Phenomenalism and Corporeal Substance in Leibniz

ROBERT MERRIHEW ADAMS

The most fundamental principle of Leibniz's metaphysics is that "there is nothing in things except simple substances, and in them perception and appetite" (G II,270/L 537).[1] This implies that bodies, which are not simple substances, can only be constructed out of simple substances and their properties of perception and appetite. ('Constructed' is our word for it. Leibniz commonly says that bodies or phenomena "result" from simple substances and their modifications; but resulting is not what we would call a causal relation in this context.)[2]

How, according to Leibniz, are bodies constructed out of simple substances and their properties? Two theses frequently asserted by Leibniz—that bodies are phenomena and that bodies are aggregates of substances—have been thought to represent incompatible theories of the construction of bodies. Interpreters have spoken of a vacillation in Leibniz or have tried to document a change of mind, assigning the different theories a predominant role in different periods of the philosopher's career.[3] I was once inclined to do that myself, but I have now become convinced that Leibniz did not vacillate or change his mind on this point. To be sure, he is often careless or imprecise, saying things in ways that ignore aspects of his views that he does not want to present at the moment. But if there are two theories here, Leibniz believed (rightly or wrongly) that they are consistent, and he held both of them throughout the mature period of his thought (say, from 1686 on).

In this paper I will try to show how he wove the theses that bodies are phenomena and that they are aggregates of substances, into a single, phenomenalistic theory, which seems to me to be reasonably coherent. In section 3 I will try to explain why Leibniz thought that, precisely *as* aggregates of substances, bodies are only phenomena; and in section 4 I will examine the distinction between real and imaginary bodies in his system, which is the principal point at which he might be suspected of using two or more mutually inconsistent constructions. First, however, I must try to explain what Leibniz does and does not mean by calling bodies

"phenomena." Section 1 will be devoted to this topic, which contains (in my opinion) some of Leibniz's most valuable contributions to metaphysics.

In order to understand Leibniz's views about corporeal aggregates, it will be important to know something about the relation between a simple substance, or "monad," and "its" body. This relation, which is the topic of section 2, is fundamental to the structure of what Leibniz calls a "corporeal substance." And this brings us to another theme, which I think Leibniz was not so successful in harmonizing with the rest of his philosophy. He held that a corporeal substance, composed of a monad (something like a soul) and its organic body (an aggregate or phenomenon), is one per se as no aggregate can be. As I will argue in my fifth and final section, the nature of this unity is puzzling and Leibniz himself seems to have been troubled about it during the last years of his life; he has left us, indeed, more evidence of vacillation on this point than on any other part of his philosophy of matter. In this connection I will examine the notorious conception of a substantial bond (*vinculum substantiale*) that appears in his letters to Des Bosses.

Thus, this paper will be concerned with three Leibnizian theses about the physical world that seem at first glance to be flatly inconsistent with each other: (1) that bodies are phenomena, (2) that bodies are aggregates of substances, and (3) that there are corporeal substances that, though composite, are one per se. And I will be arguing that Leibniz held all three of them at once and was reasonably successful in integrating the first two of them with each other, but not with the third.

1. PHENOMENA

Leibniz's phenomenalism is quite different from the sorts of phenomenalism with which English-speaking philosophers are likely to be most familiar. It is, therefore, important to clear our minds of preconceptions when we consider what Leibniz meant by calling bodies phenomena. 'Phenomenon' is a Greek word that means 'appearance,' or more literally 'thing that appears'. Things that appear are objects of awareness. The first thing that I want to say about phenomena, as Leibniz conceives of them, is that they are *intentional objects.*[4] Bodies, as phenomena, may be thought of as the objects of a story—a story told or approximated by perception, common sense, and science. In calling them phenomena Leibniz means that they have their being in the awareness that perceivers have of this story.

Leibniz spoke of phenomena as "*objects* of limited minds" (G VII, 563, my emphasis). This should not be taken to imply that he thought of phenomena as fully distinct from the acts or properties of our minds by virtue of which we are aware of them, for he also said that "phenomena are nothing but thoughts" (G II,70/L-A 86) and that the "phenomena" that are always produced in us when we see bodies "are simply new transitory modifications of our souls" (G VI,591/L 626). On the other hand, it is difficult to accept that Leibniz simply identified bodies, as phenomena, with perceptions; for the properties he ascribes to these two sorts of entities are quite different. For example, he ascribes size, shape, and motion to bodies but not to modifications of the mind as such. And, conversely, bodies are not said

to be distinct or confused, although those are salient properties of perceptions of bodies for Leibniz.

I believe the solution to this problem is that, when Leibniz speaks of material things as phenomena, he usually thinks of those phenomena as qualities or modifications of a perceiving substance *considered only in a certain respect.* Specifically, corporeal phenomena are perceptions considered with regard to their objective reality or representational content or insofar as they express some nature, form, or essence.

Here I am extrapolating from things Leibniz says about "ideas." His notion of idea is by no means the same as his notion of phenomenon. The latter notion is more closely connected with perception than the former, and some phenomena are transitory, whereas ideas in general are not. But ideas, like phenomena, are both properties and objects of the mind; and Leibniz gives much fuller discussion to the relation between ideas and the mind than I have found him to give to the relation between phenomena and the perceiving substance.

A famous controversy between Malebranche and Arnauld provides the starting point for much of Leibniz's thought about ideas. Malebranche held that ideas of bodies are objects of awareness distinct from the modifications of our minds by which we are aware of them. He had to regard them as distinct, since he held that the ideas are in God's mind and not in ours. Arnauld maintained not only that we have ideas of bodies in our own minds but also that they are modifications of our minds. Leibniz declared himself for Arnauld in this debate: "It suffices to consider ideas as Notions, that is to say as modifications of our soul. That is how the school, M. Descartes, and M. Arnauld take them" (G III,659; cf. G IV,426/L 294).[5]

This declaration does not fully reflect the complexity of Leibniz's position, however. In the first place, he agreed with Malebranche that, *if* ideas are taken "as the immediate external object of our thoughts, it is true that they could only be placed in God, since there is nothing but God that can act immediately upon us" (RML 317, cf. 490). And in conciliatory moods he was prepared to say that "it can very well be maintained in this sense that we see everything in God" (RML 490). But Leibniz insists that we also have an immediate *internal* object of our thought (RML 317). "I hold, however, that there also is always something in us that corresponds to the ideas that are in God as well as to the phenomena that take place in bodies" (RML 321f.) In this sense we have our own ideas in our own minds (DM 28-29), and our ideas are modifications of our minds, or relations of correspondence to God's ideas, which are included in those modifications (RML 490).

In the second place, Leibniz's calling ideas modifications of the soul should not lead us to suppose that he identified them with conscious episodes. In section 26 of the *Discourse on Metaphysics*, he distinguishes two sense of 'idea':

> Some take the idea for the form or difference of our thoughts, and in this way we have the idea in our mind only insofar as we think of it, and every time we think of it anew, we have other ideas of the same thing, although similar to those that went before. But it seems that others take the idea for an immediate object of thought or for some permanent form which remains when we do not contemplate it.

Leibniz prefers the second of these conceptions. An idea, properly speaking, is a "quality of our soul," but a permanent quality and not a transitory modification (DM 26). It manifests itself in distinct successive modifications when we think of it consciously; and even when we are not thinking of it, there remains in us a property (*habitudo*) that expresses the content of the idea (G VII,263/L 207). The concrete reality of the idea in our minds is thus quite different at different times.

In the third place, it is only considered in a certain respect that modifications or qualities of the soul are ideas. If we ask what it is that is permanent in an idea that takes such different forms as the conscious and the unconscious at different times, the answer is first that the representational content, or in Cartesian terms the objective reality, of the idea is constant and second that the mind always has in it a certain potentiality for making that content conscious, "the quality," as Leibniz puts it, "of representing to itself whatever nature or form it is, when the occasion arises for thinking of it" (DM 26). Leibniz himself, in the passage quoted, connects the permanence of the idea with its character as object of thought. We may say that the idea is a permanent quality of the mind considered with regard to its objective reality or representational content; Leibniz says, "This quality of our soul *insofar as it expresses some nature, form, or essence*, is properly the idea of the thing, which is in us, and which is always in us, whether we think of it or not" (DM 26, my emphasis). "An idea is that in which one perception or thought differs from another by reason of the object" (RML 73).

Similarly, I believe that when Leibniz speaks of material things as phenomena he usually thinks of those phenomena as qualities or modifications of the perceiving substance considered with regard to their objective reality or representational content or insofar as they express some nature, form, or essence. Adapting Cartesian terms, one can say that, in their objective reality or as phenomena, perceptions have properties that they do not have in their formal reality or as modifications of the mind, and vice versa. Among the most important of these properties, for Leibniz, are causal properties, for they are the basis of the preestablished harmony between body and soul. Many philosophers have wondered what the things are that need to be harmonized, if bodies are phenomena and phenomena are modifications of the soul. Leibniz holds that corporeal phenomena as such are caused mechanically by preceding corporeal phenomena, whereas modifications of the soul as such are to be explained teleologically by preceding appetites (Mon. 79, 87; GV IV,391/L 409f.; C 12). God preestablishes a harmony between soul and body by so programming perceptions that, while their formal reality follows from the formal reality of previous perceptions and appetites of the same substance by laws of teleological explanation, their objective reality follows from the objective reality of previous perceptions by laws of mechanical explanation.

In spite of these fundamental differences between perceptions as phenomena and perceptions as modifications of the perceiving substance, Leibniz will resist any attempt to treat them as fully distinct entities. The point of his saying that phenomena are modifications of our souuls is that as a conceptualist about all sorts of abstract entities and merely intentional objects, he does not believe that phenomena

have any being except *in* the existence or occurrence of qualities or modifications of perceiving substances. The existence of a phenomenon must consist in the occurrence of certain perceptions.

Nonetheless, Leibniz distinguishes, among phenomena, between *real* and merely imaginary material objects and holds that some stories in which the real ones figure are *true*. The task of Leibnizian phenomenalistic analysis is to explain what this reality and truth consist in. It is not to analyze the content of the true stories. I can discover no phenomenalistic analysis in Leibniz that does not *presuppose* the concept of spatially-extended-objects-appearing-to a perceiver. There is no attempt to break that down into supposedly more primitive concepts of sensory impressions. This is a principal difference between Leibniz and many other phenomenalists.

This point may be pursued by asking whether the objective reality of perceptions must *result*, in Leibniz's sense, from their formal reality. Must phenomena be constructible, by sufficient conditions, from the nonintentional properties of the relevant perceptions? One might expect Leibniz to answer this question in the affirmative, and perhaps he would if pressed; but I have not found that he did. He is committed, I think, to the view that the objective reality of a perception must be *expressed* by the formal reality of the perception (cf. RML 321f.); but that is not clearly more than a *necessary* condition on a perception's having a certain objective reality. For one thing to express another, according to Leibniz, is for there to be a one-to-one mapping from elements of the latter to elements of the former according to appropriate rules. (See, for example, G VII,263f./L 207f.) This appears to be a transitive and symmetrical relationship, which does not provide a *sufficient* condition for perception. Since any two actual substances (Ronald Reagan and Leonid Brezhnev, for example) are expressions of the same universe, according to Leibniz, it would seem they must also express each other, and my perception of Reagan must express Brezhnev as well as Reagan—by virtue of the transitivity and symmetry of the expression relation. Yet, I doubt that Leibniz would be willing to say that my perception of Reagan is a perception of Brezhnev, too.

So far as I know, Leibniz neither demands nor promises nor begins to give an account of sufficient conditions for a perception's having a certain objective reality, in terms of its formal reality. I think his philosophy is best interpreted as one that treats the objective reality or representational content of a perception as a primitive feature of that perception, at least for all purposes that actually arise in the philosophy. Leibniz provides at least one analysis of the notion of the *reality* of a corporeal universe that appears to us (as we will see in section 4, below). But he provides no *analysis* of the notion of a corporeal universe's appearing to us (as opposed to something else appearing to us). He thus treats the notion of a corporeal universe's appearing to us as conceptually prior to the notion of such a universe's being real.

For further exploration of the distinctive features of Leibniz's conception of phenomena, let us turn to his explicit disagreements with Berkeley. His best-known comment on Berkeley, in a letter of 15 March 1715 to Des Bosses (G II,492/L 609),

suggests that Leibniz failed to realize the strength of Berkeley's desire to be found in agreement with common sense and overlooked Berkeley's efforts to define a sense in which bodies can be called "real." Other evidence does not contradict these suggestions but does make clear that Leibniz actually read Berkeley and saw more than he is commonly thought to have seen of the similarities as well as the differences between Berkeley's views and his own. This evidence is provided by the following comments that Leibniz wrote on the last page of his copy of Berkeley's *Treatise Concerning the Principles of Human Knowledge*:

> Much here that's right and agrees with my views. [*Multa hic recte et ad sensum meum.*] But too paradoxically expressed. For we have no need to say that matter is nothing, but it suffices to say that it is a phenomenon like the rainbow; and that it is not a substance, but a result of substances; and that space is no more real than time, i.e. that it is nothing but an order of coexistences as time is an order of subexistences. The true substances are Monads, or Perceivers. But the author ought to have gone on further, namely to infinite Monads, constituting all things, and to their preestablished harmony. He wrongly or at least pointlessly rejects abstract ideas, restricts ideas to imaginations, despises the subtleties of arithmetic and geometry. He most wrongly rejects the infinite division of the extended; even if he is right to reject infinitesimal quantities.[6]

Leibniz did not fail to see that he and Berkeley were fundamentally on the same side. He thought much of their disagreement was in presentation, style, and tactics. Berkeley "expressed" their common beliefs "too paradoxically." Several substantial disagreements are reflected in Leibniz's critique, however. I will discuss three of these.

(1) The perceptual atomism of Berkeley's construction of physical objects evokes Leibniz's strongest protest. Berkeley "most wrongly [*pessime*] rejects the infinite division of the extended." For Berkeley, extended things are ideas or collections of ideas, and these ideas in turn are composed of parts that are only finitely small because they cannot be smaller than the mind in which they exist can discriminate (*Principles*, § 124). In dividing any extended thing, therefore, we come eventually to parts that are still extended but so small that they cannot be divided any further; and Berkeley maintains that there are no distinct parts within these smallest discernible parts, on the ground that as an idea exists only in the mind, "consequently each part thereof must be perceived" (ibid.).

For Leibniz, on the other hand, it is of the very essence of the extended as such to be continuous and therefore infinitely divisible. Because there are indefinitely many ways in which it can be divided in parts (G VII,562) and no parts in it that cannot themselves be divided in parts, it has no parts of which it is ultimately composed as Berkeleyan extended things are ultimately composed of the smallest perceptible parts of ideas. There may indeed be indivisible, unextended substances that are in some sense "in" an extended thing, but the extended thing cannot be composed of them precisely because a continuous quantity cannot be composed of

elements that have no parts. "Just as a part of a line is not a point, but a line in which the point is, so also a part of matter is not a soul but the body in which it is" (FC 322; cf. G VII,268/L 536). This is one of the reasons why the extended as such can only be a phenomenon. "From the very fact that a mathematical body cannot be analyzed into first constituents, it follows that it is not real at all, but something mental and designating nothing but the possibility of parts, not something actual" (G II,286/L 535f.). Another inference that Leibniz draws from his thesis that an extended whole has, as such, no first constituent parts is that it is not constructed out of its parts at all but is prior to them. "In the ideal or continuous the whole is prior to the parts, as the Arithmetical unit is prior to the fractions that divide it, which can be assigned arbitrarily, the parts being only potential; but in the real the simple is prior to the groups, the parts are actual, are before the whole" (G III,622; cf. G VII,562; G II,379). Here, therefore, is another way in which bodies as phenomena are not constructed according to Leibniz.

(2) Leibniz can take this position only because he also thinks Berkeley is wrong to "restrict ideas to imaginations"—or, in other words, because he rejects the sensationalism of Berkeley's theory. If bodies are phenomena for Leibniz, these phenomena are objects of the intellect as well as of sensation. Both faculties play a part in our perception of corporeal phenomena.

The intellect's part is particularly important and includes both mathematics and physics. Berkeley was right in insisting that no sensory image is infinitely divisible into parts that are still sensory images. Leibniz would certainly grant that the lines without breadth by which a continuous surface can be divided into parts indefinitely small can neither be imagined nor perceived by sense. We conceive of them, rather, by mathematical reason. Hence, body as an infintely divisible phenomenon is "mathematical body" for Leibniz.

Among the features of phenomena that are not directly perceived by sense at all are *forces*. Force is characteristic of monads, but there are forces that are properties of phenomena. "As matter itself is nothing but a phenomenon, but well founded, resulting from the monads, it is the same with inertia, which is a property of this phenomenon" (G III,636/L 659; Cf. G II,275f.). Certainly, Leibniz did not think we have a sensory image of inertia. (Cf. G VII,314f.) We perceive it or conceive of it only by rudimentary or sophisticated scientific thinking. Indeed, I believe that for Leibniz the universe of corporeal phenomena is primarily the object not of sense but of science. The *reality* of corporeal phenomena depends, as we will see in section 4, on their finding a place in the story that would be told by a perfected physical science.

Leibniz may well be committed to regarding corporeal phenomena as objects of a third faculty, unconscious perception, as well as of sensation and intellect. But the notion of an unconscious perception having a representational content is difficult to understand, and Leibniz does little to explain it. I will not take the time to speculate about it here but instead will pass now to a third disagreement.

(3) Part of Leibniz's point in saying that extended things as such are phenomena is to claim that they have their existence only in substances that perceive

them, and in this he agrees with Berkeley. But there is also something else going on in Leibniz's talk of phenomena, something that is reflected in his comment that Berkeley "ought to have gone on further, namely to infinite Monads, constituting all things." 'Phenomenon' contrasts not only as intramental with 'extramental'; it also contrasts as apparent with 'real'. Part of what is going on in Leibniz is that he does assume that in our perception of bodies we are at least indirectly perceiving something that is primitively real independent of our minds, and he is asking what sort of thing that may be. His answer is that it is "infinite Monads," whose harmonious perceptions are the "foundation" of corporeal phenomena.

This answer, however, does not adequately represent the interplay of appearance and reality in Leibniz's thought. Like almost all modern philosophers, Leibniz thought that good science requires us to suppose that there are very considerable qualitative differences between bodies as they appear in naive sense perception and bodies as they exist independent of our minds—if they do exist independent of our minds. In the corporeal world as described by modern science, there is, in a certain sense, no part for colors and the other so-called "secondary qualities" to play. And, on the other hand, modern science postulates vast numbers of motions of minute particles in portions of matter that appear to our senses to be perfectly quiescent internally. This was true of what Leibniz viewed as modern science, and it is true of what we think of as modern science.

Many among us respond to this situation by supposing that, whereas what we perceive naively by our senses is only an appearance, what is described by science—or what would be described by a perfected science—is reality. Leibniz has a fundamental reason for rejecting this thesis of scientific realism—a reason for not expecting science to give us knowledge of reality as it is in itself. Scientific knowledge, as Leibniz sees it, is relatively distinct but buys its distinctness at the price of studying a mathematical idealization. Reality, he thinks, is infintely complex, intensively as well as extensively. It is not just that there are infinitely many objects in infinite space; even when we perceive a body of limited extent, such as the body of a human being, Leibniz believes that the reality represented by our perception is infinitely complex and that all of that infinite complexity is relevant to the explanation of some of the salient features of the body's behavior. Human minds are finite, however; and the definitive mark of finite minds is that they cannot distinctly know an infinite complexity. So, if science is distinct knowledge, the only sort of science that is possible, even in principle, for human beings will have as its immediate object a finitely complex representation of the infinitely complex reality. At least to this extent, the objects of scientific knowledge will be phenomena. Leibniz's opinion, that the object of scientific knowledge is not reality as it is in itself but a mathematical abstraction from its infinite complexity, is plausible enough in its own right, I think; but it is also rooted in other aspects of his metaphysics, which need not be rehearsed in detail here—in his theory of free action and infinite analysis conception of contingency, for example, and in his doctrine that each thing expresses the whole universe.

Leibniz's treatment of the relation of the primary and secondary qualities to

reality can be understood in this light. In section 12 of the *Discourse on Metaphysics*, he wrote:

> It can even be demonstrated that the notion of size, shape, and motion is not so distinct as is imagined, and that it includes something imaginary and relative to our perceptions, as are also (though much more so) color, heat, and other similar qualities of which it can be doubted whether they are really found in the nature of things outside us.

Many similar statements are found in other places in his work. It seems to be implied here that the secondary qualities are even less real than the primary, although both are apparent rather than ultimately real. The primary are more real only in the sense that they represent reality more distinctly than the secondary qualities. The primary qualities "contain more of distinct knowledge" than the secondary, although they both "hold something of the phenomenal" (G II,119/L-A 152).

According to Leibniz, the perception of secondary qualities, as they appear to us, is a confused perception of minute motions or textures—a confused perception of primary qualities that are too small for us to perceive them distinctly by sense (NE II,viii,13, 21). We might put this by saying that the secondary qualities are appearances *of* primary qualities—and as such are appearances of appearances. I do not know that Leibniz ever said exactly that, but in the last letter that he wrote to Des Bosses (29 May 1716) he did suggest relating secondary qualities to the corresponding primary qualities as "resultant phenomena" to "constitutive phenomena." Thus, the "observed perception" of white and black results from tiny, unobservable bumps and depressions that reflect and trap rays of light, respectively; but these geometrical textures themselves are still only phenomena (G II,521; cf. C 489).

Even within the realm of primary qualities there are veils behind veils of appearance between us and reality in the Leibnizian universe. Inspect a leg of a fly with the naked eye and under a microscope; you will see rather different shapes. Yet Leibniz would surely say that what you see with the naked eye is a confused representation of the more complex shape that appears under the microscope and that the latter is still not complex enough to be more than an appearance. This is indeed one of Leibniz's reasons for holding that shape is only a phenomenon.

> For even shape, which is of the essence of a bounded extended mass, is never exact and strictly determined in nature, because of the actual division to infinity of the parts of matter. There is never a sphere without inequalities, nor a straight line without curvatures mingled in, nor a curve of a certain finite nature without mixture of any other—and that in the small parts as in the large—which brings it about that shape, far from being constitutive of bodies, is not even an entirely real and determined quality outside of thought (G II,119/L-A 152; cf. G VII,563).

One of the reasons, I take it, why Leibniz thought that finitely complex shapes cannot be "entirely real outside of thought" is that they cannot express a relation to every event in an infinitely complex universe as the qualities of a real thing ought

to. "There is no actual determinate shape in things," he wrote, "for none is able to satisfy infinite impressions" (C 522/L 270). The conclusion Leibniz draws is not that real shapes are infinitely complex (though some things he says might leave us with that impression) but rather that shape as such is only a phenomenon. I suppose that an infinitely complex shape would involve a (finite) line segment that changes not merely its curvature but also the direction of its change of curvature infinitely many times and that Leibniz would have thought that an absurd and impossible monstrosity. What I assume he would say, instead of postulating infinitely complex shapes, is that for every finitely complex shape that might be ascribed to a body there is another still more complex that more adequately expresses reality. Every shape in the series of more and more adequate expressions, however, will still be only finitely complex and for that reason among others will still be an appearance, qualitatively different from the reality expressed, which is infinitely complex and does not literally have a shape at all.

Bodies—organic or living bodies in particular—are appearances of monads.[7] A monad is represented by its body; we perceive it by perceiving its body. This is possible because the monad and its body express each other; the body is the expression of the soul. We have just seen, however, that a body as a phenomenon having a certain definite extension, shape, and motion is not complex enough to be an adequate expression of any real thing, according to Leibniz. It is not complex enough to express something that expresses the whole universe as a monad does. It is a mathematical abstraction. Perhaps the body that adequately expresses a monad is an infinite series of such abstractions, each more complex than its predecessors.

This discussion of bodies as appearances *of* monads has already led to questions about the relation of monads to "their" bodies. These are questions about the structure of Leibnizian corporeal substances. It is time to examine that subject more closely.

2. CORPOREAL SUBSTANCE (I): MONADIC DOMINATION

"I call that a *corporeal substance*," says Leibniz, "which consists in a simple substance or monad (that is, a soul or something analogous to a Soul) and an organic body united to it" (G VII,501). The corporeal substances are "bodies that are animated, or at least endowed with a primitive Entelechy or . . . vital principle"; they can, therefore, be called "living" (G II,118/L-A 152). When Leibniz says that corporeal substances are living things and that "all nature is full of life" (PNG 1), he emphatically does not mean that every material object is alive. He rejects the view of "those who imagine that there is a substantial form of a piece of stone, or of another non-organic body; for principles of Life belong only to organic bodies" (G VI,539/L 586). Here, as in many other places, Leibniz uses the Aristotelian term 'substantial form' to signify the soul, or that which is analogous to a soul, in any corporeal substance.) He adds that

> it is true (according to my System) that there is no portion of matter in which there is not an infinity of organic and animated bodies; among which

> I include not only animals and plants, but perhaps other sorts as well, which are entirely unknown to us. But it is not right to say, on account of that, that every portion of matter is animated—just as we do not say that a lake full of fishes is an animated body, although the fish is (G VI,539f./L 586).

Stones and lakes, then, are not corporeal substances. "Each animal and each plant too is a corporeal substance" (G III,260); I believe that they are the only corporeal substances of which Leibniz claims empirical knowledge, if we include among animals and plants the tiny living things whose discovery under seventeenth-century microscopes so excited Leibniz (G II,122/L-A 156). In a lake full of fishes the water between the fishes is not a corporeal substance, but it is composed of corporeal substances, which may be very different from the things that we know as animals and plants (Mon. 68). In particular, they may be even smaller than microscopic organisms; there is indeed no minimum size for corporeal substances.

Still, all corporeal substances are alive, in a broad sense. And Leibniz seems to have assumed that we can detect the presence or absence of life in bodies large enough to be distinctly perceived by our senses. He speaks of a study of nature that would enable us to "judge of the forms [of corporeal substances] by comparing their organs and operations" (G II,122/L-A 155f.).

The principal characteristic of living bodies that Leibniz mentions as distinguishing them from other portions of matter is that they are "organized" or "organic." There is . . . no animated body without organs" (G II,124/L-A 159); "I restrict corporeal or composite substance to living things alone, or exclusively to organic machines of nature" (G II,520). I have found little explanation in Leibniz of what distinguishes organic from inorganic bodies. It is not a radical difference in the kind of causality that operates in them. Leibniz always insists that everything can be explained mechanically in organic as well as in inorganic bodies. There is no need to refer to the substantial forms or souls of corporeal substances in explaining their physical behavior (e.g. G II,58, 77f./L-A 65f., 96). "And this *body* is *organic* when it forms a kind of Automaton or Machine of Nature, which is a machine not only as a whole but also in the smallest parts that can be noticed" (PNG 3; cf. G III,356). Presumably, an organic body is one so organized mechanically that it continues over time to cohere and retain a sort of unity in physical interactions. But stones have that property, too; so it is not enough to distinguish organic bodies from others.

Perhaps the best account that can be given of the notion of organism here is that an organic body is a body so structured mechanically that it can be interpreted as always totally expressing and being expressed by the perceptions and appetites of a soul or something analogous to a soul. We recognize living things by observing that their behavior can be interpreted as a coordinated response to their environment on the basis of something like perception of the environment together with a tendency toward something like a goal—though Leibniz would insist, of course, that their behavior can *also* be explained mechanically. This account fits animals better than plants, but it is clear in any case that Leibniz's principal model of corporeal substance is the animal; he mentions plants only occasionally and seems

favorably disposed toward the suggestion that they "can be included in the same genus with animals, and are imperfect animals" (G II,122/L-A 156).[8]

Leibniz's fullest statement about the structure of a corporeal substance is in a letter of 20 June 1703 to De Volder:

> I distinguish therefore (1) the primitive Entelechy or Soul, (2) Matter, i.e. prime matter, or primitive passive power, (3) the Monad completed by these two, (4) the Mass or secondary matter, or organic Machine, for which countless subordinate Monads come together [*ad quam . . . concurrunt*], (5) the Animal or corporeal substance, which is made One by the Monad dominating the Machine (G II,252/L 530f.).

The first three of these items can be discussed quite briefly here. The monad (3) is "a simple substance . . . ; *simple*, that is to say without parts" (Mon. 1). The primitive entelechy and prime matter must not, therefore, be conceived as *parts* that compose the monad, but rather as aspects or properties of the monad. In particular, prime matter (2) is not to be understood here as a substance or an extended stuff. It is the primitive passive power that is a fundamental property of the monad. 'Entelechy' (1) is sometimes used by Leibniz (as in Mon. 62-64) as a synonym for 'monad' or 'simply substance'; but here the entelechy clearly is not the complete monad, but a property of it. Since it goes together with primitive passive power to form the monad, the entelechy here is presumably the monad's primitive active force. Leibniz held that "the very substance of things consists in the force of acting and being acted on" (G IV,508/L 502; cf. G II,248f./L 528). The properties possessed by monads as such are perceptions and appetites, or analogous to perceptions and appetites, as Leibniz often says. As properties of monads, therefore, "primitive forces manifestly cannot be anything but internal tendencies of simple substances, by which according to a certain law of their nature they pass from perception to perception" (G II,275). As we saw in section 1, Leibniz also spoke of certain forces as properties of bodies, but this is not the place to try to understand the connection he saw between forces as properties of bodies and forces as properties of monads.

My present purpose demands a fuller discussion of the mass, or secondary matter (4), which combines with the monad to form the complete corporeal substance. This mass is, as Leibniz says here, an organic machine or, as he more often says, the organic body of the monad. Not every mass of secondary matter is an organic body; inorganic bodies are also masses of secondary matter. But only an organic body combines with a single monad to form a corporeal substance. No mass of secondary matter, organic or inorganic, is in itself a substance. The organic body, "taken separately, that is, apart from the soul, is not one substance but an aggregate of several" (G IV,396). "And *secondary matter* (as for example the organic body) is not a substance, but for another reason; it is that it is a heap of several substances, like a lake full of fishes, or like a herd of sheep, and consequently it is what is called *One per accidens*—in a word, a phenomenon" (G III,657). The mass of secondary matter that, as an organic body, combines with a monad to form a corporeal substance is thus merely a phenomenon *because* it is an aggregate of substances. The

connection between being an aggregate and being a phenomenon will be the topic of section 3; for the present, I must simply note that the organic body, apart from its "soul" or dominant monad, is characterized both as an aggregate and as a phenomenon.

According to Leibniz, *every* created monad has an organic body of this sort with which it combines to form a corporeal substance (G IV,395f.; G VII,502, 530; cf. Mon. 62-63). The monad *always* has its body, and hence the organic body is an enduring object permanently attached to its dominant monad (G II,251/L 530). Even in death, it does not cease to exist, it does not cease to be organic; it just undergoes a sudden, drastic reduction in size and a change in its operations (e.g., PNG 6). The parts of an organic body do not belong to it permanently, however. "It is true that the whole which has a true unity can remain strictly the same individual even though it loses or gains parts, as we experience in ourselves; thus the parts are immediate requisites only for a time" (G II,120/L-A 153). The substances that are included in an organic body can be replaced with other substances so long as the body retains the necessary organs and the same dominant monad (Mon. 71-72).

In the outline I have been following, Leibniz clearly distinguishes the corporeal substance (5) both from its organic machine and from its dominant monad. It is something formed by the combination of those two. This appears to rule out one tempting interpretation. Cassirer identified corporeal substance with the monad itself "insofar as it is endowed with a particular organic body, according to which it represents and desires."[9] Cassirer added that this corporeal endowment is "only a determination of the *content of the consciousness*" of the monad. On this reading, the corporeal substance is a substance because it is a monad and corporeal because it is endowed with an organic body.

This conception of corporeal substance agrees admirably with other aspects of the philosophy of Leibniz and is suggested (though I think not unambiguously asserted) by some passages of his writings (G VII,314; G IV,499, 395f.). It would provide the simplest explanation of the per se unity of a corporeal substance. Unfortunately, the weight of the evidence is against Cassirer's interpretation. Leibniz seems, at least usually, to have thought of a corporeal substance as including a mass or organic body as well as a dominant monad. We have seen that he defined a corporeal substance as consisting "in a simple substance or monad . . . and an organic body united to it" (G VII,501). In other passages, he speaks of "the complete corporeal substance, which includes the form and the matter, or the soul with the organs" (G VI,506/L 551), or of "corporeal substance" as "composed of the soul and the mass" (G VI,588/L 624), and says that "a true substance (such as an animal) is composed of an immaterial soul and an organic body, and it is the Composite of these two that is called *One per se*" (G III,657). The corporeal substance is formed by the coming together of the subordinate monads with the primary monad (G II,252/L 530).

The corporeal (or composite) substance thus formed is not an aggregate, but one per se, according to Leibniz. Hence, it is not a mere phenomenon; corporeal substance is regularly contrasted with the phenomenal (G II,77/L-A 95; G VII, 314,

322/L 365; G III,657; C II,435/L 600). But corporeal substance certainly is not simple, as monads are. How then can it be one per se? Leibniz stated to De Volder that the corporeal substance "is made One by the Monad dominating the Machine" (G II,252/L 531). This statement gives rise to at least two questions: (a) how does a monad "dominate" its organic body or "Machine"? (b) How does this domination make the corporeal substance one per se? The second of these questions, as the center of the gravest difficulties and instabilities in Leibniz's theory of the physical world, will be reserved for the final section of this paper. But the first question will be discussed now. I think it can be answered in terms of the perceptions of monads in a way that is consistent with Leibniz's phenomenalism. This answer will be important in section 3 for understanding why Leibniz thought that corporeal aggregates, as such, are phenomena.

In what sense, then, does a monad "dominate" or rule its organic body? In what sense does it dominate or rule the subordinate monads, as Leibniz more often says?

In a letter of 16 June 1712 to Des Bosses, Leibniz says, "The domination, however, and subordination of monads, considered in the monads themselves, consists in nothing but degrees of perfection" (G II,452/L 605). Clearly, the dominant monad must be more perfect than the monads subordinate to it. And perfection of monads, for Leibniz, is measured by distinctness of perceptions; so the dominant monad must perceive some things more distinctly than the subordinate monads.

What must the dominant monad perceive more distinctly than the subordinate monads? Everything that happens within its body, suggested Bertrand Russell. But that does not adequately explain the sense in which Leibniz thought the dominant monad rules the body. In particular, the sufficient condition for domination that Russell seems to propose is not plausible. He says:

> If, then, in a certain volume, there is one monad with much clearer perceptions than the rest, this monad may perceive all that happens within that volume more clearly than do any of the others within that volume. And in this sense it may be dominant over all the monads in its immediate neighborhood.[10]

But suppose that a certain volume of air immediately adjacent to my right eye contains no monad that perceives anything in that volume or in my body as distinctly as I do. By Russell's criterion, if I dominate as a monad over my body, I will dominate also over all the monads in that adjacent volume of air, and it will presumably form part of my body. The incorporation of such volumes of air in my body would surely be an unacceptable consequence for Leibniz. He might try to avoid it by insisting that in any such space there would always be a monad that perceived something in the space as distinctly as I. But I would expect him to base his strategy more directly on the offensive feature of the example, which is that the volume of air does not seem to be part of the organic structure of my body.

In a letter to De Volder, Leibniz says, "Nay rather the soul itself of the whole would be nothing but the soul of a separately animated part, were it not the

dominant soul in the whole *by virtue of the structure of the whole*" (G II,194/L 522, emphasis mine). I believe that a correct understanding of Leibniz's conception of monadic domination depends on the relation of the dominant monad to the structure of its organic body no less than on the superior distinctness of the dominant monad's perceptions. There are two main points to be discussed here.

(1) In a preliminary draft of his *New System*, Leibniz says that the perceptions of a monad correspond "to the rest of the universe, but particularly to the organs of the body that constitutes its point of view in the world, and this is that in which their union consists" (G IV,477). Every monad expresses everything in the whole universe, according to Leibniz; but each monad expresses, and is expressed by, its own organic body in a special way. A monad and its organic body both *contain* expressions of an infinity of things; but each *is*, as a whole, an expression of the other, and this relationship of mutual expression is peculiarly direct. An organic body stands in this relation to its dominant monad alone, not to the subordinate monads in it—though they do, of course, contain expressions of it. This is an important part of the structural relationship between a monad and its organic body by which monadic domination is constituted.

An organic body is an expression of its soul or dominant monad. Leibniz has less to say about this than about the soul's expressing its body, but expression as he understands it is a relation of one-to-one mapping, which will normally be symmetrical. So, if each monad is an especially good expression of its body, the organic body will be, reciprocally, an especially good expression of its dominant monad. I believe that in the most natural development of Leibniz's system this explains how one perceives another monad. There is only indirect textual support for this interpretation, but how else would Leibniz think that we perceive other monads?

Suppose I see a kitten jumping off a chair to pounce on a piece of string. Leibniz will surely say that I perceive certain internal properties of the kitten's soul: its seeing the string and intending to seize it. And how do I perceive those psychological properties? By far the most plausible answer is that I read them off certain properties of the kitten's body: its structure, posture, spatial position, and movements.

According to Leibniz, the subordinate monads in the kitten's body also have internal properties analogous to the seeing and intending in the kitten's soul. And since I perceive everything, at least unconsciously, I must perceive these perceptions and appetitions of the subordinate monads. But it would not be plausible to say that I perceive them by perceiving physical properties of the whole body of the kitten. Rather, I perceive the subordinate monads by perceiving *their* organic bodies, which most directly express their perceptions and appetitions. Perhaps I do not usually perceive them consciously; but with a suitable microscope, for example, I might observe one of the kitten's white blood cells reacting to a bacterium in its vicinity. In this case, I may be taken as perceiving a perception of the bacterium and an appetition for its obliteration that are present (confusedly, no doubt) in the dominant monad of the white corpuscle. And I would be reading these internal properties of the monad off movements and other physical properties of the cell. If

I understand Leibniz correctly on this point, each monad is perceived by perceiving *its* organic body, and perception of an organic body directly yields perception of its dominant monad but not of its subordinate monads.

My claim that for Leibniz one perceives a monad by perceiving its body is somewhat speculative, but he explicitly holds that each created monad expresses and perceives everything else *by* expressing and perceiving its own organic body.

> Thus although each created Monad represents the whole universe, it represents more distinctly the body which is particularly assigned to it and of which it constitutes the Entelechy; and as this body expresses the whole universe by the connection of all matter in the *plenum*, the Soul also represents the whole universe in representing this body, which belongs to it in a particular way (Mon. 62; cf. G II,90f., 112f./L-A 113f., 144f.; G II,253/L 531; G IV,530ff., 545; NE II,vii,21; C 14; G VII, 567).

The Leibnizian harmony is a system of infinitely many models—or even a system of systems of models. Each model perfectly, if perhaps obscurely, expresses all the others; but some express each other with a special closeness or directness. Perhaps Leibniz would explain this special closeness in terms of distinctness of perceptions; I find it a point of obscurity in his philosophy. One system of models occupies a peculiarly central role, although it does not have a high status ontologically. This is the universe of organic bodies, considered as phenomena and continuously extended in space and time. They are involved in all of the modeling in the whole harmony; for each of the ultimately real models, the monads, stands in a direct modeling relationship only to its own organic body. The organic body, however, is also a model of the whole universe of organic bodies. Leibniz thought that in a physical universe with no empty space every physical event would have some effect on each infinitely divisible organic body and that each such body would, therefore, always bear in itself traces from which, in accordance with the mechanical laws of nature, an infinite mind could read off all past, present, and future events in the spatiotemporal universe. Since my organic body expresses in this way the whole corporeal universe and also expresses me as its dominant monad, I perceive the whole corporeal universe in perceiving my own body. And, since the other organic bodies in the universe express their own dominant monads and since each finite monad is expressed by its own body, I perceive each monad by perceiving its organic body and I perceive the whole system of finite monads by perceiving the whole system of organic bodies. And I perceive all of this by perceiving my own organic body. (So far as I can see, the thesis that I perceive other monads by perceiving their bodies is needed here if the idea that I perceive *everything* by perceiving my body and the effects of other bodies on it is to be carried through.)

Obviously, I do not consciously perceive all these things. Because I am finite, I perceive most of them much too confusedly to be conscious of them, Leibniz would say. His scheme is at least initially less plausible if we attend mainly to conscious perceptions. When I am reading a page, do I really perceive the letters on the page by perceiving what is going on in my eye? It seems that I can see perfectly well

what is on the page without consciously knowing anything at all about what is going on in my eye (and without even being able to become conscious of the inner workings of my eye by paying attention to them). If my perception models what is going on in my eye more *directly* than it models the surface of the page and if conscious perceptions are always more *distinct* than perceptions that cannot even be brought to consciousness by attending to them,[11] then this case shows that Leibniz cannot consistently explain directness of the expression and perception relations wholly in terms of distinctness of perceptions. Perhaps directness and indirectness of perception in such a case are founded on explanatory relations rather than on degrees of distinctness. I perceive what is going on in my eye more directly than what is on the page because the psychophysical laws that correlate corporeal phenomena with what happens in monads relate visual perceptions more directly to events in the eye than to events at a distance.[12] The distant events are related to visual perceptions by virtue of their connection, under mechanical laws, with events in the eye.

The task of providing a satisfactory account of the relation of directness of expression will not be pursued further here, but clearly it is an important problem. The idea that each monad and its organic body express each other with a unique directness plays a pivotal role in Leibniz's philosophy. As we have seen, it is used to explain how every monad perceives everything else. I think it plays an essential part in determining which monad has, or dominates, which organic body. That is my present concern; in addition, I will argue in section 3 that the spatial position, or "point of view," of a monad depends in turn on which organic body it has, while any aggregation of monads to form bodies depends on their spatial position. Thus, a great deal depends directly or indirectly on the relation of directness of expression.

(2) Leibniz does imply that a dominant monad perceives some things more distinctly than the monads subordinated to it do. What remains to be explained here about monadic domination is how the greater distinctness of the dominant monad's perceptions is related to the structure of the organic body and why these relationships should be expressed by an idea of domination, that is, of rule or control. The hypothesis I propose to answer these questions is that what the dominant monad as such perceives more distinctly than any other monad in its body is an appetite or tendency for perceptions of the normal organic functioning of the body. I call this a hypothesis because I have not found any place in which Leibniz explicitly asserts it, but it seems to me to provide the best explanation of much that he does say.

In developing the hypothesis, I begin with a passage of an early draft of section 14 of the *Discourse on Metaphysics*:

> It is sure above all that when we desire some phenomenon which occurs at a designated time, and when this happens ordinarily, we say that we have acted and are the cause of it, as when I will that which is called moving my hand. Also when it appears to me that at my will something happens to that which I call another substance, and that that would have happened to it in that way even if it had not willed, as I judge by frequent experience, I say that that substance is acted on, as I confess the same thing about myself when that happens to me following the will of another substance.

I believe that these statements reveal the intuitive origins of the idea that activity and passivity can be explained in terms of distinctness of perceptions. Voluntary agency provides the paradigm of activity. It is characterized by consciousness of a tendency or appetite that has a certain event as its goal. The goal is described by Leibniz here as a "phenomenon," a certain event as perceived by the voluntary agent. The whole passage is stated very much in terms of what appears to the agent; that Leibniz was thinking in those terms is confirmed by the fact that he initially wrote "perception" where "phenomenon" stands in the text as I quoted it and that he initially wrote "when I will that it appear to me" in describing the willing of a motion of his hand. A substance that is conscious of an appetite for a perception of a certain event is active in producing the event, if the appetite does indeed produce the perception; whereas other substances involved in the event are acted on if they are not conscious of such an appetite for their perceptions of the event. According to Leibniz's philosophy, they must have had appetites for those perceptions, but they were not conscious of them; that is, they were much less distinctly aware of them than the active substance was of its corresponding appetite. I believe that for Leibniz activity and passivity in the production of an event consist in more and less distinct perception of a monad's own appetite for perceptions of the event, although this distinctness does not reach consciousness in most cases as it does in the case of voluntary action.

My hypothesis is that Leibniz saw the dominant monad as active, in this way, in the normal functioning of its organic body, the functioning that fits the body constantly to be the direct expression of the dominant monad. This is connected with Leibniz's speaking of the monad as the "soul" or "substantial form" of the body or of the corporeal substance. He was consciously and professedly adopting or adapting Aristotelian and scholastic terminology here, and he explicitly took a position, in the famous scholastic dispute about the unit or plurality of substantial forms, for those who held that there is only one substantial form or soul in each substance. He considered himself to be in agreement with theological authority on this point (Gr. 552), and to Queen Sophia Charlotte he wrote:

> I have read the sheet that Your Majesty was kind enough to send me on the subject of my letter. It is very much to my taste, when it says that the immaterial is active, and that the material is passive. That is exactly my idea. I also recognize degrees in activites, such as life, perception, reason, and thus believe that there can be more kinds of souls, which are called vegetative, sensitive, rational, as there are kinds of bodies which have life without sensation, and others which have life and sensation without reason. I believe, however, that the sensitive soul is vegetative at the same time, and that the rational soul is sensitive and vegetative, and that thus one single soul in us includes these three degrees,[13] without its being necessary to conceive of three souls in us, of which the lower would be material in relation to the higher; and it seems that that would be to multiply beings without necessity (G VI,521).

Two points in this text are important for my present purpose: that I am the

vegetative and sensitive soul of my body, as well as a rational soul, and that the functions of a vegetative and sensitive soul are the activites of life and sensation. If I am the vegetative soul of my body, that is presumably because I am active in the nutritive functioning of my body—for example, in particular events of sugar metabolism in the cells of my body. And, if I am active in those events, that is because I perceive my preceding appetite for my perception of them and that perception, though unconscious, is more distinct than the perception any other monad in my body has of its corresponding appetite.

This hypothesis allows, but does not require, that the dominant monad perceives *all* events in its body more distinctly than any other monad in the body does. All that is required is that it have more distinct perceptions of its appetites for all events of *normal* functioning of the body. I see no reason why the soul must be similarly active with respect to traumas of disease or injury in the body. In fact, I suspect Leibniz would deny that it is. His fullest discussion of the soul's role in the production of such traumas is in response to a criticism by Bayle. Bayle had asked how the theory of preestablished harmony could explain the sudden transition from pleasure to pain in a dog that is struck unexpectedly by a stick while eating (G IV,531). What is the previous state of the dog's soul from which the sudden pain results, according to Leibniz? Leibniz replies:

> Thus the causes that make the stick act (that is to say the man positioned behind the dog, who is getting ready to hit it while it eats, and everything in the course of bodies that contributes to dispose that man to this) are also represented from the first in the soul of the dog exactly in accordance with the truth, but weakly by little, confused perceptions, without apperception, that is to say without the dog noticing it, because the dog's body is also only imperceptibly affected. And when in the course of bodies these dispositions finally produce the blow pressed hard on the body of the dog, in the same way the representations of these dispositions in the dog's soul finally produce the representation of the blow of the stick. Since that representation is distinguished and strong, . . . the dog apperceives it very distinctly, and that is what makes its pain (G IV,532).

This explanation, according to which perceptions produce one another in the soul by virtue of their representing corporeal events that follow from one another by the laws of the corporeal universe, is reminiscent of Spinoza's version of psychophysical parallelism. But what I want to emphasize in this text is that the soul's prior tendency to have the pain that is its perception of the trauma in its body is based on its unconscious perception of events outside its body.[14] It perceives these events indirectly by perceiving its own body; I cannot see that Leibniz is committed to saying that the soul perceives those external events more distinctly than the subordinate monads do. At any rate, a more distinct perception of external events, or of the causes of traumas, is not obviously connected with the functions of a vegetative soul.

This hypothesis about the nature of the rule that the dominant monad bears

in its body confirms and illuminates my interpretation of the nature of organism in Leibniz. An organic body is one of many of whose operations, in its parts of all sizes, can be explained not only mechanically but also *teleologically*, as directed in accordance with the active appetites of a soul that is at least vegetative and may also be sensitive and rational. And the active appetites of a vegetative soul are for states that contribute to the maintenance of the body as a direct expression of a monad and a perfect expression of the whole corporeal universe, according to certain laws of nature.

3. AGGREGATES

Leibniz says that "the body is an aggregate of substances" (G II,135/L-A 170). We may be tempted to think this contradicts the thesis that bodies are phenomena, but Leibniz did not think these views inconsistent. He speaks of masses as "only Beings by aggregation, and *therefore* phenomena."[15] (G II,252/L 531, my emphasis; cf. G VII,344). In order to understand this doctrine—frequently asserted by Leibniz—that precisely as aggregates of substances, bodies are phenomena, we must first consider how these aggregates are constituted. There are two questions here: of what sort of substances are bodies aggregates, and what is the principle of aggregation that determines which substances are grouped together to form a particular aggregate?

Leibniz is commonly read as holding that bodies are aggregates of *monads*. A question naturally arises: how could an aggregate of those ultimately real substances be only an appearance? But it is not entirely clear that he did think of bodies as aggregates of monads or simple substances. There are indeed places in his works where he speaks of a corporeal mass as aggregated from "unities" (G II,379) or, more clearly, as "a result or assemblage of simple substances or indeed of a multitude of real unities" (G IV,491; cf. G VII,561; G III,367; G II,282/L 539; G III,622). I think there are more texts, however, that support the view that "a mass is an aggregate of *corporeal* substances" (G VII,501, my emphasis; cf. G III,260; G IV,572; G II,205f.; G VI,550; C 13f.; L-W 139). We have seen that, according to Leibniz, a corporeal substance is composed of a monad and the organic body of that monad and that in his opinion the organic body is a phenomenon (G III,657). This might suggest to us that Leibniz thought corporeal masses are phenomena *because* they are aggregates of corporeal substances that are partly composed of phenomena.

This explanation of Leibniz's belief in the phenomenality of corporeal aggregates is unacceptable, however, for at least four reasons. (1) If masses are phenomena because they are composed of corporeal substances that are partly composed of phenomena, the corporeal substances themselves should also be phenomena because they are partly composed of phenomena; but Leibniz did not hold that corporeal substances are phenomena. (2) So far as I know, Leibniz never says that corporeal aggregates are phenomena because they are partly composed of phenomena; but he often says they are phenomena because they are aggregates. (3) Indeed, a vicious-looking circle would arise if Leibniz tried to explain the phenomenality of corporeal

aggregates on the ground that they are partly composed of organic bodies that are phenomena, for he explains the phenomenality of organic bodies on the ground that they are aggregates. (4) Leibniz did write to De Volder that "accurately speaking, matter is not composed of" monads "but results from them" (G II,268/L 536). Elsewhere, however, it seems that the treatment of bodies as aggregates of *corporeal* substances is not meant to exclude the claim that at bottom they are entirely reducible to *simple* substances or monads, related in certain ways. Thus, Leibniz can say that every body is "an aggregate of animals or other living and therefore organic things or else of concretions or masses, but which also themselves are finally analyzed into living things"—where I take the living things to be corporeal substances; but he adds immediately that "the last thing in the analysis of substances is simple substances, namely souls or, if you prefer a more general word, *Monads*, which lack parts" (C 13f.). For all of these reasons, I think we must try to understand why Leibniz would have thought that aggregates as such cannot be more than phenomena even if they are aggregates of *simple* substances.

First, however, we have to consider what is the principle that determines how substances—simple or corporeal, as the case may be—are grouped together to form a body. Although Leibniz does not give much explanation on this point, I think it is fairly clear that a body will be an aggregate of all or most of the substances whose positions are within some continuous three-dimensional portion of space. What portion of space that is, and which substances are members of the aggregate, may change over time, of course. This spatial togetherness is a necessary condition for any corporeal aggregation, but it is presumably not a sufficient conditin for even the accidental unity that Leibniz ascribes to a stone. For such unity, additional, quasi-causal conditions on the way in which the members of the aggregate change their positions relative to each other will also be necessary.[16]

If the aggregation of substances into bodies depends on the positions of the substances, the next thing we will want to know is what determines the positions of the substance in space. It is not hard to answer this question if it is about *corporeal* substances. A corporeal substance is composed of an organic body and the dominant monad of that body. The position of the corporeal substance will surely be the position of its organic body. The organic body is a phenomenon, spatial position is a phenomenal property, and the spatial position of the organic body is *given* in appearance. The spatial position of a corporeal substance is thus the one it appears to have, or perhaps the one it *would* appear to have in a perfected science.

If we think of bodies as aggregates of *simple* substance, we will need to have spatial positions for the simple substances as well as for corporeal substances. But this can be accomplished by assigning to each simple substance the spatial position of its organic body (cf. G II,253/L 531), for, according to Leibniz, each simple substance is the dominant monad of an organic body.

This construction of bodies as aggregates of either corporeal or simple substances has the metaphysical peculiarity that the grouping of the substances into aggregates depends on the spatial appearance of the bodies. Those who seek a less

phenomenalistic reading of Leibniz might wish to find a construction of corporeal aggregates that is independent of such phenomenal properties of bodies. I once thought I had discovered such a construction. It starts with Bertrand Russell's statement that for Leibniz "places result from points of view, and points of view involve confused perception or *materia prima*."[17] In this construction, all spatial relations are to be defined in terms of the points of view of monads. These points of view will be the positions of the monads and will be conceptually prior to the positions of bodies. The points of view of monads will be positions determined by comparison of the degree of confusion of their perceptions of each other, in accordance with the principle that, if monad A's perception of monad C is more obscure than monad A's perception of monad B, then monad A is closer to monad B than to monad C.

William Irvine[18] has persuaded me that this construction is mathematically possible. That is, if we are given a monad corresponding to every point of space, plus, for every triple of monads, A, B, and C, the information whether the distance AB is greater or less than, or equal to, the distance AC, that will suffice for the construction of all spatial relations. Furthermore, Leibniz often indicates that distance is correlated with obscurity of perception. Nevertheless, I have not found this construction in Leibniz, and I have come to believe that it does not correspond to his intentions, for several reasons.

(1) It is not plausible to suppose that we always perceive nearer things more distinctly than anything that is farther away, and Leibniz does not seem to have believed it. In response to a related objection by Arnauld, he wrote that in distinctness of perception "the distance of some is compensated for by the smallness or other hindrance of others, and Thales sees the stars without seeing the ditch in front of his feet" (G II,90/L-A 113). In other places, he says that the things a monad perceives distinctly are "some that are nearer *or more prominent, accommodated to its organs*" or "the nearest, *or the largest* with respect to each of the Monads" (C 15, Mon. 60, my emphasis). Thus, distance and obscurity of perception are not always directly proportional to each other, and it is not clear that degrees of obscurity of perception will provide enough data for a mathematically satisfactory construction of spatial relations.

(2) In order to make the points of view of monads completely prior to bodies, I was trying to define them in terms of monads' perceptions *of each other*, rather than in terms of their perceptions of bodies. But I have not found any indication that Leibniz thought that any monad, except God, ever perceives any other monad directly. In section 2, I have argued for an interpretation of his system according to which I perceive every other created monad by perceiving, more or less distinctly, its organic body.

(3) The construction of all spatial relations, and therefore of bodies, from the points of view of monads depends on assigning to each monad a point in space as its precise position. Leibniz noted in 1709, however, that, although he had once "located Souls in points," that was "many years before, when his philosophy was not yet mature enough" (G II,372/L 599). In the last decades of his life, he seems

to have thought that the only spatial position that could correctly be assigned to monads is that of "the whole organic body that they animate" (G II,371/L 598; cf. G IV,477; NE II,xxiii,21; G III,357).

I conclude that the first construction I gave of the spatial positions of simple and corporeal substances is the one intended by Leibniz. These positions and, therefore, the aggregation of substances into bodies are dependent on the apparent position of bodies as phenomena. Having come to this conclusion, I am ready to try to explain why Leibniz would have thought that corporeal aggregates cannot be more than phenomena even if they are aggregates of simple substances. There are two sorts of reason to be considered here: Leibniz has (1) a reason for thinking that *all* aggregates as such must be merely phenomena and (2) a special reason for ascribing phenomenal status to *corporeal* aggregates.

(1) The reason that he usually gives for thinking that aggregates as such are only phenomena is that they are not one per se. "Finally, bodies are nothing but aggregates, constituting something that is one *per accidens* or by an external denomination, and therefore they are well founded Phenomena" (G VII,344). The unity of an aggregate comes to it by an "external denomination"—namely, by relation to a mind that perceives relationships among the things that are aggregated. And, since Leibniz adhered to the Scholastic maxim that 'being' and 'one' are equivalent ["*Ens et unum convertuntur*" (G II,304)], he inferred that aggregates that have their unity only in the mind also have their being only in the mind.

This reasoning is clearly expressed in Leibniz's long letter of 30 April 1687 to Arnauld.

> To be brief, I hold as an axiom this identical proposition which is diversified only by accent, namely that what is not truly *one* being [*un* estre] is not truly a *being* [un *estre*] either. It has always been believed that these are mutually convertible things. . . . I have believed therefore that I would be permitted to distinguish Beings of aggregation from substances, since those Beings have their unity only in our mind, which relies on the relations or modes of genuine substances (G II,97/L-A 121).

Leibniz's claim is that aggregates have their unity and, therefore, their being only in the mind and that this is true even of aggregates of real things.

Why did Leibniz think that aggregates have their unity only in the mind? Another passage in the same letter to Arnauld reminds us that Leibniz is a conceptualist about abstract objects in general and also about relations (G II,438), believing that they have their being only in the mind (especially in the divine mind). (Cf. NE II,xii,3-7.) The same treatment is to be accorded to the unity of an aggregate and, hence, to the aggregate itself.

> Our mind notices or conceives some genuine substances which have certain modes; these modes include relations to other substances, from which the mind takes the occasion to join them together in thought and to put one name in the accounting for all these things together, which serves for convenience in reasoning; but one must not let oneself be deceived into making of

> them so many substances or truly real Beings. That is only for those who stop at appearances, or else for those who make realities out of all the abstractions of the mind, and who conceive number, time, place, motion, shape, sensible qualities as so many separate beings (G II,101/L-A 126f.).

In Leibniz's ontology, the only things that have being in their own right are particular "substances, or complete Beings, endowed with a true unity, with their different successive states" (ibid.). Everything else, including universals and also including aggregates, "being nothing but phenomena, abstractions, or relations" (ibid.), is at best a being of reason (*ens rationis*), existing in the mind and dependent on being thought of.

(2) There is another reason for assigning the status of appearances to *corporeal* aggregates in particular. "Mass is nothing but a phenomenon, like the Rainbow," wrote Leibniz to Des Bosses (G II,390). The rainbow provides Leibniz with a favorite example of a phenomenon to which he frequently likens bodies. His treatment of the example is not perfectly consistent. At least once (G II,58/L-A 66), he contrasts the rainbow with aggregates, but more often it is presented as something that is a phenomenon because it is an aggregate (e.g., G II,306). "The rainbow," Leibniz says, "is an aggregate of drops which jointly produce certain colors that are apparent to us" (Gr. 322). "The rainbow is of diminished reality under two headings," Leibniz says, "for it is a Being by aggregation of drops, and the qualities by which it is known are apparent or at least of that kind of real ones which are relative to our senses" (Gr. 322). The first of these reasons for the diminished reality of the rainbow is simply Leibniz's general thesis of the phenomenality of aggregates; it is the second reason that we must now develop.

This reason has to do with the perceptual relativity of colors. Colors, Leibniz indicates in the same text, are "apparent qualities" in the sense that they are "not in things absolutely, but insofar as they act on us; thus the same water will seem cold or tepid or hot according to the disposition of my hands. Yet this is real in it, that it is naturally apt to produce this sensation in me when I am thus disposed" (Gr. 322). Colors in general are apparent qualities in this sense, according to Leibniz; but he neglects to emphasize that the colors of the rainbow are even more than ordinarily relative to perception. Any particular aggregate of drops of water will be colored as a rainbow only relative to perceptions from a particular place. And, on the other hand, Leibniz thinks that spatial properties, too—such as size, shape, and position—are not in monads absolutely but can be ascribed to monads or aggregates of monads in a derivative sense defined in terms of the way the organic bodies of the monads are perceived. Because the aggregation of drops in a rainbow, and of monads in a body, is based on properties that are relative to perception in this way, he infers that the rainbow and the body are phenomena and have diminished reality.

It is misleading, I think, that Leibniz says in presenting this argument that the qualities by which the rainbow is *known* or recognized (*noscitur*) are apparent or relative to our senses. What is crucial here is not that we know or recognize the rainbow by merely apparent qualities. We know or recognize other monads generally by properties of their bodies that are merely apparent, according to Leibniz, and the

monads are not less real for that. The crux of the argument is that the *existence* of the aggregate depends on properties that are relative to our perceptions. The relation to perception provides the principle of grouping that defines the aggregate. If we think of a rainbow as an aggregate of drops, what is it that picks them out from all the other drops of water in the sky and groups them as an object that we call a rainbow? It is their relation to the color perceptions that an observer (in one place but not in others) would have. It is only in appearance that there is more reason to aggregate these drops together than to form any other group from the drops in the sky. Likewise, the aggregation of monads as belonging to a single corporeal mass depends entirely on their bodies' *appearing* to occupy contiguous or overlapping spaces.

Suppose through a cleverly contrived network of glass fibers the images of a thousand different people walking, talking, and gesturing on a thousand different streets of a hundred different cities were combined to give you an image of an angry mob. This "mob," we might say, is an aggregate of real human beings, but the reality of the individual persons does not keep the mob as such from being a mere phenomenon. This is because the existence of an aggregate (in the Leibnizian sense) depends on relations among its members in a way that the existence of a set does not. If sets exist at all, the existence of all the members of a set suffices for the existence of the set. But that Leibnizian paradigm of an aggregate, a pile of wood, ceases to exist when the logs in it are scattered, even though the logs are not destroyed. A pile or mob exists only while its members are grouped by a certain proximity. In the case that I described, the mob is a mere phenomenon because its grouping is merely apparent and exists only in the image presented to you by the optical apparatus. This would be an apt example for Leibniz, because in his opinion the aggregation of monads by spatial relations, to form bodies, is no less dependent on perception since monads do not have spatial properties in their own right but are spatially represented in our perceptions. (Cf. G III,623.) "And the aggregates themselves are nothing but phenomena," Leibniz says, "since besides the monads that enter into them, the rest is added by perception alone, by the very fact that they are perceived together" (G II,517).

Doubts may remain, nevertheless, as to whether this conception of bodies as aggregates and therefore phenomena is completely consistent with the account I gave in section 1, according to which bodies, as phenomena, are perceptions considered with regard to their objective reality or representational content. Several questions arise here. (1) Does Leibniz think that aggregates of monads, or of corporeal substances, as the case may be, are perceptions or modifications of the mind (considered with regard to their objective reality or representational content)? Yes, he seems to be saying that in his conceptualism about aggregates. (2) If bodies as phemonena are the objects of stories told by perception, by common sense, and especially by science, as I suggested earlier, can they also be aggregates of substances? Certainly they can also be aggregates, for, according to Leibniz, it is part of the story told by science, and less clearly also by common sense and perception, that every extended thing is composed of parts into which it could be divided; and

that is enough to make extended things aggregates in Leibniz's book. On the other hand, it does not seem to be part of the story told by perception, common sense, or science that extended things are composed of *monads*, nor perhaps even that they are composed of *substances* at all. To this I think Leibniz might say that those stories do not *exclude* the thesis that bodies are aggregates of substances. It is at least vaguely part of the stories told by common sense and science that the appearances of bodies have or may have some further foundation in reality. But no hypothesis of the nature of that foundation is part of the stories of Leibnizian science and common sense; it is left to metaphysics to consider what the foundation might be.

(3) Can aggregates of substances possess the physical properties that bodies have in the story told by science? It might seem, in particular, that an aggregate of *simple* substances would not be *continuous* because it is composed of parts that cannot be divided again into parts and that do not adjoin or overlap each other. Leibniz seems to say as much himself in his last letter to De Volder (G II,282/L 539); but that passage is a difficult one in which he also appears to have forgotten his doctrine that aggregates, even aggregates of real things, are phenomena.[19] We could say, however, that, though monads may be *elements* of corporeal aggregates, the relevant *parts* of the aggregate are not monads but subaggregates containing infinitely many monads. The aggregate will be divisible in indefinitely many and various ways into subaggregates of this sort, which will themselves be similarly divisible into subaggregates and which may overlap each other in their membership or may share a common "boundary" of monads. In this way, the aggregate as such can have the mathematical structure of continuity. This distinction between the role of monads and the role of subaggregates in the composition of corporeal aggregates seems to me to be approximately what Leibniz was after when he wrote to Fardella, in March 1690:

> Meanwhile it should not therefore be said that an indivisible substance enters into the composition of a body as a part, but rather as an essential internal requirement. Just as a point, although it is not a component part of a line, but something heterogeneous, is still necessarily required, in order for the line to be and to be understood (FC 320; cf. G II,436/L 600).

Just as the parts of a line are not points but lines, so the parts of a corporeal aggregate are not monads but (I suggest) subaggregates.

Continuity is not the only physical property, of course, but there are natural enough ways of assigning other physical properties to any aggregates of monads that might constitute bodies. Although monads do not have any primitive spatial properties, Leibniz assigns them, in a derivative sense, the spatial positions occupied by their organic bodies. I have argued, further, that the principle of aggregation by which Leibniz thinks monads are grouped to form a corporeal mass provides that the monadic membership of a particular corporeal mass at any given time includes all or most of the monads whose spatial position at that time, in this derived sense, is within a certain region of space. And it seems natural to say that the size and

shape of such an aggregate are the size and shape of the space in which the member monads have their positions. The positions are resultant or constructed properties of the monads, but the size and shape are constitutive properties of the aggregate. That is indeed one reason why the aggregate is only a phenomenon, since size and shape are phenomenal properties. Motions can be ascribed to corporeal aggregates on an analogous basis.

I am guilty of some oversimplification here, however. It was pointed out at the end of section 1 that for Leibniz the spatial representation of a monad is defined, not by any single shape, but by an infinite series of increasingly complex shapes. Presumably, the same will be true of aggregates of monads; instead of a single determinate shape, they will have an infinite series of shapes that increase in complexity as they increase in accuracy.

4. THE REALITY OF PHENOMENA

Phenomenalists and idealists do not generally leave us without a systematic difference between the physical objects that appear to us in normal experience and those that appear to us in dreams and hallucinations. In Leibniz's thought, there is a distinction between "real" phenomena and "imaginary" (G VII,319/L 363) or "apparent" or "false" phenomena (Gr. 322). As I stated in section 1, it seems to be part of Leibniz's projects to analyze this distinction in a way that he does not attempt to analyze the *content* of physical phenomena.

His principal account of what it is for phenomena to be "real" or "true" is classically phenomenalistic in the sense that it is in terms of the contents of perceptions and their agreements with other perceptions. "Matter and motion are . . . phenomena of perceivers, whose reality is located in the harmony of perceivers with themselves (at different times) and with other perceivers" (G II,270/L 537). This account can be found in works of all periods of Leibniz's thought—in the Paris years,[20] in 1686 in section 14 of the *Discourse on Metaphysics*, in criticisms of Descartes about 1692 (G IV,356/L 384), in a letter to De Volder in 1704 (G II,270/L 537), and in a sketch of his metaphysics prepared for Remond in 1714 (G III,623), to mention only a few texts.

The criteria for reality of phenomena are most fully spelled out in an essay "On the Method of Distinguishing Real from Imaginary Phenomena" (dated to 1684 by Hochstetter).[21] They are similar to criteria proposed by other early modern philosophers. The internal marks of a real phenomenon are that it is *vivid, complex*, and *harmonious (congruum)*.

> It will be vivid if qualities such as light, color, heat appear intense enough. It will be complex if they are varied, and suited for setting up many experiments and new observations, for example if we experience in the phenomenon not only colors but also sounds, odors, tastes, tactile qualities, and that both in the whole and in various parts, which we can investigate again according to various causes (G VII,319f./L 363).

These first two marks do not usually figure in Leibniz's formulations about the reality of phenomena, but *harmony* is stressed repeatedly. Internally, "a phenomenon will be harmonious when it is composed of several phenomena for which a reason can be given from each other or from some sufficiently simple common hypothesis" (G VII,320/L 364).

The main external mark, and the most important mark, of the reality of a phenomenon is also a sort of harmony:

> if it keeps the custom of other phenomena that have occurred to us frequently, so that the parts of the phenomenon have the same position, order, and outcome that similar phenomena have had. . . . Likewise, if a reason for this [phenomenon] can be given from those that precede, or if they all fit the same hypothesis as a common reason. The strongest proof, however, is surely agreement with the whole series of life, especially if most other [people] affirm that the same thing agrees with their phenomena. . . . But the most powerful proof of the reality of phenomena, which even suffices by itself, is the success of predicting future phenomena from past and present ones (G VII,320/L 364).

The notions of complexity and harmony are clearly connected here with notions of causal order. Real phenomena are those that form part of a *causally* coherent, *scientifically* adequate story that appears all or most of the time, at least in an obscure or fragmentary way, to all or most perceivers. That is the story that would be told by a perfected physical science. Imaginary phenomena are those that do not fit in this story.[22]

There is a problem about how Leibniz can admit imaginary phenomena in this sense at all, for he holds that every monad always perceives the whole universe. It follows that the true physical story appears at *all* times to *all* perceivers, not just to most of them at most times. How then can there be any false phenomena? I have not found Leibniz dealing explicitly with this problem, but we can conjecture what his answer might have been. In the first place, I think he believed that all perceptions of every monad do express something that is in the monad's organic body. Suppose I seem to see a pink rat. Leibniz would say that this perception expresses, and is a perception of, some event in my body. As a perception of that event it is a true, not a false, perception, and the event is a real, not an imaginary, phenomenon. What appears to me consciously, however, is not the event in my body, but a pink rat. In this case, I think Leibniz has to say that my perception has two different objective realities or representational contents. The first, an event in my body, is a phenomenon that certainly coheres with the story told by a perfected physical science. The second, a pink rat, may or may not cohere with that story; it is real if it does and an hallucination if it does not.

There are many passages in which Leibniz seems to say that internal and external harmony, supplemented perhaps by vividness and complexity, is a sufficient condition for the reality of a phenomenon. In the essay "On the Method of Distinguishing Real from Imaginary Phenomena," however, he speaks more cautiously.

The marks of reality are presented as epistemic criteria by which we may tell when a phenomenon is real; it is not asserted that they define what the reality of a phenomenon consists in. Indeed, it is virtually implied that a phenomenon could possess the marks of reality and yet not be fully real. "It must be admitted that the proofs of real phenomena that have been adduced thus far, even taken in any combination whatever, are not demonstrative." They have "the greatest probability," or "moral certainty," but not "Metaphysical" certainty; there would be no contradiction in supposing them false. "Therefore it cannot be absolutely demonstrated by any argument that there are bodies; and nothing keeps certain well ordered dreams from being the object of our mind, which we judge to be true and which are equivalent for practical purposes to true things because of their mutual agreement." Leibniz rejects Descartes's claim that in such case God would be a deceiver. "For what if our nature happened not to be capable of real phenomena? Surely God should be thanked rather than blamed in that case; for by causing those phenomena at least to agree, since they could not be real, he has furnished us with something equally as useful, for all of life, as real phenomena" (G VII,320f./L 364; cf. G I,372f.; NE IV,ii,14).

It has been thought that Leibniz vacillated or changed his mind about the sufficiency of the harmony and agreement of phenomena for their reality, but it seems to me more probable that he used 'real' in stronger and weaker senses in expressing different aspects of a fairly constant system of opinions. A statement in the previous paragraph of the same essay is particularly revealing: "Indeed even if it were said that this whole life is nothing but a dream, and the visible world nothing but a phantasm, I would call this dream of phantasm real enough if we were never deceived by it when we used our reason well," that is, if predictions reasonably based on past experience generally succeeded so far as future experience is concerned (G VII,320/L 364). To say that this whole life is a dream is presumably to say that its phenomena lack a kind of reality that phenomena could have, but Leibniz indicates another sense in which our phenomena would still be "real enough," provided only that our experience had all the internal marks of reality.

This helps to explain the fact that Leibniz seems to offer two other accounts of what the reality of bodies consists in. These accounts, I suggest, should be seen as stating additional conditions that harmonious phenomena must satisfy in order to be real in the fullest sense, although their harmony is sufficient for their reality in a weaker sense that is enough for all practical purposes. It must be admitted, however, that all three accounts—the one in terms of the harmony of perceptions as well as the other two—are usually presented as if they were completely independent.

One of the other accounts is theological. In a study for a letter to Des Bosses, Leibniz wrote:

> If bodies are phenomena and are evaluated on the basis of our appearances, they will not be real, since they appear differently to different people. Therefore the reality of bodies, space, motions, and time seems to consist in their being God's phenomena, or the object of intuitive knowledge [*scientia visionis*] (G II,438).

This is an exceptional text in two respects. In the first place, it seems to deny that there is enough agreement among human perceivers for their phenomena to satisfy the intersubjective harmony condition for reality. Elsewhere Leibniz seems to assume that the required agreement *does* exist (DM 14), especially if unconscious perceptions are taken into account. Even in writing to Des Bosses just a few months later, Leibniz says that on the hypothesis that there is nothing outside of all souls or monads, "when we say that Socrates is sitting, nothing else is meant than that those things by which we understand Socrates and sitting are appearing to us and to others who are concerned" (G II,451f./L605), which surely implies enough agreement in the perceptions of those "who are concerned" to distinguish a real from a merely apparent sitting of Socrates.

In the second place, the explanation of the reality of phenomena in terms of God's phenomena is rare in Leibniz's work. It occurs in other letters to Des Bosses (G II,474, 482/L 607f.), but I have not found it elsewhere. There are many unanswered questions, also, about what God's corporeal phenomena would be.[23] For these reasons, I will largely ignore this second, theological account of the reality of phenomena.

The third account applies chiefly to aggregates as such and says that their reality consists in the reality of the substances that enter into them. Aggregates "have no other reality than that which belongs to the Unities that are in them" (G II,261; cf. G VII,314). Given that Leibniz says that bodies *are* aggregates of substances, indeed, it is hard to see how he could fail to think that their reality consists at least partly in the reality of the substances that are aggregated in them. And this thesis plays a part in the argument for monads. It is partly because an aggregate "has no reality unless it is borrowed from the things contained" in it that Leibniz "inferred, therefore there are indivisible unities in things, since otherwise there will be in things no true unity, and no reality not borrowed" (G II,267).

There are several reasons for thinking that this is not a completely independent account of the reality of bodies, that it does not conflict with the account in terms of harmonious perceptions but supplements it and even depends on it. (1) Leibniz seems to have regarded the two accounts as consistent. He sometimes gives both of them in the same document. I have quoted expressions of both of them from his letter of 30 June 1704 to De Volder (G II,267, 270/L 537). And in a single two-page piece written in 1714 Leibniz says both that bodies *are* assemblages of monads and that material things "have their reality from the agreement of the perceptions of apperceiving substances" (G III,622f.).

(2) I think Leibniz believed that the two accounts are at least materially equivalent—that there is a true scientific story that is always at least unconsciously perceived by all monads, that most of what appears consciously to conscious perceivers fits at least approximately into that story, that there are infinitely many monads whose properties are expressed by organic bodies that would figure in a sufficiently detailed extension of the true scientific story, that aggregates of these monads (or of the corporeal substances that they form with their organic bodies) can, therefore, be regarded as the bodies that figure in the true scientific story,

and thus that the bodies of the true scientific theory are real according to both accounts, both as coherent phenomena and as aggregates of real things.

(3) The claim that the reality of bodies consists in the reality of the substances that are aggregated in them presupposes that substances *are* aggregated in them, and this aggregation presupposes the harmony of perceptions. As I argued above, the grouping of substances into corporeal aggregates depends on the spatial positions their organic bodies appear to have. If a single system of aggregates of substances is to be real, as opposed to any others, which may be imaginary, it is surely not enough that the substances that belong to the real aggregates be real; it is also required that the aggregates themselves represent the *true* grouping of the substances. In particular, the true grouping of the substances can hardly depend on the positions the substances' organic bodies appear to have just a little of the time to just any perceiver. Rather, it depends on the positions the organic bodies have in a coherent system of phenomena that are represented by most of the perceptions of all perceivers—or else perhaps by all the perceptions of a single authoritative perceiver (God). In order for there to be corporeal aggregates that are real by virtue of the reality of the substances aggregated in them, they must appear as material masses in this coherent system of phenomena and, therefore, they must satisfy the harmonious perceptions condition for reality—or else the theological condition, but the latter usually seems to play no role in Leibniz's thought.

Considering all these reasons (and ignoring the theological account), I think we find in Leibniz, not two competing analyses of the reality of corporeal phenomena, but one analysis in two layers. Phenomena are real, in a weak sense, if and only if they fit into a single scientifically adequate system of harmonious phenomena of all perceivers.[24] Those phenomena—and only those—that are real in this weaker sense are also real in a fuller sense to the extent that there exist real monads that are appropriately expressed by organic bodies belonging to the system of phenomena that is at least weakly real.

5. CORPOREAL SUBSTANCE (II): PRINCIPLES OF UNITY

There are many texts in which Leibniz says that corporeal substances are distinguished from mere aggregates by a profounder sort of unity. Writing to Arnauld late in 1686, he said, "if there are no corporeal substances, such as I wish, it follows that bodies are nothing but true phenomena, like the rainbow," for on account of the infinite divisibility of the continuum, "one will never come to anything of which one can say, 'Here is truly a being,' except when one finds animated machines of which the soul or substantial form constitutes the substantial unity independent of the external union of contact" (G II,77/L-A 95). This statement implies, first, that there cannot be a corporeal substance without a "substantial unity" stronger than the unity that many aggregates have by the bodily contact of their members with each other and, second, that such a substantial unity is somehow provided by the dominant monad. And this is only one of a number of texts in which the dominant monad, or perhaps sometimes the active entelechy in the

dominant monad, is characterized as the principle of unity of the corporeal substance. A corporeal substance is "actuated by one Entelechy, without which there would be in it no principle of true Unity" (G II,250/L 529); "the Monad dominating the Machine makes [the corporeal substance] One" (G II,252/L531; cf. G II,120/L-A 154; L 454; G III,260f.; G II,314; PNG 3).

It may be doubted, however, whether on Leibniz's showing the dominant monad gives to the composite that it forms with the organic body a unity fundamentally different in kind from the unity of an aggregate. As Leibniz himself said, monadic domination and the unity that springs from it consist at bottom only in certain relations among the perceptions of monads. "The agglomeration of these organized corporeal substances which constitutes our body is not united with our Soul except by that relation which follows from the order of the phenomena that are natural to each substance separately" (G IV,573). Aggregates, too, are united (accidentally, Leibniz says) by relations among the perceptions of monads. So at bottom it would seem that the unity of an aggregate and the unity of a corporeal substance are of the same kind.

To be sure, the perceptual relations involved in monadic domination are more direct, in a puzzling sense that I have discussed in section 2, and they play a more basic part in explanation in the Leibnizian system than those that constitute aggregates. They also give rise to interesting properties of a corporeal substance; Leibniz mentions indivisibility, natural indestructibility, and the property of completely expressing its whole past and future, as distinguishing a corporeal substance from a mere aggregate (G II,76/L-A 94). But these properties belong to the organic body, which is not a substance, as well as to the corporeal substance; and they merely result, for Leibniz, from the fact that the organic body, as a phenomenon, is a perpetual perfect expression of the dominant monad, which possesses analogous properties. Given Leibniz's doctrine that "there is nothing in things except simple substances, and in them perception and appetite" (G II,270/L 537), there is no way for the unity of a corporeal substance to be anything over and above the system of relations among the perceptions of monads. By stipulation, of course, Leibniz would be free to define a difference between unity and accidental unity in terms of different patterns of relations among perceptions. But does this add up to such a fundamental metaphysical difference as Leibniz seems to wish to assert between corporeal substances and aggregates?

There is evidence that Leibniz himself worried about this issue, at least in the last ten or twelve years of his life. This evidence is connected with his correspondence with the Jesuit Fathers Tournemine and Des Bosses. Leibniz wrote a note for Tournemine, probably in 1706, in which he acknowledges that his preestablished harmony cannot account any better than the Cartesian philosophy for "a true Union" between the soul and the body. He excuses himself from giving such an account:

> I have tried to give an account only of Phenomena, that is to say, of the relation that is perceived between the Soul and the Body. But as the Metaphysical Union that one adds to it is not a Phenomenon, and as an intelligible

> Notion has not even been given of it, I have not taken it upon myself to seek the explanation of it. I do not deny, however, that there is something of that nature (G VI,595).

It is hard to interpret this statement. It certainly does not constitute an affirmation that there is, over and above the relations of perceptions of monads provided by the preestablished harmony, a metaphysical union of soul and body. In fact, Leibniz plainly denies that such a union is part of his philosophy. But is he tactfully muffling his belief that it is an unintelligible absurdity? Or is he more straightforwardly acknowledging that there may be something in the universe that cannot be understood in his philosophy?

The more cynical reading of the text is supported, in my opinion, by the last letter he wrote to De Volder, dated 19 January 1706, in which he reports an interchange with Tournemine. What he wrote to De Volder agrees closely in substance with what he wrote for Tournemine but is noticeably less respectful and more ironic in tone. It is introduced with the remark, "The scholastics commonly seek things that are not so much beyond this world [*ultramundana*] as Utopian. An elegant example was recently supplied to me by the Jesuit Tournemine, an ingenious Frenchman" (G II,281/L 538). The "example," stigmatized as "Utopian," is Tournemine's demand for an account of a union, different from agreement, between body and soul. By itself, therefore, the interchange with Tournemine is not much evidence that Leibniz had serious misgivings about his own philosophy.

The evidence of Leibniz's correspondence with Des Bosses, however, cannot be disposed of so easily. That correspondence is voluminous and in large part devoted to the nature of the union between soul and body. It is in writing to Des Bosses, probably in 1712, that Leibniz introduced the notorious concept of a *substantial bond (vinculum substantiale)*. The substantial bond is "a certain union, or rather a real unifier superadded to the monads by God"; it is "something absolute (and therefore substantial)" (G II,435/L 600). It "will not be a simple result, or will not consist solely of true or real relations, but will add besides some new substantiality or substantial bond; and it will be an effect not only of the divine intellect but also of the divine will" (G II,438)—or, as we might say, it will not be a mere logical construct out of monads and the relations of their perceptions. A subsantial bond never unites spatially scattered monads; it unites only "monads which are under the domination of one, or which make one organic body or one Machine of nature" (G II,438f.; cf. G II,486/L 609). And each substantial bond is permanently attached to a single dominant monad (G II,496/L 611). It is only by the order of nature, however, and not by absolute necessity, that the substantial bond thus requires the dominant monad and its organic body. Supernaturally and miraculously, God can separate the bond from the monads (G II,495f./L 610f.) and perhaps does so in transubstantiation, in the Eucharist.

The conception of the substantial bond includes some of the properties that Leibniz previously ascribed to the dominant monad. It is "the very substantial form of the composite" (G II,516; cf. G II,504/L 614) and apparently "consists in the primitive active and passive power of the composite" (G II,485f./L 609). "This

bond will be the source [*principium*] of the actions of the composite substance" (G II,503/L 613). It is to the substantial bond that the properties of the composite substance are to be ascribed; "it will be necessary that the accidents of the composite be its modifications" (G II,486/L 609).

Unlike any monad, however, the substantial bond is metaphysically acted on by other finite things. It does not change anything in the monads (G II,517; cf. G II,451/L 604), for that would be contrary to their nature. But it unites them by being influenced by them (G II,496/L 611).

"If that substantial bond of monads were absent, all bodies with all their qualities would be nothing but well founded phenomena, like the rainbow or the image in a mirror" (G II,435/L 600). But, if there were substantial bonds, then corporeal substance would be "something making phenomena real outside of Souls" (G II,451/L 604; cf. G II,515f., 519). Among phenomena made real are not only bodies but their qualities of continuity and extension. "Real continuity cannot arise except from a substantial bond" (G II,517).

The question of the extent to which Leibniz personally accepted this theory of substantial bonds is extremely controversial. Some interpreters have taken the theory straightforwardly as a part of his philosophy in its final form. I believe the majority view, however, is typified by Russell's statement, "Thus the *vinculum substantiale* is rather the concession of a diplomatist than the creed of a philosopher."[25]

Several reasons can be given for not taking the substantial bond very seriously as a part of Leibniz's thought. (1) The most important reason is that it is blatantly inconsistent with other parts of his philosophy. The theory of substantial bonds postulates something ultimately real in things besides "simple substances, and in them perception and appetite" (cf. G II,270/L 537). It also postulates a continuous extension that is not a phenomenon but is real. Both of these positions are emphatically rejected in many other places in Leibniz's writings, late as well as early (e.g., in G III,622f. and E 745f., written in 1714 and 1716, respectively).

(2) Russell says that "nowhere does Leibniz himself assert that he believes" the doctrine of substantial bonds.[26] This could be disputed. In a letter of 16 January 1716, he refers to "the primitive passive and active powers of the composite" and says to Des Bosses, "the complete thing resulting from them I really judge to be that substantial bond which I am urging" (G II,511). This certainly looks like an endorsement of this doctrine. It could be read, however, as a statement only of what Leibniz thinks should be said about primitive passive and active powers *if* they are ascribed to a composite substance as such. And it is true that Leibniz more commonly speaks of substantial bonds in a more tentative way that seems to leave open the alternative hypothesis that bodies are in fact only phenomena. He even explicitly expresses to Des Bosses some preference for the phenomenalistic view (G II,461).

(3) A particularly important indication of Leibniz's intentions is found in a passage, cited by Russell, from Leibniz's letter of 30 June 1715 to Des Bosses:

> Whether my latest answer about Monads will have pleased you, I hardly know. I fear that the things I have written to you at different times about this subject may not cohere well enough among themselves, since, you know, I have

> not treated this theme, of Phenomena to be elevated to reality, or of composite substances, except on the occasion of your letters (G II,499).

The theme (*argumentum*) mentioned in this text is certainly the doctrine of substantial bonds. Leibniz is telling Des Bosses, in effect, that he has not thought enough about it and does not have the ideas clearly enough in mind to be confident that he has been consistent in what he has said about it from one letter to another. Whatever may have seemed plausible to Leibniz in those hours that he spent writing to Des Bosses, a theory that he did not "treat" except in this correspondence, that he did not keep clearly in mind, and that is blatantly inconsistent with important doctrines that he asserted in many other places and continued to assert during this period of his life, cannot be counted as a part of his philosophy.

There is quite a range of attitudes, however, that a philosopher may have toward ideas that are not a part of his philosophy. He may be sure they are false. He may be afraid they may be true or wish they were true. He may think they present an intriguing or perhaps even a promising alternative to some of his own views. He may be playing more or less seriously with the thought of trying to incorporate them into his philosophy. He may be completely confident of the correctness of his own theories; but, if he is worried about their adequacy in some respect, that will affect his interest in alternative theories.

In trying to discover Leibniz's attitude toward the theory of substantial bonds, we must form some assessment of his motives in discussing it with Des Bosses. Russell's claim that the *vinculum substantiale* is "the concession of a diplomatist" reflects a cynical assessment. It is based on the idea that the theory "springs from Leibniz's endeavour to reconcile his philosophy with the dogma of transubstantiation." Not that he meant at this stage in his life to accept the dogma. As a Lutheran, he was quite frank with Des Bosses that he did not accept it (G II,390). But "he was extremely anxious to persuade Catholics that they might, without heresy, believe in his doctrine of monads," suggests Russell.[27]

There are at least four reasons for regarding Russell's explanation of Leibniz's motives as implausible. (1) Leibniz was certainly capable of concealing part of his position in order to make the rest of it more palatable to others. He has even left behind some indication that he believed in doing so.[28] But one at least must wonder why he would be interested in selling to Catholics what is left of the theory of monads after abandoning the claim that the world is constituted by monads alone.

(2) I must record my own impression that Leibniz strikes me as comparatively candid, rather than cautious, in his correspondence with Des Bosses. His very inability to remember exactly what he had said to Des Bosses supports the suggestion that he was not carefully shaping diplomatic missives but rather was freely and casually playing with ideas in letters to a good friend. It is worth noting that the more phenomenalistic aspects of Leibniz's thought find much fuller expression in his letters to Des Bosses than they do in his publications and his letters to most correspondents, though Leibniz withheld from Des Bosses a full endorsement of phenomenalistic views that he did endorse in writing to some others.

(3) The doctrine of the substantial bond was proposed by Leibniz, not forced

on him by Des Bosses, although the term 'bond' (*vinculum*) in this context does have resonance with Jesuit metaphysics of the seventeenth century.[29] Indeed, Des Bosses showed a rather persistent preference for accidental or modal bonds, against which Leibniz had to defend his substantial bonds. And Des Bosses did not react with horror to the phenomenalistic alternatives offered by Leibniz. If the *vinculum substantiale* was a concession, it was not in any simple way a concession to Des Bosses.

(4) Except in one of Leibniz's letters, neither he nor Des Bosses seems to have believed that the doctrine of transubstantiation could not be accommodated without the substantial bonds. Leibniz did once say that he could hardly see how the dogma could be "sufficiently explained by mere monads and phenomena" (G II,460). But he subsequently proposed two different theories of transubstantiation based on the assumption that only monads and their phenomena exist (G II,474/L 607f.; G II,520f.), and the availability of these theories did not seem to diminish his interest in substantial bonds.

Des Bosses also proposed to Leibniz a theory of transubstantiation based on "the Hypothesis of bodies reduced to Phenomena" (G II,453-55). He did not endorse this theory, but he liked it better, in one way at least, than Leibniz's substantial bond theory of transubstantiation. In Leibniz's theory, the substantial bonds of the sacramental bread and wine, or of the corporeal substances contained in them, are miraculously destroyed, but the monads of the bread and wine endure and are miraculously united to the substantial bonds of the body and blood of Christ. Des Bosses objected to the survival of the monads of the bread and wine as inconsistent with "the dogma of the Church . . . that the whole substance of the bread and wine perish" (G II,463; cf. 474, 480). In Des Bosses's theory based on monads and phenomena alone, the monads of the bread and wine are destroyed and the monads of the body and blood of Christ take their place. Leibniz was averse, of course, to the destruction of monads; but Des Bosses forced him to admit, in the end, that the destruction of substantial bonds would be just as unnatural (G II,481f.).

There is more than one alternative, of course, to a cynical reading of Leibniz's discussion of substantial bonds. He could largely have been playing, in a friendly discussion, with ideas that he did not believe for a minute. But there is something to be said for the view that Leibniz was influenced to some extent by worries about the adequacy of his philosophy to account for certain types of union.

I have already argued that he had reason to be uneasy about the adequacy of his account of the special unity that he wished to ascribe to corporeal substances. A few hints of such uneasiness may be found elsewhere (e.g., the mention of "metaphysical union of the soul and its body" in G III,658), but the major evidence for it is in the letters to Des Bosses.

This evidence is independent of the question whether Leibniz accepted the theory of substantial bonds. Even if he did not, he seems at least to have asserted to Des Bosses that without the bonds there would be no corporeal substances that would be one per se because the monads and their subordination would not be enough to constitute such composite substances (G II,435,444,511,517f./L 600,602). This is

clearly inconsistent with Leibniz's oft-repeated claim that the dominant monad is the principle of unity that makes a corporeal substance one per se.

It would be neat and tidy if it could be shown that these statements to Des Bosses represent a change of mind on Leibniz's part. But, in fact, there seems not to have been a settled change in his views on this point. Even after he began to make these statements to Des Bosses, he wrote in *The Principles of Nature and of Grace* that the dominant monad of a composite substance "makes . . . the principle of its unicity" (PNG 3).[30] We have to do here with a vacillation, at most, rather than a change of mind.

I believe that Leibniz's deepest grounds for misgivings about the adequacy of his treatment of concepts of union were theological. The theory of substantial bonds is introduced under the condition, "if faith leads us to corporeal substance" (G II,435/L 600), though the allusion there may be more to Des Bosses's theology than to Leibniz's own. In any event, Leibniz alludes to problems about the relation of his philosophy to dogmas to which he was committed as he was not committed to transubstantiation, problems about the need for a strong concept of union or something similar. The Lutheran doctrine of the Eucharist, as he explained it to Des Bosses, does not involve transubstantiation but does involve a real "presence of the body of Christ," and he acknowledged that this presence "is something Metaphysical, as union is: which is not explained by phenomena" (G II,390/L615*n*8; cf. G VI,595f. and Gr. 449).

Still more important is a problem about the doctrine of the Incarnation. He wrote to Des Bosses:

> If an account could be thought out for explaining the possibility of your transubstantiation even with bodies reduced to phenomena alone, I would much prefer that. For that Hypothesis pleases in many ways. Nor do we need anything else besides Monads and their internal modifications, for Philosophy as opposed to the supernatural. But I fear that we cannot explain the mystery of the Incarnation, and other things, unless real bonds or unions are added (G II,461).

This is not the only text in which Leibniz suggests something like this about the Incarnation. There is an obscure but fascinating theological fragment, not addressed to any correspondent, in which he brings the Incarnation together with the union of soul and body: "Everything can be explained by adding one thing to those things which can be explained from phenomena—namely, by adding the *union* of God with the creature in the incarnation; of the soul with the body to make the human suppositum; of the monads among themselves to make the secondary substance or organic body" (RML 414, Leibniz's emphasis). I take it that the human suppositum and organic body mentioned here are the human nature and human body of Christ, but it is striking that the idea of a union of body and soul, and of monads, that cannot be explained in terms of phenomena is once more linked with the union of divine and human in Christ.

Perhaps there was a reason for this linkage. A long tradition has seen the

relation of divine and human in the Incarnation as analogous to the union of body and soul in a human being. The so-called "Athanasian Creed" states, "For as the reasonable soul and flesh is one man, so God and man is one Christ."[31] The analogy was familiar to Leibniz. In a study for a letter to the Electress Sophia in 1702 he wrote, "For as an active thing joined to the animal makes the man of it, so the Divinity joined to the man makes of it the man that is God's [*l'homme à Dieu*; or the man-god (*l'homme-Dieu*) as Leibniz actually wrote to the Electress]" (G VI, 521).

There are two reasons why Leibniz might have thought that the doctrine of the union of divine and human natures in the Incarnation requires another conception of union than that which monadic domination provides in his philosophy for the union of body and soul. The first reason is simply that, as we have seen, the union provided by monadic domination is not very strong. The second reason is that applying the Leibnizian conception of domination directly to the Incarnation leads to heresy. According to Leibniz, the dominant monad is the *sole* substantial form of a corporeal substance. If it is a rational soul, it is the sensitive and vegetative soul of its body as well. By analogy, if the second person of the holy Trinity were united with a human nature as a dominant monad in a corporeal substance, the divine nature would be the only substantial form or soul of that substance. It would take the place of the rational as well as the sensitive and vegetative souls. But that is an extension of the Apollinarian heresy. Orthodoxy requires, as Leibniz surely knew, that the single person of Christ include a complete human soul distinct from the divine nature.

If Leibniz believed, at the end of his life, that the doctrines that are most satisfactory in philosophy as such are not adequate for theology, that would not have been an unprecedented belief. It was held, before Leibniz, by many philosophers whose loyalty to Christianity was sincere. That would have been an uncomfortable position, however, for a philosopher who held in his *Theodicy*, in the "Preliminary Discourse on the Conformity of Faith with Reason" (§ 63), that "the Mysteries surpass our reason, . . . but they are not at all contrary to our reason." Leibniz would surely have preferred to think that the central dogmas of Christianity can be reconciled with the views to which a rational examination of the nature of substance would lead us. But it is not clear that he saw how that could be done to his own satisfaction.[32]

Notes

1. The works of Leibniz are cited by the following abbreviations: C = *Opuscules et fragments inédits de Leibniz*, ed. by Louis Couturat (Paris: Alcan, 1903). DM = *Discourse on Metaphysics*, as ed. by Henri Lestienne (Paris: Vrin, 1975) and trans. by P. G. Lucas and L. Grint (Manchester: Manchester University Press, 1953), cited by section number. E = *Opera philosophica*, ed. by J. E. Erdmann (Berlin: G. Eichler, 1840). FC = *Nouvelles lettres et opuscules inédits de Leibniz*, ed. by Foucher de Careil (Paris: Aug. Durand, 1857). G = *Die philosophischen Schriften von Gottfried Wilhelm Leibniz*, ed. by C. I. Gerhardt (Berlin: Weidmannsche Buchhandlung, 1875-1890), cited by volume and page. GM = *Leibnizens mathematische Schriften*, ed. by C. I. Gerhardt (Berlin: A. Asher, and Halle: H. W. Schmidt, 1849-1863), cited by

volume and page. Gr. = *Textes inédits*, ed. by Gaston Grua (Paris: Presses Universitaires de France, 1948). L = Leibniz, *Philosophical Papers and Letters*, trans. and ed. by Leroy E. Loemker, 2nd ed. (Dordrecht and Boston: Reidel, 1969). L-A = *The Leibniz-Arnauld Correspondence*, ed. and trans. by H. T. Mason (Manchester: Manchester University Press, 1967). L-W = *Briefwechsel zwischen Leibniz und Christian Wolf*, ed. by C. I. Gerhardt (Halle: H. W. Schmidt, 1860). Mon. = *Monadology*, cited by section number from Leibniz, *Principes de la nature et de la grace fondés en raison* and *Principes de la philosophie ou Monadologie*, ed. in one volume by André Robinet (Paris: Presses Universitaires de France, 1954). NE = *New Essays Concerning Human Understanding*, cited by book, chapter, and section from G, V. PNG = *The Principles of Nature and of Grace*, cited by section number from the same edition as Mon. RML = André Robinet, *Malebranche et Leibniz: Relations personnelles* (Paris: Vrin, 1955). All works are cited by page number unless otherwise noted above. Entries separated by a slash refer to the original and an English translation of the same passage. I take responsibility for the English translation of all quotations, although I have made some use of existing English versions.

2. "In actual realities the whole," for example, "is a result of the parts" (G VII,562), but that does not mean that the parts are (efficient) causes of the whole. I think that if *b* results from *a* in Leibniz's sense, then *a* entails *b* and *b* adds nothing to reality over and above *a*. The data from which something "results" are jointly *sufficient* for the result. (L 699 seems to say that the "result" is *uniquely* determined by the data, which must, therefore, be sufficient for it. In the original Latin of this mathematical context [GM VII,21f.], however, the word whose meaning is explained is the unusual *'prostultare.*; and it is not clear to me whether what is said here implies anything about the meaning of *'resultare'*, *'resultatum'*, and *'resultat'*, which are more usual in metaphysical contexts. Even if this text is not directly relevant, I think it is most plausible to take Leibniz as supposing that the data must be sufficient for a "result" in metaphysics.) Perhaps the data will also be individually *necessary* for the result, but I doubt that that is implied in the notion of "result." Certainly, the result need not be capable of definition in terms of the data, in a finite language, for the data will commonly be infinite. Leibniz is not committed to the possibility of translating talk about bodies into talk about simple substances and their perceptions.

3. For example, Erich Hochstetter, "Von der wahren Wirklichkeit bei Leibniz," *Zeitschrift für philosophische Forschung*, Vol. 20 (1966), pp. 421-46 (see especially the references to Leibniz's "Schwanken," pp. 422 and 440); and Louis Loeb, *From Descartes to Hume* (Ithaca, N.Y.: Cornell University Press, 1981), pp. 299-309—to mention two works that I hold in high regard.

4. Cf. Montgomery Furth, "Monadology," *The Philosophical Review*, Vol. 76 (1967), p. 172.

5. On Leibniz's relation to this controversy, see RML 133ff. Even before seeing the documents, Leibniz wrote in a letter that "Mons. Arnauld writes with more judgment" than Father Malebranche (RML 150).

6. Published, with a full report of the discovery, by Willy Kabitz, "Leibniz und Berkeley," *Sitzungsberichte der preussischen Akademie der Wissenschaften*, Philosophisch-historische Klasse N. xxiv, (Jahrgang 1932), p. 636.

7. Here I disagree with Hochstetter, "Von der wahren Wirklichkeit bei Leibniz," p. 436. It must be granted to Hochstetter that Leibniz did not explicitly speak of phenomena as "appearances of monads."

8. In writing to Arnauld, Leibniz expressed some agnosticism, or at least some hesitation, about whether there are any "true corporeal substances" besides those that have "souls" or whether it is enough for them to have something analogous to a soul. (See G II,76f./L-A 95.) If sincere, this uncertainty seems not to have endured.

9. Ernst Cassirer, *Leibniz's System in seinem wissenschaftlichen Grundlagen* (Marburg: N. G. Elwert'sche Verlagsbuchhandlung, 1902), p. 408. Cassirer represents this phrase as a quotation from E 678, but he seems to me to be mistranslating and misapplying the text.

10. Bertrand Russell, *A Critical Exposition of the Philosophy of Leibniz*, 2nd ed. (London: George Allen and Unwin, 1937), p. 148.

11. I believe consciousness and distinctness were linked in this way in Leibniz's mind (see Mon. 19-24), but the question could be raised whether his theory of perception would not go better if distinctness and consciousness were allowed to be two dimensions in which perceptions can vary independently—distinctness being a feature of the structure of the perception and consciousness being, as it were, the light that is turned on it. (I am indebted to Jeremy Hyman for this image.) Separating these dimensions would give the theory more flexibility.

12. As Wallace Anderson has pointed out to me, it is also true that visual perceptions are *more fully* correlated with the eye than with the page. There are features of my visual perception that express features of my eye without expressing features of the page (e.g., the dots that are swimming across my image of the page).

13. The mention of "degrees" in the soul here might serve to place Leibniz more precisely in the complex Scholastic debate about the unity or plurality of substantial forms, but I will not pursue that historical relationship here.

14. Despite what Leibniz says here, it will be difficult for him to refuse to distinguish my perceiving my appetite for a certain event from my perceiving the corporeal causes of that event, for I may perceive the latter much more distinctly than the former, as when I perceive that I am falling and about to strike the ground with considerable force. (I owe this observation to Timothy Sheppard.)

15. I take these phrases to apply only to masses. Literally, Leibniz says this about "the rest" (*reliqua*) by contrast with "simple things." "The rest" might be taken to include corporeal substances (which are composite), but I find it hard to believe that Leibniz meant to say that corporeal substances are "only Beings by aggregation, and therefore phenomena," given other things that he says about corporeal substances.

16. For this last point I am indebted to Wallace Anderson. Cf. G II,100/L-A 126.

17. Russell, *A Critical Exposition of the Philosophy of Leibniz*, p. 147.

18. In unpublished papers written at UCLA.

19. A much earlier text in which there is at least a suggestion that aggregates of true substances might not be phenomena is G VII,322/L 365 (dated to 1684 by Hochstetter; see note 21).

20. See Hochstetter, "Von der wahren Wirklichkeit bei Leibniz," and Hector-Neri Castaneda, "Leibniz's Meditation on April 15, 1676 about Existence, Dreams, and Space," *Studia Leibnitiana, Supplementa*, Vol. XVIII (1978) (*Leibniz à Paris*, Tome II), pp. 91-129.

21. Hochstetter, "Von der wahren Wirklichkeit bei Leibniz," p. 431f. This dating presumably reflects the thinking of the staff of the Academy edition as of 1966.

22. This is a convenient way of talking. Leibniz's conceptualism might give rise to some problems about the ontological status of such a story, if we rely heavily on 'would be told'.

23. In G VII,563, Leibniz seems to equate "phenomena" with "objects of limited spirits"—which could be taken as implying that God has no phenomena.

24. Perhaps Leibniz recognizes a still weaker sense in which phenomena are "real enough" if they belong to a scientifically adequate system of the harmonious phenomena of a single perceiver.

25. Russell, *A Critical Exposition of the Philosophy of Leibniz*, p. 152.

26. *Ibid.*

27. *Ibid.*

28. See Lestienne's edition of DM, p. 14*n*, in the 1952 or earlier edition (missing from the 1975 edition, in which a new introduction by Andre Robinet replaces some of Lestienne's introductory material).

29. A. Boehm, *Le "vinculum substantiale", chez Leibniz: Ses origines historiques* (Paris: Vrin, 1938)—a very useful book, though Boehm takes remarkably little note of the reasons for denying that the doctrine of the *vinculum* was part of Leibniz's philosophy.

30. Leibniz first wrote 'unity' ('*unité*') and then changed it to 'unicity' ('*unicité*'). '*Unicité*'

was an unusual word, but the best evidence I have found suggests that the change did not weaken the claim of unity but was meant to emphasize that the unity here is original rather than produced. (Cf. the *Oxford English Dictionary* on seventeenth-century use of 'unicity'.) I am indebted to Nicholas Rescher for a comment that helped straighten me out on this point.

31. H. Denzinger, *Enchiridion symbolorum, definitionum et declarationum de rebus fidei et morum*, 11th ed. (Freiburg-im-Breisgau: Herder, 1911), p. 19; trans. in the (proposed) *Book of Common Prayer of the Episcopal Church* (1977), p. 865.

32. Drafts of parts of this paper have been read to several scholarly gatherings, and the material has been discussed with my Leibniz class at UCLA. Many people have helped me with their comments. I am particularly indebted to Nicholas Jolley, Louis Loeb, J. E. McGuire, and the late Wallace Anderson for giving me written comments, which have been of great use for my revisions.