and relations in the simple substance, although it has no parts. (Mon 12-13)

Leibniz proposes this as the most basic process occurring in nature. The momentary state of every monad is characterized by a multitude of distinct modifications, with change occurring through the gradual variation of those modifications.²⁷

At this point, Leibniz moves to the second stage in his development of the concept of the monad, in which he gives greater specificity to the diversity of modifications that define the monad's state. A monad does not contain just any multitude of modifications. Each of its passing states "involves and represents a multitude in the unity or simple substance," making it a state of *perception*. Leibniz defines perception, in general, as "the representation of a multitude in a unity" (GP VII 529). In making representation an essential feature of a monad's states he commits himself to two points. First, the states of a monad have content, or are information bearing. Second, by virtue of this content, monads "express" each other. Although monads are

²⁷ It is sometimes asked how, if a monad is without parts, there can be a multitude of distinct modifications in it. Leibniz answers this by appeal to the example of the mind, in which there can be many perceptions, thoughts and feelings simultaneously. It is also worth attending, though, to the abstractness of his account: he, in effect, sketches the idea of a state description of an ideal machine or "automaton" (Mon 18). It is a mark of his prescience that he recognizes this can be done, independently of the question of how the automaton might be realized in a substance.

physically isolated from each other, there are well-defined relations between the contents of their states (Mon 56, 59).²⁸

This supports the central claim of the doctrine of preestablished harmony: monads are programmed by God to change their states in a coordinated fashion in relation to the states of all other monads. We might think of this as the operating system of the monad, which involves its states being continually updated to reflect the contents of other monads' states. Leibniz then takes a further crucial step by specifying the basic content of a monad's states (in effect, the simulation program they all run). The multitude that every monad represents consists of the many things making up a single physical universe, which Leibniz conceives as a material plenum (there is no void; all extension is full of matter). The metaphysical theory is now in place. God creates every monad as a "concentrated universe" (GP III 575/L 663). It contains a complete representation of what we take to be the physical universe; and in each monad this representation is continually updated, in coordination with the representations of every other monad, to reflect the evolving history of the universe.

The details of this picture are far from intuitive, but they reflect Leibniz's efforts to think through what the fundamental constitution of reality must be like, given his conviction that matter—the divisible stuff "diffused" in extended things—does not meet the exacting standards

²⁸ For Leibniz's technical notion of expression, see A VI.4, 1370/L 207; A II.2, 240/LA 144; C 15/MP 176-7; and Chris Swoyer, "Leibnizian Expression," *Journal of the History of Philosophy* 33 (1995), 63-99. As Swoyer argues, Leibniz conceives of expression as a structure-preserving mapping, whereby relations in one domain are lawfully related to relations in another. The implication is that monads express each other by virtue of functional relations between *relations* (spatiotemporal and causal relations) represented in their perceptions.

he places on the real. If matter is not real, then the physical universe composed of material things is not real either. Yet we are all convinced that we live in a material world. Leibniz ties this conviction to the confused content of our perceptions. Not satisfied to say with Descartes that our senses mislead us about the real properties of bodies, Leibniz contends that perceptual experience disposes us to misconceive reality in a more fundamental way. At the same time, he accommodates the facts of our experience by building them into the basic plan according to which we represent the world. In short, reality consists of unextended monads; but each of those monads represents a world of material things, corresponding to the world we take to be real.

The move to draw Leibniz's theory closer to ordinary experience should not proceed too quickly. His underlying idea is that every monad is endowed by God with a *complete* representation of the physical universe. No created monad is, or can be, aware of all of this detail, extending to the outermost reaches of space and to the beginning and end of time. But all of it is present as content in every monad's states, most of it inaccessible for the purposes of cognition. Metaphysically, this is the basic form of perception that Leibniz ascribes to all monads. There are many monads, so-called "bare monads," in whose perceptions there is nothing "distinct," nothing "in relief and stronger in flavor." Such monads exist as though in a "stupor," meaning that they are entirely unaware of, and cognitive unresponsive to, the world of their representations (Mon 24). Nevertheless, the representations are there and they are continually updated to reflect the evolving state of the perceived physical universe. Leibniz ascribes this change to a monad's force of "appetition": the inherent tendency of its perceptual states to give way to new states (Mon 15). These two powers, perception and appetition, exhaust the properties of a monad. As he writes to Des Bosses in 1713, "since monads are nothing other than representations of phenomena with a transition to new phenomena, it is clear that in monads

there is perception on account of the representation, and appetite on account of the transition; and there are no principles from which anything else could be sought” (Look-Rutherford, 318-19).²⁹

The final stage in Leibniz’s development of the concept of the monad imposes on top of this framework an account of animal and human psychology, identifying the soul or mind of complex living creatures with a superior kind of monad. “[S]ince sensation is something more than a simple perception,” he writes, “I think that the general name of monad and entelechy is sufficient for simple substances which only have perceptions, and that we should only call those substances *souls* where perception is more distinct and accompanied by memory” (Mon 19; cf. PNG 4). By perceptions that are “distinct,” Leibniz means ones that stand out “in relief” and affect a subject sensibly, in contrast to the soul’s state during “a deep, dreamless sleep” (Mon 20). Such perceptions are characteristic of animal life, in which a creature’s experience is marked by its responsiveness to representations of its body and its physical environment. In any soul, only a small portion of its perceptions are “heightened” in this way (Mon 25). These stand out against the background of the infinite detail of the universe, represented unconsciously in every monad, and become the basis of an animal’s ability to learn from experience: “We observe that when

²⁹ Cf. Mon 17; PNG 2; GP IV 562/L 579. I pass over one significant issue regarding the form of the laws governing monadic change. Leibniz describes these as “laws of the *final causes of good and evil*” (PNG 3), reinforcing the point that the actions of a monad are teleological or end-directed. For contrasting accounts of how this should be understood, see Martha Brandt Bolton, “Change in the Monad,” and Donald Rutherford, “Laws and Powers in Leibniz,” both in: *The Divine Order, the Human Order, and the Order of Nature: Historical Perspectives*, ed. Eric Watkins (Oxford: Oxford University Press, 2013), 175-94, 149-74.

animals have the perception of something which strikes them, and when they previously had a similar perception of that thing, then, through a representation in their memory, they expect that which was attached to the thing in the perception, and are led to have sensations similar to those they had before” (Mon 26).

For the most part, human minds operate like the souls of animals: “Men act like beasts insofar as the sequence of their perceptions results from the principle of memory alone.... We are all mere Empirics in three fourths of our actions” (Mon 28). Nevertheless, Leibniz credits minds with a fundamentally different kind of cognition than that enjoyed by lesser souls. Human minds, and those of more elevated spirits, have the capacity for reflective thought, on which depends their ability to acquire rational knowledge:

It is... through the knowledge of necessary truths and through their abstractions that we rise to *reflective acts*, which enable us to think of that which is called ‘I’ and enable us to consider that this or that is in us. And thus, in thinking of ourselves, we think of being, of substance, of the simple and of the composite, of the immaterial and of God himself, by conceiving that that which is limited in us is limitless in him. And these reflective acts furnish the principal objects of our reasonings. (Mon 30; cf. PNG 5, 14)

Minds are distinguished from animal souls by their ability to grasp necessary truths and to link them in demonstrative reasoning. That minds are able to do this is ascribed to the fact that they have access to a distinct kind of cognitive content, which is made available to them through “reflective acts.” In reflective thought—thought *about* thinking and about themselves as subjects of thought—minds gain access to an inner intelligible reality. They comprehend the fundamental concepts on which Leibniz builds his metaphysics, especially the concepts of being, unity and

infinity (or God).³⁰ These concepts, he believes, are the basis of a mind's ability to comprehend the perfection, order and justice that define God's plan for the world, and thereby to realize its own role as an autonomous subject of the "city of God": "the most perfect possible state under the most perfect of monarchs" (Mon 85).

Leibniz depicts monads as ordered in a hierarchy of perfection, defined by the distinctness of their perceptions (Mon 48, 60). At the top of the hierarchy is God, whose omniscience reflects his standing as the unique actually infinite being.³¹ Below God are rational minds, capable of varying degrees of distinct intellectual knowledge; then animal souls, possessing some distinct perceptions; and finally, bare monads, whose perceptions are wholly confused and "sunk in matter." Two points should be observed in interpreting this hierarchy of perfection. First, while Leibniz undoubtedly understands God as a perfect unity, the designation of God as a "monad" is in tension with the theoretical framework developed in the "Monadology." In no meaningful sense is God's nature defined by perception and appetite in the way that Leibniz characterizes them.³² Second, the idea that perfection can be measured

³⁰ In a 1696 letter to the Electress Sophie, Leibniz writes: "My fundamental meditations turn on two things, namely, on unity and on infinity" (GP VII 542). In a later letter to her, he includes among the concepts acquired through reflection those of "force, action, change, time, identity, one, true, good, and a thousand others" (GP VII 552).

³¹ "Thus God alone is the primitive unity or the first simple substance" (Mon 47). In other texts, Leibniz explicitly refers to God as a monad (GP III 636/L 659; GP VII 502).

³² In Mon 48, Leibniz is more careful to say that a monad's perceptual and appetitive faculties are "imitations" of the divine attributes of knowledge and will, "in proportion to the perfections they have."

along a single dimension of distinctness of perception obscures the difference between two kinds and sources of cognitive content. The background condition for perception in all monads is the representation of a material manifold, i.e. the physical universe. The distinctness of perception in this sense is a function of how much of the infinite detail of the universe stands out in the perceptions of a given monad. In different monads, different aspects of the manifold appear in relief, based on how their sensory organs are affected by the motions of matter. A soul whose body is responsive to auditory stimuli will perceive different features as distinct than a soul whose body is responsive to visual stimuli (PNG 4).³³ A different sense of distinctness, though, comes into play in the case of rational minds, whose cognitive capacities are enhanced by their grasp of intelligible concepts. Conceptual content of this sort is more distinct to the extent that it is less confounded by perceptual representations of matter and analyzed into constitutive primitive concepts. Because different kinds of content are involved in the two cases, there is no single dimension along which monads can be ordered in terms of the distinctness of their perceptions.

In the end, Leibniz recognizes three basic kinds of monads: God, minds, and all other soul-like substances. Between God and all other monads there is a categorical distinction grounded in the difference between infinite and finite, creator and created. Leibniz elaborates this distinction through the doctrine that every created monad is endowed with primitive passive power, or primary matter, manifested in its confused perceptions of matter. A monad is lower in the hierarchy of perfection to the extent that the changes in its states are ascribed to this passive, material principle rather than to its primitive active power, or form, manifested in distinct

³³ Understanding this statement in accordance with the doctrine of preestablished harmony: no soul is directly affected by the body.

perceptions.³⁴ Leibniz also holds, however, that just as no finite increment of perfection, however great, spans the divide between God and any created being, so no finite increment of perfection, spans the divide between minds and other monads. As he sometimes says, minds are “infinitely nearer” to God than all other things.³⁵ Whereas souls in general are “living mirrors or images of the universe of creatures,” minds are also “images of the divinity itself, or of the author of nature, capable of knowing the system of the universe, and imitating something of it through their schematic representations of it, each mind being like a little divinity in its own realm” (Mon 83). Because of their intellectual capacities, minds partake of “a moral world within the natural world” (Mon 86), reflecting their ability, and obligation, to model their actions on those of God and to contribute through their endeavors to the perfection of the world.

3. A World of Monads

Leibniz describes a monad’s perceptions and appetitions as “intrinsic denominations,” meaning they are qualities that can be predicated of a monad independently of its relations to other created

³⁴ Cf. GP II 252/AG 177; GP III 636/L 659; and *Theodicy*, §124: “If [an intelligent creature] had only distinct thoughts it would be a God, its wisdom would be without bounds: that is one of the results of my meditations. As soon as there is a mixture of confused thoughts, there is sense, there is matter. For these confused thoughts come from the relation of all things one to the other by way of duration and extent. Thus it is that in my philosophy there is no rational creature without some organic body, and there is no created spirit entirely detached from matter” (GP VI 179/H 198).

³⁵ Cf. “Discourse on Metaphysics,” §§35-36 (A VI.4, 1584-7/AG 66-8).

beings.³⁶ At the same time, he regards these qualities as the basis of a monad's relations to other monads in a world. In a late letter to Bourguet, he writes:

In the way in which I define perception and appetite, all monads must be endowed with them. I hold *perception* to be the representation of plurality in the simple, and *appetite* to be the striving from one perception to another. But these two things occur in all monads, for otherwise a monad would have no relation to the rest of the world. (GP III 574-5/L 662-3)

That monads exist related to other monads in a world may seem to rest uneasily with Leibniz's claims about the ontological independence of monads. On the one hand, each monad is, "as it were, a certain world of its own,"³⁷ with no real, or physical, dependence on any other existing thing except God; changes in a monad's perceptual states come about through its own appetitions, independently of the states of other monads. On the other hand, no monad exists separated from a world of other monads. Reinforcing this point in a 1698 letter to Gabriel Wagner, Leibniz quips: "solitary monads do not exist. They are monads, not monks" (Grua 395).

Reconciling these claims requires drawing some distinctions. According to Leibniz, no monad requires the existence of any another monad, in the sense that it is metaphysically possible for the former to exist as the individual it is without the existence of the latter. To Des Bosses he asserts that God could create a single monad—presumably any monad—and sustain its existence independently of the existence of any other monad.³⁸ However, this scenario of one

³⁶ See Mon 9, and C 9/MP 134: "From this it appears that two intrinsic denominations are required, a power of transition and that to which the transition is made."

³⁷ Look-Rutherford, 226-7, 242-3; A VI.4, 1550/AG 47.

³⁸ Look-Rutherford, 337-9.

or more isolated substances does not comport with Leibniz's understanding of possible worlds. Possible worlds are not merely consistent sets of arbitrary possible substances. Instead, Leibniz begins from the idea that any possible world is a way of being a *world*, where there are strict conditions on the kind of order that must be realized among a plurality of things for them to constitute a world. Leibniz accepts the now widely held view that any world is closed with respect to spatiotemporal and causal order. That is, for any possible world, any member of such a world must be spatiotemporally related and causally connected to every other member of that world.³⁹

The challenge lies in understanding how these conditions can be met in the case of monads. Leibniz does not take worldhood to imply that monads are located in a physical space shared with bodies—either the absolute space of Newtonians or a material plenum; and he does not backtrack on his doctrine that monads do not affect each other through an immediate causal influence.⁴⁰ Nevertheless, he holds that the monads of a world are united through orders of coexistence and succession, identified with a generalized notion of spatiotemporal order, and through relations of *commercio*, or mutual connection, which are relations of “ideal” causal dependence.⁴¹ In defining these relations among monads, Leibniz makes one critical assumption:

³⁹ I defend this reading in Chapter 4 of this volume, “The Actual World.”

⁴⁰ Look-Rutherford, 226-7.

⁴¹ See, in particular, the supplementary study to his letter to Des Bosses of 15 February 1712 (Look-Rutherford, 232-3). According to Leibniz, “The modifications of one monad are the ideal causes of the modifications of another monad... insofar as reasons appear in one monad which, from the beginning of things, prompt God to produce modifications in another monad” (Look-Rutherford, 298-9; cf. 274-5). Specifically, one monad is said to *act* on another just in

that every monad has a unique body that fixes its position and causal state relative to that of every other monad.⁴² This thesis plays a key role in the theory of monads, as can be seen in the link Leibniz establishes between it and his explanation of the finitude of monads: “God alone is above all matter, since he is its author. But creatures free or freed from matter would at the same time be divorced from the universal connection [*la liaison universelle*], like deserters from the general order” (GP VI 546/L 592).⁴³ The thesis of the embodiment of monads is thus employed in explaining the difference between God and created monads, and in explaining how monads are related in a world.

Leibniz’s defense of the embodiment of monads is consistent with a realism about bodies—a position that maintains, for example, that a monad and its organic body together form a corporeal substance that possesses a *per se* unity. Yet the account does not require this. Leibniz’s explanation of the finitude of monads, and of the order and connection among them, stands even if every monad has only a phenomenal body, whose represented structure and relations to other bodies are the basis of the monad’s having a “point of view” on the universe (Mon 57). As he explains in the “Monadology,” monads are related in a common universe through representations of their particular bodies:

case it represents its body as the physical cause of changes in the body of the second monad, and that monad in turn represents its body as *acted* on by the body of the first monad (Mon 49-52; *Theodicy*, §66).

⁴² “My own view is that the soul always thinks and feels, is always united with some body, and indeed never suddenly and totally leaves the body with which it is united” (*New Essays*, II.xxiii.20; RB 221).

⁴³ Cf. *Theodicy*, §124, quoted in note 34.

Thus, although each created monad represents the whole universe, it more distinctly represents the body which is particularly affected by it, and whose entelechy it constitutes. And just as this body expresses the whole universe through the interconnection of all matter in the plenum, the soul also represents the whole universe by representing this body, which belongs to it in a particular way. (Mon 62)

Every monad represents itself as a unique body, which is spatiotemporally and causally related to every other body in the universe, including those represented by other monads as *their* bodies. On these grounds, Leibniz concludes that every monad is related to every other monad via relations of coexistence and succession, and relations of mutual causal dependence. That is, there are determinate answers to the questions of where and when any monad is, and of what its state of activity is, relative to those of other monads.⁴⁴ The answers to these questions are given in terms of the relations among the bodies that each monad represents as its own. And these answers hold independently of whether the relation between a monad and its body goes beyond its representation of that body as its physical point of view on the universe. If the latter condition

⁴⁴ GP II 253/AG 178; C 14/MP 175-6; RB 155. In his letter to Des Bosses of 26 May 1712, Leibniz writes: “monads in themselves do not even have a situation [*situm*] with respect to each other—at least one that is real, which extends beyond the order of phenomena. Each is, as it were, a certain world apart, and they correspond to each other through their phenomena, and not through any other intrinsic intercourse and connection [*nullo alio per se commercio nexuque*]” (Look-Rutherford, 240-3). His position is thus that while monads have no real situation with respect to each other, or causal influence on each other, they have *ideal* versions of these relations, based on the phenomena they represent.

is met, and if all monads represent themselves as parts of the same universe, then those monads together constitute a world.

4. Monads and Matter

The thesis that reality ultimately consists solely of monads and their internal modifications is defended by Leibniz in many late texts.⁴⁵ This bold thesis raises numerous questions, the most pressing of which is the relation of monads to what common sense and science affirm as ontological *terra firma*: the physical world of material things, including our own and other living bodies. As Leibniz confronts this topic, it divides into two questions. First, can a relation among monads account for the supposed unity of a living body or corporeal substance? Second, does the metaphysics of monads support a plausible explanation of the reality of matter, whose properties appear categorically different from those of monads?

It is common to depict the theory of monads and the theory of corporeal substances as competing metaphysical pictures, which Leibniz is forced to choose between. If the latter theory is taken to be a fundamental ontology, which treats corporeal substances as irreducible to monads, then it is incompatible with the thesis that monads are the elements into which all other things are resolved. But the later Leibniz does not think of corporeal substances in this way. Until the end of his life, he insists that matter is structured by the infinite envelopment of living bodies within living bodies (Mon 63-70). What changes as he develops the theory of monads is that he rejects the corporeal substance theory as fundamental from an ontological point of view. Although the infinite envelopment of living bodies accurately describes what we would find if we analyzed any piece of matter physically—it would consist of living bodies, each of which

⁴⁵ See note 1.

was composed of smaller living bodies, *ad infinitum*—a deeper level of reality underlies this representation of matter. At this level, matter itself is nothing but monads. We find this view stated in an important text from the final decade of Leibniz’s life:

A substance is either simple, such as a soul, which has no parts, or it is composite, such as an animal, which consists of a soul and an organic body. But an organic body, like every other body, is merely an aggregate of animals or other things which are living and therefore organic, or finally of small objects or masses; but these also are finally resolved into living things, from which it is evident that all bodies are finally resolved into living things, and that what in the analysis of substances, exist ultimately are simple substances—namely, souls, or, if you prefer a more general term, *monads*, which are without parts. For even though every simple substance has an organic body which corresponds to it—otherwise it would not have any kind of orderly relation to other things in the universe—yet by itself it is without parts. And because an organic body, or any other body whatsoever, can again be resolved into substances endowed with organic bodies, it is evident that in the end there are simple substances alone, and that in them are the sources of all things and of the modifications that come to things. (C 13-14/MP 175)

On Leibniz’s final view, all matter—including the organic matter of living bodies—is nothing more than monads. Living bodies, which he describes in some late writings as “composite substances,” consist of a soul, or dominant monad, and an organic body made up of an infinite envelopment of smaller living bodies. Each of these bodies, in turn, consists of a dominant monad and a organic body similarly composed. Thus, following through the resolution

of any composite substance into its constituent elements, one finds in the end only monads: a dominant monad and a mass of subordinate monads, each of which is the dominant monad of an organic body that is a component of the organic body of the dominant monad.⁴⁶

Because a composite substance is a *composite*, made up of an infinity of monads, it can only be, given the principles of Leibniz's philosophy, an *ens per aggregationem*, whose unity is a function of mind-dependent relations. Strictly speaking, it cannot be a substance, if a necessary condition for that is being an *unum per se*.⁴⁷ The continuing presence of the vocabulary of "corporeal substance" in Leibniz's late writings can be charitably interpreted along the following lines. As we have seen, the thesis of monadic embodiment is a cornerstone of his metaphysics. According to this thesis, every monad represents itself as a corporeal substance: an enduring living body. Furthermore, this appearance has a ground in reality: there *are* other monads that represent themselves as the organic bodies into which the dominant monad's body can be resolved. Nevertheless, the composite made up of the dominant monad and the mass of

⁴⁶ Cf. GP II 252/AG 177; GP VII 502; and PNG 3: "Each distinct simple substance or monad, which makes up the center of a composite substance (an animal, for example) and is the principle of its unity, is surrounded by a *mass* composed of an infinity of other monads, which constitute the *body belonging to* this central monad, through whose properties the monad represents the things outside, similarly to the way a center does" (GP VI 598/AG 207).

⁴⁷ A point Leibniz acknowledges to Des Bosses: "monads do not constitute a complete composite substance, since they do not make a per se unity, but a mere aggregate, unless some substantial bond is added" (Look-Rutherford, 242-3). Cf. GP VI 628/AG 229; and on the notion of a "substantial bond," note 50 below.

subordinate monads is only a special sort of aggregate: one in which the monads are ordered with respect to each other based on relations of ideal causation.⁴⁸

From the point of view of the theory of monads, this seems a wholly successful piece of reductive metaphysics. Living bodies no longer qualify as substances in the strict sense; yet Leibniz has the resources to uphold many common beliefs about the embodied life of human beings.⁴⁹ To claim more than this, he thinks, one must appeal to extra-philosophical considerations, which if not contrary to reason are nonetheless above reason.⁵⁰

⁴⁸ In notes for his letter to Des Bosses of 24 January 1713, Leibniz writes: “I acknowledge no modes of monads except perceptions and appetites, or tendencies to new perceptions; and through these alone it happens that souls or monads are subordinated to one another—that is, subordinated representatively, with no real influx between them” (Look-Rutherford, 302-5). Cf. Look-Rutherford, 256-7.

⁴⁹ In a letter to Des Bosses of 19 August 1715, he writes, “even if bodies were not substances, nonetheless all men will be inclined to judge that bodies are substances, just as they are all inclined to judge that the Earth is at rest, even though it is really in motion” (Look-Rutherford, 346-7). Leibniz agrees that sense experience corroborates the existence of corporeal substances, but he does not think that this settles the issue of their ontological status: “If bodies were mere phenomena, they would not deceive the senses on account of that. For the senses do not make known anything about metaphysical matters” (Look-Rutherford, 368-9).

⁵⁰ On the distinction between “above reason” and “contrary to reason,” see Maria Rosa Antognazza, “The Conformity of Faith with Reason in the ‘Discours Préliminaire’ of the *Theodicy*,” in Paul Rateau (ed.), *Lectures et interprétations des Essais de théodicée de G. W. Leibniz* [Studia Leibnitiana Sonderhefte 40] (Stuttgart: Steiner, 2011), 231-45. In response to

The reduction of living bodies to monads, however, opens the door to a deeper problem. According to Leibniz's analysis, any living body consists of a soul, or dominant monad, and a mass of lesser monads associated with the matter of the soul's body. Yet in what sense can the latter monads be identified with the matter of the body? How do they ground, or otherwise explain, the body's existence? This question seems especially fraught when we consider that monads are by definition unextended, immaterial substances. In what sense could such things account for the reality of our and other living bodies?⁵¹

Des Bosses's concern to uphold the reality of corporeal substance, Leibniz proposes the device of a "substantial bond" (*vinculum substantiale*), designed to supply the principle of unity that is otherwise lacking in an aggregate of monads. After exploring various ways in which this hypothesis might be defended as an extension of the theory of monads, he concludes that the arguments favoring it hinge on matters of faith, in particular, acceptance of the Catholic doctrine of transubstantiation (Look-Rutherford, 224-7). As a Lutheran, Leibniz does not accept this interpretation of the Eucharist (Look-Rutherford, 152-3). A stronger case can be made by appeal to the mystery of the Incarnation (Look-Rutherford, 278-9). In the end, though, Leibniz appears satisfied to defend the theory of monads as adequate for a "fundamental investigation" of things within the order of nature (Look-Rutherford, 254-5). As he writes in his letter of 24 January 1713: "The hypothesis of mere monads has this distinction, that, with it assumed, nothing remains unexplained, nor is anything assumed except what is proven and what must be assumed necessarily" (Look-Rutherford, 306-7). For a fuller discussion of these points, see Look-Rutherford, lvii-lxxv.

⁵¹ Leibniz designates the matter whose reality is to be explained as "*secondary matter*—i.e. matter as it actually occurs, invested with its derivative qualities" (RB 222; cf. RB 378, 434), or

What Leibniz has to say on this question is far from conclusive, and he in fact seems to be torn between several responses.⁵² His most radical stance rejects the substantial reality of matter all together in favor of the view that all the physical properties of bodies exist only as the contents of monadic perceptions. On this view, call it phenomenalism, there is nothing that the body is over and above the harmonious perceptions of monads. Support for this position comes from a well-known passage in a 1704 letter to De Volder:

[C]onsidering the matter carefully, we must say that there is nothing in things but simple substances, and in them, perception and appetite. Moreover, matter and motion are not substances or things as much as they are the phenomena of perceivers, the reality of which is situated in the harmony of the perceivers with themselves (at different times) and with other perceivers. (GP II 270/AG 181)⁵³

“the complete body that results from the active and the passive” (GP II 171/AG 173). He distinguishes this both from “primary matter,” or primitive passive power taken in abstraction from a complete nature, and from the Cartesian notion of matter as *res extensa*, which is an abstraction from a body’s active *and* passive powers, and in itself purely phenomenal.

⁵² See Rutherford, “Leibniz as Idealist.” For a bolder thesis about Leibniz’s lack of a final position on these issues, see Garber, *Leibniz: Substance, Body, Monad*, ch. 9.

⁵³ Similar statements appear in letters to Des Bosses: Look-Rutherford, 226-8, 240-3, 254-7. See also a passage omitted from the final draft of his letter to Bourguet of 22 March 1714: “The difficulty that is raised concerning the communication of motion ceases when one considers that material things and their motions are only phenomena. Their reality lies only in the agreement of the appearances of monads. If the dreams of the same person were consistently

Yet Leibniz does not consistently defend this phenomenalist position even in his correspondence with De Volder. In his next letter, responding to De Volder's complaint that he (Leibniz) seems "to eliminate bodies completely and place them in appearances," Leibniz writes:

I don't really eliminate body, but reduce it to what it is. For I show that corporeal mass, which is thought to have something over and above simple substances, is not a substance but a phenomenon resulting from simple substances, which alone have unity and absolute reality.... It is necessary that these simple substances exist everywhere.... In the *mass of extension*, or rather, of extended things, or, as I prefer, in the multitude of things, I say that there is *no unity*, but rather innumerable unities. (GP II 275/AG 181-2)

What we commonly take to be a real thing existing in its own right—extended matter—is, Leibniz suggests, a "phenomenon resulting from simple substances." As such, this phenomenon is not illusory, or a mere appearance. It has a kind of reality by virtue of being grounded, or "well founded" in monads. In explaining this point Leibniz draws on the analogy of the rainbow: just as the rainbow's colored bands are the appearance to us of a multitude of water droplets refracting different wavelengths of light, so extended matter is the appearance to us of an multitude of unextended monads. The analogy is instructive, but it can take us only so far in understanding Leibniz's position. He asserts that monads are located everywhere in matter, or that everything is full of monads, a statement that is supported by his analysis of living bodies into their constituent monads.⁵⁴ Yet he also cautions that talk of spatial location, or of filling

followed, and if the dreams of all souls were in agreement, there would be no need for anything else to produce body and matter from them" (GP III 567n.).

⁵⁴ GM III 537/AG 167; GP VII 500-2, 549; Look-Rutherford, 25.

extension, is not to be taken literally in the case of monads. In contrast to the rainbow, where the water droplets are spatially located relative to our body and causally responsible for the bands of color we see in the sky, monads are neither parts of bodies nor the physical causes of their appearance to us.⁵⁵

It is important to have in focus the problem as Leibniz sees it. Contrasting his metaphysics with Spinoza's, he writes in 1715: "according to Spinoza... there is only one substance. He would be right if there were no monads; then everything except God would be of a passing nature and would vanish into simple accidents or modifications, since there would be no substantial foundation [*base des substances*] in things, such as consists in the existence of monads" (GP III 575/L 663). What we are presented with in corporeal phenomena, Leibniz believes, is a constantly changing array of accidents. These accidents include all of a body's kinematic and dynamic properties. For such accidents to exist, they must have a ground in substance. As we have seen, extended matter as such lacks the unity definitive of substance (it is divisible *ad infinitum*). Hence, the accidents that mark the existence of bodies must be grounded in some other substance(s). One possibility that Leibniz rejects is Spinoza's doctrine that all accidents are modifications of a single substance, God. Against this, he defends monads as the substantial foundations for the existence of all accidents. The question is whether he provides an adequate explanation of how this might be so.

Phenomenalism offers one version of how such an explanation might go. On this view, none of a body's physical properties have a mind-independent reality, none are formal modifications of external monads, but they all have a foundation in substance as the contents of monads' perceptual states. The simplicity of this account makes it attractive to Leibniz.

⁵⁵ Look-Rutherford, 226-7, 254-5.

Furthermore, this explanatory strategy represents at least part of his position, for he consistently maintains that many of a body's physical properties—extension, shape, motion—are merely phenomenal. It is only a body's dynamical properties—its active and passive force—that are real, and hence arguably require an external ground in the reality of substance (and not just an internal ground in the perceiver of those phenomena).⁵⁶

One of the critical points Leibniz makes in this connection is that the monads grounding the reality of physical forces are not elementary parts of matter. They do not, in other words, explain matter's macroscopic properties by comprising an underlying physical microstructure. When Leibniz claims that monads are “in” matter, or that they are the “elements” of things, he is drawing on his technical notion of substance as a “requisite” (*requisitum*) for the properties it grounds.⁵⁷ Roughly, to say that one thing is a requisite of another is to say that the former is a necessary condition for the existence of the latter *and* that it renders its existence intelligible (in accord with the principle of sufficient reason). On this basis, Leibniz also claims that a thing derives its reality from that of its requisites.⁵⁸ Consequently, if monads are requisites of matter,

⁵⁶ Cf. the opening of the *Specimen dynamicum* (GM VI 234-5/AG 117-8). To Des Bosses, he writes that if there are only souls or monads, “all real extension would also vanish, not to mention motion, whose reality would be reduced to mere changes of phenomena” (Look-Rutherford, 242-3).

⁵⁷ Monads are “not parts but requisites of bodies” (GP VII 503). Cf. A VI.4, 1669/AG 103; A VI.4, 1673.

⁵⁸ For Leibniz's definitions, see A VI.4, 650, 871, 990. I discuss the point at greater length in Rutherford, “Leibniz as Idealist.”

then the existence of matter presupposes the existence of monads, which supply a ground for the reality of the active and passive forces of matter.

If this is not complicated enough, Leibniz draws on two different notions of a requisite, distinguished as a *requisitum immediatum* and a *requisitum mediatum*.⁵⁹ The difference between these notions, both of which Leibniz applies to monads, is that immediate requisites are metaphysically necessary conditions for the existence of a thing. The grounding arguments surveyed in section 1 establish monads as requisites in this sense: matter cannot be conceived to exist (as a multiplicity subject to change) unless it is understood in terms of monads. But Leibniz also interprets monads as grounding the properties of matter in the weaker sense of being “mediate requisites.” He clarifies this claim in a letter to Des Bosses, in which he explains that the soul of a worm existing in a human body is not a “substantial part” of the body but a “mere requisite”—and not a requisite “by a metaphysical necessity, but rather because it is required in the course of nature” (Look-Rutherford, 296-7; cf. 226-7). His point is that even if it is necessary that there be monads everywhere in matter, it is not necessary that the soul of the worm be one of those monads. The worm’s soul is one of the monads grounding the reality of that particular human body, because the worm’s body happens to be one of the components of that body. The claim that the worm’s soul “is required in the course of nature” is thus a way of affirming that the appearance of the human body is well-founded, or has a ground in reality, in that there are monads that represent themselves as the infinitely enveloped components of that body.

Leibniz presents a similar account to Christian Wolff as explaining the ground of the dynamical properties of matter. Since physical derivative forces—“conatus and impetus, and the actions that follow from these”—are changeable accidents, they must be modifications of some

⁵⁹ A VI.4, 627, 650.

“substantial active thing, or primitive force” (GLW 130). This thesis, which Leibniz defends in his 1695 *Specimen dynamicum*, remains part of his position when he adopts the theory of monads. Yet Wolff is reasonably puzzled about how the primitive force of monads, that of appetite, *could* ground the reality of physical forces. How can the forces of bodies be understood as modifications of the primitive forces of monads? In responding to Wolff, Leibniz makes it clear that he regards external monads as grounding derivative forces to the extent that those monads *represent* themselves as exerting the physical forces in question:

You ask how primitive force is modified, for example, when the motion of heavy objects is accelerated in descent; I respond that the modification of primitive force, which is in the monad itself, cannot be better explained than by explaining how derivative force is changed in the phenomena. For what is exhibited extensively and mechanically in the phenomena is, concentratedly and vitally, in monads.... What is exhibited mechanically and extensively through the reaction of what resists and the restoration of what is compressed is concentrated dynamically and monadically... in the entelechy itself, in which there is the source of mechanism and a representation of mechanical things; for phenomena result from monads (which alone are true substances). (GLW 138-9)⁶⁰

Again, the pattern of explanation is that external monads supply what is “required in the course of nature” for the phenomena to be well-founded. The phenomena are not illusory or mere appearances, provided there are monads that are a substantial foundation for them. Yet the

⁶⁰ For further discussion of this exchange, see Donald Rutherford, “Idealism Declined: Leibniz and Christian Wolff,” in *Leibniz and His Correspondents*, ed. Paul Lodge (Cambridge: Cambridge University Press, 2004), 214-37.

monads supply this foundation by *representing* themselves as the physical causes of the phenomena. Thus, Leibniz establishes derivative forces not as formal modifications of primitive force, but only as features of the content of the perceptions of the grounding monads. The account he defends to Wolff amounts to a version of phenomenalism, augmented by the thesis that the phenomena perceived by monads are well-founded, because God has chosen to create substances that represent themselves as the material constituents and physical causes of those phenomena.⁶¹

Leibniz's account of monads as immediate requisites of matter supports a more robust conclusion. The grounding arguments discussed in section 1 imply that, properly understood, matter *is* monads. What we took to be an extended object infinitely divisible into parts becomes intelligible from the point of view of reason as an infinity of discrete simple substance. On this analysis, we have a firmer hold on the claim that the dynamical properties of bodies—their active and passive forces—are grounded in a substantial reality. The active and passive forces ascribed to bodies are our representations of the primitive active and passive powers of other monads. The extended mass of the body is a confused image of the diffusion of the primary matter of monads,

⁶¹ For a development of this interpretation, see Adams, *Leibniz: Determinist, Theist, Idealist*. I take this to be the crux of Leibniz's claim that matter "results" from monads: "Accurately speaking... matter is not composed of these constitutive unities but results from them, since matter or extended mass is nothing but a phenomenon grounded in things, like the rainbow or the mock-sun, and all reality belongs only to unities.... Substantial unities are not parts but foundations of phenomena" (GP II 268/AG 179). Cf. GP II 276/AG 182; GP III 636/L 659.

just as the body's moving forces are a confused image of the entelechies of those monads.⁶² To this extent, Leibniz's account more closely tracks the rainbow example. The colored bands of the rainbow are artifacts of our mode of perception, but they have a foundation in the differential refraction of light by droplets of water. Analogously, the corporeal aspects of active and passive force are artifacts of our mode of perception, but they have a foundation in the primitive active and passive powers of monads. Yet there is also a significant difference between the two accounts. In the case of the rainbow we are able to bridge, in an informative way, the gap between the phenomenon and its ground. We can explain why light, refracted as it is, alters our retina in such a way as to produce the appearance of an array of colored bands. In the case of the matter-monad relation, we can describe no such connection between appearance and reality. Perceptually, we are presented with a world of extended material things and intellectual analysis alone supports the conclusion that the world we perceive is really one of an infinity of simple substances. No intermediate steps fill the gap between phenomenon and ground. Instead, we must be satisfied with the distinction between two fundamentally different epistemic

⁶² To De Volder, Leibniz writes: "[Extension] expresses only a certain nonsuccessive... and simultaneous diffusion or repetition of a certain nature, or what comes to the same thing, a multitude of things of the same nature, existing together, with a certain order among themselves. It is this nature, I say, that is said to be extended or diffused.... Furthermore, the nature which is supposed to be diffused, repeated, continued, is that which constitutes the physical body [*corpus physicum*]; it cannot be found in anything but the principle of acting and being acted upon, since nothing else is suggested to us by the phenomena" (GP II 269/AG 179). Cf. GP II 195/L 532; Look-Rutherford, 364-5.

perspectives: the world as represented perceptually by monads and the world as comprehended by reason.

5. Conclusion

The theory of monads is Leibniz's fullest attempt to limn reality from the standpoint of reason alone. In the theory, he describes what the properties of a fundamental entity would have to be and how such entities can be conceived as related in a world. Leibniz starts from the assumption that reality is structured by relations of ontological dependence that are subject to the principle of sufficient reason. Given this, he is confident that if a multitude of things exists, and if change occurs, there must be a ground for these facts—a ground found in monads.

If this analysis can be sustained, Leibniz has shown that what we represent perceptually as extended matter, infinitely divisible into parts and subject to change, must be monads, for that conception of matter alone identifies the grounds of its existence. Leibniz's explicit claims about the relation of matter and monads to some extent confound this conclusion. On the one hand, he asserts that the derivative forces of matter can exist only as modifications of the primitive force of monads. This sounds like the conclusion of his grounding arguments. However, when Leibniz explicates this claim, he falls back on a different kind of grounding relation: one that construes corporeal phenomena as "well-founded" to the extent that there are monads that represent themselves as the material substrate and physical causes of those phenomena. On this analysis, matter is not shown to *be* monads, but to be the harmonized contents of the perceptions of monads.

Leibniz's account of matter and its properties as "well-founded phenomena" is consistent with his ontological analysis of matter, but it responds to a different question: not what is matter,

but which monads are sufficient “in the course of nature” for a phenomenon to be well-founded. The answer to the ontological question can only be *monads*, for these are the “elements” of all things. Yet aside from showing that our understanding of matter terminates in monads, Leibniz is taxed to establish a meaningful explanatory relation between the two. He is keen to build bridges between the theory of monads and the views of the world supported by sense experience and the physical sciences, but such bridges remain provisional and dependent on analogy.

In the end, Leibniz’s metaphysics comes closest to that of Plato, the philosopher with whom he has the deepest sympathy. Through reason we gain access to an “intelligible world” that cannot be fully reconciled with the manifest image of the world given in sense perception.⁶³ The epistemic perspective of science, no less than that of ordinary experience, is tied to the form of our perceptual representations. As such it cannot deliver a view of reality—the world of monads—as it is in itself. But the philosopher does have access to this view, acquired through the diligent use of reason, and Leibniz takes himself to have delivered a first glimpse of it.⁶⁴

⁶³ *New Essays*, IV.iii.6 (A VI.6, 378-9).

⁶⁴ My thanks to Maria Rosa Antognazza for helpful comments on an earlier draft of this chapter.