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The Cambridge Companion to Leibniz

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Chapter

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4 Metaphysics: The early period to the *Discourse on Metaphysics*

The *Discourse on Metaphysics* of 1686 is generally regarded as the first complete presentation of Leibniz's mature metaphysics. In this chapter, we trace the development of that philosophy from Leibniz's youth, through his years in Paris, to his time in Hanover. Because the metaphysics of the 1680s has lately received so much attention and because the importance of the earlier philosophy has generally not been recognized, we concentrate on Leibniz's thought prior to 1680. In section 1, we present the intellectual context in which his youthful metaphysics is most easily understood and summarize both his original metaphysical principles and his first conception of substance. We claim that these metaphysical principles, all of which concern substance, form the bedrock of Leibniz's philosophy for years to come. In section 2, we unearth an inconsistency that Leibniz discovered between his first account of substance and the principles, and trace the steps he took in revising the former. In section 3, we argue that this concept of substance, combined with certain theological commitments, led Leibniz to develop most of the central doctrines of his mature thought. For example, we claim that by April, 1676, Leibniz has arrived at his doctrine of preestablished harmony. In section 4, we discuss the relationship between his concept containment theory of truth, which grew out of intensive work on logic in 1679, and his theory of substance. We finally give a brief summary of the central doctrines of the metaphysics of the *Discourse*.¹

I THE ORIGINAL METAPHYSICS

In 1668, Leibniz began work on an ambitious theological project under the encouragement of his friend and patron, Baron Johann

Christian von Boineburg. The motivation behind this project, entitled "Catholic Demonstrations," was to effect a reconciliation between Roman Catholics and Protestants. Leibniz hoped to solve certain theological problems in a way that would satisfy members of both faiths and would remain consistent with the pronouncements of the Council of Trent. Although each of the essays in this collection treats a traditional Christian theological question (e.g., transubstantiation, incarnation), Leibniz's answers lay the foundations of his metaphysics. These works are especially valuable for what they reveal about the motivations behind Leibniz's first account of substance. As we shall see, Leibniz soon revises his original theory, but the concerns and principles first articulated in these early theological essays continue to guide his philosophical reasoning for years to come.

That Leibniz had a metaphysics at this time will come as a surprise to many. It has not been previously recognized and is discernible only if one approaches the early works with a sufficiently broad textual and historical perspective.²

1.1 Intellectual background and textual difficulties

The intellectual culture of seventeenth-century Protestant Germany is enormously interesting and complicated but cannot be adequately discussed here. Two of its features are worth mentioning because they form the background against which Leibniz's early metaphysics is most easily discerned. Over the long expanse of Leibniz's philosophical career, many of the details of his thought change and the arguments for them evolve, but he never abandons certain core assumptions and concerns that he acquired during his youth and that are firmly rooted in the intellectual climate of seventeenth-century Germany.

However odd it may seem to us that Leibniz's first attempt at systematic metaphysics was directed towards an ecumenical goal, such a project was not at all unusual in the mid-seventeenth century. Whether motivated by political, millenarian, or other religious concerns, the period is full of intellectuals in search of peace among the faithful and of natural philosophers attempting to forge a synthesis between Christian doctrine and the new science. Throughout his life, many of Leibniz's most important metaphysical projects are

motivated by theological questions, and he frequently criticizes other philosophers for not having the proper concern for such theological matters. We will see in what follows that some of the central doctrines of the *Discourse on Metaphysics* were developed at least partly in an attempt to solve specific theological problems.³

The second feature of Leibniz's intellectual culture worth discussing here is particularly difficult to appreciate, given our twentieth-century sensibilities. From Renaissance humanists in Germany, Leibniz acquired an intellectual goal and accompanying philosophical method which, however peculiar they may seem to us now, were well respected and widely used throughout early modern Europe.⁴ Johann C. Sturm (1635–1703), a German philosopher with whom Leibniz corresponded, presents an account of both the goal and its method in his *Eclectic Philosophy*.⁵ According to Sturm, the goal of philosophy "is the Truth, as Aristotle taught" (p. 127), and the proper way to find what is "most true" is to rid oneself of the dogma of any particular philosophical sect and to acquire knowledge of all the significant intellectual traditions: "all of Nature and Reason" is available to those "few people" who practice the proper critical eclecticism (pp. 5ff.). In order to discover the truth one must understand the philosophy of Aristotle, Plato, Gassendi, Descartes, and the "other geniuses"; once a proper understanding of the thought of such philosophers is acquired, their views can be combined into a coherent and true system (pp. 189f.).

For German eclectics like Sturm, the resulting system was fundamentally based in the philosophy of Aristotle. The assumption was that Aristotle had been systematically misinterpreted by the scholastics and that, once his philosophy was seen in light of the new science, it could be accurately understood. During the period, it was common for people to call themselves Aristotelians and yet borrow heavily from non-Aristotelian ideas and even from the new science.⁶ Leibniz learned this lesson well from his two most important teachers. Jacob Thomasius of Leipzig and Erhard Weigel of Jena both believed that the thought of Aristotle had been perverted by his uncomprehending Scholastic followers and, that once the philosophy of the ancient was disentangled from that of the incompetent Schoolmen, it would form the basis for the "true philosophy."⁷

Unless Leibniz's first metaphysical reflections and his subsequent philosophical development are seen against the background of this

eclectic Aristotelianism, they are nearly impossible to discern. Therefore, in studying Leibniz's texts it is important to keep in mind that by the time he had finished his formal studies, he had acquired a goal, a method, and a set of assumptions that would persist for years to come. The goal was to uncover the truth that was presumed to lie hidden beneath the various conflicting philosophical schools; the method was to study carefully all the prominent philosophical sects and, in Sturm's words, not "to cut ourselves off from any source of knowledge" (p. 20); the assumptions were that the philosophy of Aristotle does not conflict with the new science and could be made to cohere with other philosophical traditions (e.g., Platonism); the result was a system firmly based in the philosophy of Aristotle, somewhat imaginatively interpreted.⁸ It should not be surprising therefore that throughout his life Leibniz studies a wide range of authors, that he is inclined to force comparisons between his own views and those of other thinkers, and that he often uses terms and philosophical jargon from an odd collection of sources to express his own ideas (see, e.g., A VI.ii 279f.: W 90f.; A VI.i 516: L 117f.; G IV 479f.: AG 140: G IV 45 iff.: AG 58).

In order to discover Leibniz's earliest metaphysical ideas it is not only important to understand something about the complications of his intellectual culture, it is also necessary to appreciate the difficulty posed by his philosophical corpus. Although this energetic German wrote thousands of pages of notes and hundreds of letters, he published very little, and there is no single systematic text in which he explicates his philosophy. One has to piece together Leibniz's metaphysics from his abundant letters and short, mostly unedited essays. This by itself would not be so difficult if it were not for the fact that Leibniz is often both imprecise and incomplete in the articulation of his ideas. His notes – replete with cross-outs, arrows, and reformulations – reveal an impatient intellect hurrying to express its ideas as quickly as possible. As Leibniz himself wrote about his papers in 1676: "instead of treasure . . . , you will only find ashes; instead of elaborate works, a few sheets of paper and some poorly expressed vestiges of hasty reflections, which were only saved for the sake of my memory" (A VI.iii 533). One might expect more from the letters that he sent to the great philosophers of Europe, often with the expressed intention of revealing his ideas. But there is a problem even here: Leibniz neither

states his most fundamental assumptions nor explains how he arrived at his conclusions. In an uncharacteristically frank moment of 1676 Leibniz writes:

A metaphysics should be written with accurate definitions and demonstrations, but nothing should be demonstrated in it apart from that which does not clash too much with received opinions. For in that way this metaphysics can be accepted; and once it has been approved then, *if people examine it more deeply later, they themselves will draw the necessary consequences*. Besides this, one can, as a separate undertaking, show these people later the way of reasoning about these things. In this metaphysics, it will be useful for there to be added here and there the authoritative utterances of great men, who have reasoned in a similar way; especially when these utterances contain something that seems to have some possible relevance to the illustration of a view. (A VI.iii 573f.: Pk 95; our emphasis)

There is one especially important lesson to be learned here: as students of Leibniz, we must not be satisfied with the definitions and demonstrations that he offers, nor should we accept at face value his proclamations about other philosophers. Rather, we must be willing to dig beneath these definitions and comments in an attempt to discover the more fundamental assumptions beneath. Only when we have unearthed these assumptions will we have arrived at his real “way of reasoning about these things.”

Given the scant help Leibniz gives his reader about his underlying concerns and deep motivations, it is no wonder that it has been so difficult to make out his most fundamental views. It is in an attempt to discover these views that we turn to Leibniz’s early metaphysics where his most basic assumptions are closest to the surface and easiest to discern.

1.2 *The original metaphysical principles*

When Leibniz begins work on the theological project in 1668, he is both a mechanist and an Aristotelian and maintains that the philosophy of Aristotle “can be conformed easily” to that of the mechanists (A II.i 10). He is a mechanist in the sense that he accepts mechanical explanations in physics: “I maintain the rule which is common to all these moderns, [namely that] nothing ought to be explained in bodies except through magnitude, figure, and motion” (A II.i 15; L*94; cf. A VI.i 490; L 110).⁹ He is an

Aristotelian in his basic metaphysical commitments, especially his robust sense of the self-sufficiency of individual corporeal substances. That is, Leibniz sides with “the Moderns” in that he wants to explain corporeal properties in terms of matter in motion, but he rejects what he considers to be the metaphysical foundations of that physics. In his opinion, mechanists like Hobbes, Gassendi, and Descartes were mistaken in assuming that they could ground their physics in a notion of body that included only the material and excluded the immaterial. Leibniz’s original metaphysics is an attempt to replace that wholly material (and hence “atheistic”) foundation with his own Aristotelian conception that combines the corporeal with the incorporeal. By forging a synthesis of Aristotelian metaphysics and mechanical physics, he hopes to show “that the very views which the moderns are putting forth so pompously flow from Aristotelian principles” (A II.i 16: L* 95).¹⁰

Both Leibniz’s argument against the mechanical concept of corporeal substance and his reasons for replacing it with his own conception are easily lost in the obscurity and complications of the texts. They become apparent only when seen against the background of his basic metaphysical assumptions. Leibniz is rarely explicit about these assumptions, but they are discernible as the implicit premises and unstated assumptions of his arguments in the texts of 1668–69. Each exposes a slightly different aspect of the robust self-sufficiency that Leibniz requires of substances; together they form the bedrock of his metaphysical thinking. They may be summarized as follows.

The *Principle of Self-sufficiency* (PS): a being *S* is self-sufficient if and only if the complete reason for its properties can be discovered in the nature of *S*.¹¹

The *Principle of Substantial Self-sufficiency* (PSS): a being *S* is a substance if and only if *S* is self-sufficient.¹²

The *Principle of Causal Self-sufficiency* (PCS): for any being *S*, strictly speaking, *S* can be said to have a property *p* and *p* can be said to exist in *S* just in case the complete reason for *p* can be found in the nature of *S*.¹³

The *Principle of Substantial Activity* (PSA): a being *S* is a substance if and only if it subsists per se and *S* subsists per se if and only if it has a principle of activity within its own nature.¹⁴

The *Principle of Sufficient Reason* (PSR): for everything there is there is a complete reason.¹⁵ A *complete reason* for some state of

affairs s (1) constitutes the necessary and sufficient condition for s ; (2) is perspicuous in that, in those cases where one can understand it, one sees exactly why s as opposed to some other state of affairs came about; (3) is such that in those cases when a full account of it can be given, that account constitutes a complete explanation of s ; and (4) the reason itself does not require a reason of the same type.¹⁶ This notion of complete reason along with the Principle of Sufficient Reason implies two other assumptions.

The *Logical Assumption*: for any state of affairs s , the logically necessary and sufficient conditions of s exist and in theory can be articulated; the *Intelligibility Assumption*: those conditions are in theory intelligible.

These original metaphysical principles and assumptions imply a good deal about both the universe and its maker. They yield a world of active, self-sufficient substances whose natures constitute the cause and explanation of their properties. Since all the events of the natural world are ultimately reducible to these substantial natures, the world is rendered both explicable and intelligible. It is significant that Leibniz does not think it is necessary to argue for these claims: the intelligibility of the world seems to follow from his belief in the wisdom and rationality of God; the self-sufficiency of essentially active substances from his acceptance of the philosophy of Aristotle, as he interpreted it.

The importance that these metaphysical commitments have for the development of Leibniz's thought cannot be overemphasized: they guide his metaphysical reasoning for years to come. The precise role they play in the development of his original conception of substance is perhaps most apparent in the criticisms Leibniz offers of the standard metaphysical foundations of mechanism.

1.3 *The original concept of substance*

Leibniz and the Moderns agree that all the properties of bodies are reducible to the motion of matter and that motion itself cannot be derived from corporeal nature alone. That is, however the standard mechanist defined body (e.g., as extended stuff or as extended, impenetrable stuff), they agreed with Leibniz that motion could not be derived from it. Because corporeal nature needed an outside source of motion, each philosopher had some way of bringing God, as a

source of motion, to body. For example, Descartes maintains that God adds motion to body by continual creation, while Gassendi thinks that God infuses motion into atoms at their creation.¹⁷

But this is where the agreement between Leibniz and the Moderns ends. The latter maintained that God was in some sense the cause of the motion in bodies and yet they were perfectly happy to make motion a fundamental property of body. For instance, Descartes maintains that motion is a mode *of* extension, even though it has to be added *to* extension by God. The important point here is that, for the standard mechanist, regardless of how motion comes into the picture, two things were taken to be true about it: (1) it is not reducible to or caused by the nature or essence of body and yet (2) it is a fundamental feature of body. Leibniz finds this position unacceptable and offers (1) as a reason for denying (2). For Leibniz, the Moderns made two crucial mistakes, one made evident by the PCS, the other by the PSS. First, they attributed motion to body as a fundamental property or mode despite the fact that the cause of motion did not reside in the nature of body. According to Leibniz and the PCS, if the cause of motion is not in corporeal nature, then strictly speaking motion cannot be said to belong to that nature (see, for instance, A II.i 23f, L 101f). Second, they intended to construct a substance out of corporeal nature alone despite the fact that it is was not "self-sufficient" and could "not subsist without an incorporeal principle." According to Leibniz and the PSS, any substance worth the name ought to be self-sufficient at least with regard to its essential properties (A VI.i 490: L 110). In other words, for Leibniz, the standard mechanical conception of corporeal substance was unacceptably insubstantial.

Leibniz's original notion of substance grew out of his attempt to make corporeal substance properly substantial while retaining mechanical physics. His commitment to the metaphysical principles listed above required that such a substance be both causally and substantially self-sufficient in the appropriate way; his commitment to mechanical physics demanded it be constituted of extended stuff in motion; his commitment to the philosophy of Aristotle implied that the substance would have both a passive and active principle.

In constructing the proper passive principle, Leibniz distinguished between matter and body: the former is nothing other than impenetrability and extension, matter without mind, inert stuff without a

principle of activity, and hence without motion; the latter is a combination of matter and a principle of activity that can cause motion.¹⁸ As Leibniz explains: "It must be demonstrated against Descartes that space and extension are really different from body because otherwise motion would not be a real thing [in body]" (A VI.i 510). Matter is basically inert stuff and does not have motion while body is constituted of matter in motion.¹⁹

Mind functions as the active principle and plays the role of the Aristotelian substantial form. According to Leibniz, because only something incorporeal can act as a source of activity, it follows from the PSA that a substance is that which has an incorporeal principle. Because of the fundamental connection between substance and activity, a body will be a substance if and only if it is in union with something incorporeal that can function as its principle of activity. Leibniz writes: "Something when taken together with concurring mind is substance," otherwise it is not. A mind makes the body substantial by constituting its principle of activity: "the substance of the body is union with sustaining mind" (A VI.i 508–9; L 115–16).²⁰ There are two sorts of minds and hence two sorts of substances. Leibniz writes: "the substance of the human body is union with human mind, and the substance of bodies which lack reason [i.e., nonhuman substances] is union with the universal mind, or God" (A VI.i 509; L 116). For both human and nonhuman substances, mind is the active principle, that which informs matter with motion and thereby makes it into a corporeal substance. Human substances have their own minds and hence their own source of activity. Nonhuman substances have God, the "universal mind," as their active, determining principle. In his role as "primary form" (e.g., A II.i 20; L 99), God individuates matter and thereby produces an individual substance, or what Leibniz sometimes describes as "an organized arrangement of parts" of matter (A II.i 16f.; L 96).²¹ According to Leibniz, in devising his conception of substance, he has followed Aristotle: the individual corporeal substance is composed of indeterminate matter and a determining form; the substantial nature, here a composite of matter in motion, acts as the cause and explanation of its properties (A II.i 11; A II.i 21f.; L 100).

We noted above that, when Leibniz began work on the theological project in 1668, he was both a mechanist and an Aristotelian and maintained that the philosophy of Aristotle "can be conformed eas-

ily" to that of the mechanists (A II.i 10). We have just described the motivation behind his original notion of substance: he found what he considered to be serious flaws in the foundations of mechanical physics and attempted to construct his own, more secure Aristotelian foundation.²² There are two points to make about the results of this, Leibniz's first attempt at original metaphysics. First, Leibniz does forge a synthesis of mechanical and Aristotelian elements. By demoting the mechanical conception of body to prime matter and hence to a mere constituent of corporeal substance and by defining corporeal substance as the *union* of matter and mind, Leibniz makes his conception more appropriately self-sufficient and more consistent with Aristotelian metaphysics. Matter and mind combine as passive and active elements to form a union that constitutes the cause and explanation for the properties of substances and hence for everything else there is. But Leibniz's original notion of corporeal substance is also consistent with mechanical physics: by making substance a union of mind and matter, he has all the necessary ingredients for a proper mechanical physics. As Leibniz happily proclaims in 1669, "the explanation of all qualities must be found in magnitude, figure, motion, etc." (A II.i 23f.: L 102).

The second point to emphasize about Leibniz's original account of substance is that it is very much a tentative solution to the difficult philosophical and theological issues with which he was grappling in 1668–69. By April, 1669, Leibniz has decided both that the Moderns were seriously mistaken in their materialist conception of corporeal substance and that the only way to correct their mistake and to solve certain difficult theological problems (e.g., transubstantiation) was to put something incorporeal into substance.²³ But he was undecided about the details of his solution. Most importantly, he was unclear about how to conceive the relations between God and matter. His second conception of substance evolved out of an attempt to solve this problem.

2 THE ORIGINS OF THE MATURE THEORY OF SUBSTANCE, 1669–1672

Leibniz was proud of his original account of substance. In his writings of 1668–69 he frequently emphasizes the several advantages that he thinks it has both in solving theological problems (e.g., A II.i

II, 24; A VI.i 508, 492, 494) and in revealing the true sophistication of the philosophy of Aristotle (e.g., A II.i 15, 18; A VI.i 510). He probably would have maintained this conception if not for a problem he found lurking beneath the surface, one that he considered significant enough to require a dramatic shift in his thinking. The problem is due to the fact that, while each nonhuman corporeal substance has a nature (i.e., an organized arrangement of parts of matter) in terms of which its properties can be explained, that nature is itself *caused* by a substance that stands wholly outside of it. What Leibniz came to consider problematic is that, although corporeal properties follow from the combination of matter and motion, motion is itself caused by something substantially distinct from that nature. It follows from the PCS and the fact that God is the cause of motion in body that, strictly speaking, the motion neither belongs to the body nor really exists in it. And, if motion is not really in the body, it becomes unclear how the *nature* of body is supposed to be constituted of matter in motion. Since God causes the nature (by moving the matter), it follows from the PCS that the motion does not really belong to the nature and hence that the nature does not strictly speaking belong to the body.

Nor is it clear how the properties of a body that are supposed to be caused by this nature really belong to it. For example, according to the mechanical physics to which Leibniz is committed, the shape of a body is reducible to and explainable in terms of the arrangement of the parts of the body. But, since the cause of motion is God, it is not clear in what sense the shape belongs to the body. Because God causes the shape by moving the matter, it would seem to follow from the PCS that the shape belongs as much to God as to the body. In other words, it is not clear whether the shape of the shoe is strictly in God or in the object.

Because Leibniz was concerned to formulate an account of non-human substance that would be both substantially and causally self-sufficient, the fact that his original conception turns out *not* to be self-sufficient in just these ways constitutes a serious flaw. Leibniz's second conception of substance grew out of his attempt to solve exactly this problem. Between the spring of 1669 and the winter of 1670, he realized that the only justifiable way to attribute corporeal properties to individual bodies, given his PCS, and to make nonhuman corporeal substances properly self-sufficient, given

his PSS, was to give each body its own incorporeal principle, one that could be part of corporeal nature in the way God was not. Leibniz makes the point succinctly in the mid-1670s when he explains that “in order to *complete* the concept of Body . . . [a principle of] action . . . has to be added to the concept of extension” (A VI.iii 158: W 64; our emphasis).

In 1669, Leibniz had his work cut out for him. First, he had to decide upon an incorporeal principle to put into body so that its nature would be the cause of its own motion and hence of its properties. Second, Leibniz had to find a way to make this incorporeal principle part of the *nature* of the substance: otherwise, he would not have escaped the problem facing his first conception. Following the PSS, if the corporeal and incorporeal principles were not unified into a single nature, the problem with the original account would remain, i.e., the motion would belong only to the incorporeal principle that directly caused it and not to the substance as a whole. To avoid this problem, the corporeal and incorporeal elements in substance had to form one nature so that the motion strictly speaking could be attributed to the substance and not just to the incorporeal cause of motion within the substance.

There is straightforward evidence that Leibniz’s development took exactly these steps, and for precisely these reasons, i.e., that once he discovered the problem with his original concept of substance, he decided to solve it by giving each body its own incorporeal principle and then worked out the details of how to form a substantial union out of two things, each with its own nature.²⁴ The steps that Leibniz took in devising his full solution are as follows.

In April, 1669, Leibniz wrote a letter to his revered teacher, Jacob Thomasius, presenting for the first time in detail his original conception of substance. In early 1670, Leibniz published an edition of a text by the Renaissance humanist, Marius Nizolius. Besides writing a preface to the text, Leibniz attached to it a slightly altered version of his letter to Thomasius. Although the actual additions and deletions in the second, published version of the letter are few, they represent a fundamental shift in Leibniz’s views about substance: Leibniz adds an incorporeal principle, namely thought (*cogitatio*), to extension as an element in corporeal substance and deletes the reference to God as the cause of the motion in bodies.²⁵ That is, within

months of composing his original letter to Thomasius, Leibniz had recognized not only the problem with his first account of substance but also what was required to solve it.

The changes Leibniz makes in the letter do not constitute anything like a fully worked out solution to the problem, but they do reveal both Leibniz's recognition of the problem and the form his solution would take. Leibniz is searching for some kind of incorporeal principle that can take the place of God as the cause of motion. It is not surprising then that within weeks of revising his letter to Thomasius, Leibniz is hard at work constructing a new conception of substance. The first explicit revision of Leibniz's original conception of substance occurs in a theological essay entitled *On the Incarnation of God or Hypostatic Union*. In this paper, Leibniz faces the problem of hypostatic union, here understood to be the problem of how there can be a union of the divine and human natures of Christ. Given Leibniz's philosophical concerns at the time, the theological problem of hypostatic union seems an especially appropriate context for a discussion of how an immaterial and a material principle (each with its own nature) are to be related so as to form one substance. Although Leibniz's discussion in this unfinished essay is enormously complicated, the points relevant to the present discussion may be summarized as follows. Leibniz describes an hypostatic union between two things, *A* and *B*, in the following way: "If *A* is [that which does] the unifying and *B* is that which is said to be unified, then, in the first place, *A* is a thing subsisting *per se*; in the second, *A* acts through *B* . . . ; and thus, *A* acts immediately in *B* or [*seu*] not through another" (A VI.i 534). Here we find the three crucial features of an hypostatic union: the union is made out of two elements, one active, one passive; the active element subsists *per se*, but can only act through the other; the passive element need not subsist *per se*, but is the means by which the active element acts. Moreover, according to Leibniz, although God does not need a passive element through which to act, created mind does. This means that in order for there to be any activity in the created world, hypostatical unions are required. Further, it is not enough that the active element acts some of the time, it must act constantly on the passive element. The idea seems to be that when the acting stops, so does the union. Thus, according to Leibniz, *A* and *B* are hy-

postatically unified if and only if the active element acts constantly on the passive element and the latter is its "immediate instrument" of acting.

Leibniz's pronouncements here represent a significant step towards solving the problem with his original account of substance and constitute the foundations of a new conception. By focusing on the necessary conditions for an hypostatic union, the essay squarely faces the problem with the first account. According to the PCS, a property *p* will belong to an object *b* if and only if the full account of *p* is found in the *nature* of *b*. The crucial flaw with the original view was that the cause of the motion of body *qua* substance (namely, divine mind) stood outside it and, hence, remained wholly distinct from the nature of the corporeal substance. The key to Leibniz's new position is that he inserts created mind between God and body *qua* matter and withdraws the claim that God causes the motion in the corporeal substance. Instead, God creates mind so that it may act as "God's instrument." By such means, created mind becomes the principle of activity in the body *qua* substance; it thereby constitutes, along with its matter, the nature of the substance and the cause and explanation of its properties.

Nor is it problematic that mind, the incorporeal element in the substance, is the efficient cause of the activity in the substance. While the mind is the source of activity, the motion or action must occur *through* matter. By combining mind and body *qua* matter in the way he does, Leibniz has cleverly managed to create a single unit out of corporeal and incorporeal elements. His strategy is fairly simple: a real substantial union between elements of two different natures (one active, one passive) depends on the constant activity of the active principle on the passive principle because the constancy of the union of the two depends on the constancy of the connection between them. Since the two elements will cease to be a union when they cease to be connected, and since constant activity assures constant connection, Leibniz's account of substantial union requires constant activity. In other words, the hypostatic union of incorporeal and corporeal natures crucially depends upon two features of the principle of activity: first, that it constantly acts and, second, that it cannot act except through the matter in which it is rooted.

A comparison to organic unities may be helpful at this point. If one understands an organic unity to be composed of a mind and

some portion of matter, then it is easy to understand why the unity requires the constant activity of the one on the other. With any organic unity, however simple or complex, its survival depends on the maintenance of its organization: if the mind or organizing principle in either an amoeba or rhododendron desists in acting, then the organization ceases and the union dissolves; there is no longer an organized arrangement of matter, but a heap of decaying flesh. On this model the active element or mind cannot act outside itself except through the passive element, because in order to act externally it has to do so through the matter that it organizes.

Despite the fact that *On the Incarnation of God* presents the fundamental structure of Leibniz's second account of substance, it leaves crucial questions unanswered. Most of these cluster around the issue of the nature of mind and its relation to body. It is not surprising, therefore, that upon completing this essay, Leibniz turned his attention to topics concerning mind. According to his own account, it was during the winter of 1669–70, that Leibniz was able “to penetrate” into the “deepest nature of mind” (A II.i 65) and to grasp that the motion of bodies cannot be explained “without invoking incorporeal beings” (A II.i 64–65). The results of this study were significant: not only did Leibniz produce the most important publication of his early years, he summarized his new views in a series of letters that he sent to some of the most prominent philosophers of Europe. These writings contain the original formulations of what would become Leibniz's mature metaphysics. Although there is not space here to go into their details, the most significant metaphysical conclusions of these texts follow.

Leibniz published two major works in 1671: the *New Physical Hypothesis*, which he dedicated to the Royal Society of London and the *Theory of Abstract Motion*, which he dedicated to the Royal Academy of Paris. It is in the latter that he presents his new idea: “I demonstrated that the true locus of mind is a certain point or center” that is unextended and indivisible (A II.i 173: L 149) and thereby showed that “mind itself actually exists in a point as opposed to body [which] occupies space” (A II.i 108). By conceiving of a point as that which is unextended and indivisible, Leibniz gave himself the conceptual means to distinguish neatly between the “place” of mind and that of body and hence a way of putting mind into body.²⁶

The second crucial discovery during this period concerns the precise relation between the mind and the substance of which it is part.

Leibniz is especially explicit about this in a letter to Duke Johann Friedrich of May 1671. He asserts that "there is a kernel of [every] substance" that can either "spread throughout" the body or "draw itself into an invisible center" and that is like the source and "fount of the substance." According to Leibniz the mind or kernel of every corporeal substance causes and maintains its organization, which can be more or less expansive. The mind does not literally spread throughout the body (for then it would exist in space), but the organization that it causes does. That is, the incorporeal principle causes and maintains an organization of matter that can be more or less "spread out." Making explicit use of an organic model, Leibniz asks us to conceive the relation between substance and mind as that between an organism and its organizing principle: just as it is the organizing principle that causes the organism to grow from an acorn to a tree and then, say, to survive the removal of several limbs, it is the mind that produces and sustains the organized arrangement of matter in every body (A II.i 108f.).²⁷

Along with his letter to the Duke, Leibniz enclosed an essay on a "most difficult" theological problem, the resurrection of the body. Drawing upon the same organic model, Leibniz offers a neat solution to the problem. He explains that the soul resides in "a certain center" of a corporeal substance which is the "fountain of life" of the substance and that, even in fire or other drastic physical changes, this center survives in the ashes or some small part of the original body. Resurrection occurs when "the flower of the substance of the same body [that died], through excretions and emissions, transforms itself into something new." Moreover, according to Leibniz, this "flower of substance" explains "the generation of plants from seeds," the development of "the seed in the uterus," and even "the essences of chemicals" (A II.i 116). Thus, human beings, animals, plants, and even chemical elements are all substances in the sense that they are constituted of mind and matter, where the former constantly acts on the latter and in doing so produces a single unified thing. This unity of mind and matter can expand (as when a plant grows from a seed) or recede (as when a tree burns away to ash), but through all such changes the mind and some bit of matter persist.

An obvious question arises at this point: how do the minds in chemical elements and plants differ from those in human beings? Leibniz was enormously proud of the fact that in studying "the

innermost nature of mind" he had developed an answer to just this question. He writes: "I demonstrated that the true locus of mind is a certain point or center, and from this I deduced some remarkable conclusions about . . . the true innermost difference between motion and thought" (A II.i 173: L 149). The key to understanding the difference is to appreciate the importance of the fact that, although "mind in its very nature acts" (A II.i 162) and "the actions of mind consist in conatuses" which are infinitesimal motions "in a point" (A II.i 108), only the actions of "true minds" persist and thereby produce "a harmony of conatuses." It is the persistence of the actions of true minds that allows them "to think, to compare diverse things, to perceive" (A II.i 113). The minds in bodies do not persist; during the period Leibniz sometimes describes them as momentary (e.g., A II.i 102; A VI.ii 266: L 141).

In the development of his second account of substance, Leibniz did not focus exclusively on the topic of mind. He also deliberated upon the nature of matter, the other constituent in corporeal substance. Sometime in 1670/71 Leibniz wrote an important fragment "On Prime Matter" in which he reveals the full force of his eclecticism. He argues that "the prime matter of Aristotle is the same as the subtle matter of Descartes: each is infinitely divisible, each lacks form and motion per se, each receives form through motion, and each receives motion from mind." Moreover, Leibniz praises those Scholastics who believed that "prime matter has [its] existence from form," which he understands to mean that without motion there is no variety and without variety "matter is nothing." In other words, prime matter becomes some thing when mind organizes it into a body. What he considers one of his contributions to these views is that "matter is actually divided into infinite parts" so that "there are infinite creatures in any given body" (A VI.ii 279f: W* 90f).

With this said, the materials are in place to explicate Leibniz's second theory of substance. Interestingly enough, its structure is fundamentally the same as the first conception. Matter plays the role of Aristotelian prime matter, i.e., it is indeterminate and must be made some *thing* through activity: "particulars or bodies arise" only when matter is activated by mind (A VI.ii 280: W 91). The principle of activity is something incorporeal that plays the role of the Aristotelian substantial form, the determining principle, that

which makes the thing what it is. When the incorporeal principle individuates matter, the result is an individual corporeal substance. And once again the resulting physics is fundamentally mechanical in that all corporeal properties are reducible to and explainable in terms of the movements of the parts of body.

The crucial difference between the two theories is that in the second each substance has its own principle of activity or substantial form that is so related to the corporeal principle as to form a single nature with it. Although mind exists in a point, it constantly acts through the matter to which it is attached and, as Leibniz writes, it can "act upon" a larger or smaller extent of matter. It is important to emphasize the fact that every activity is the result of mind's acting *through* matter: the mind does the moving, but the matter is what is moved. Thus, mind and matter are constitutive parts of any activity. Since the mind and the matter are constantly joined in the activity of the one on the other, the substance is an hypostatic union of mind and matter; each substance is constituted by mind and matter in constant relation. By so combining mind and matter to form an hypostatic union, Leibniz renders substance self-sufficient in a way consistent with the PSS and PCS. He thereby solves the problem with his original theory and lays the groundwork for his mature metaphysics.

3 THE EVOLUTION OF THE MATURE PHILOSOPHY, 1672–1676

For decades, core features of the philosophy of the *Discourse on Metaphysics* have baffled scholars. Despite extensive analysis and study, its deep motivations and the precise relations among some of its central doctrines have remained largely mysterious.²⁸ We will argue in this section that most of the fundamental tenets of Leibniz's mature thought are already in place in 1676 and that they grew naturally out of Leibniz's early metaphysics.

During the four years Leibniz spent in Paris (1672–76), his intellectual energies were focused primarily on mathematical and technical problems. The results include the construction of a calculating machine that was successfully demonstrated in early 1675 and the invention of the calculus in the autumn of that year. But he did not wholly neglect the metaphysical ideas that he worked so hard to

develop during the period of 1669–71. In Paris, he found time to enlarge upon key elements of the earlier metaphysical system.²⁹ At the most general level, his metaphysical investigations concern four areas of study: God as the cause of the universe (sec. 3.1) and created minds as the source of the activity (3.2), plenitude (3.3), and harmony (3.4) in that world.³⁰

3.1 *God and the importance of being harmonious*

In March, 1673 Leibniz wrote a letter to Duke Johann Friedrich in which he describes his intellectual activities during his first year in Paris: “I have made important demonstrations in the difficult areas of religion and the true philosophy,” and also contributions concerning “the inner nature of things” (A II.i 232). That God stands at the center of this “true philosophy” and that the evolution in Leibniz’s thinking about mind and matter during the period is encouraged by his reflections on the nature of God is clear from his notes. Leibniz arrived in Paris with the basic outline of his theory of substance; the next step in his metaphysical investigations was to examine the precise relationship between such creatures and their creator.

Leibniz’s analysis of this relationship is best seen in the context of the PSR and its notion of a complete reason. The PSR implies that God as the cause of the world is its sufficient reason. As Leibniz defined it just before his departure for Paris, “a sufficient reason is that which having been given the thing is” (A VI.ii 483). The notion of complete reason demands an intimate and intelligible relation between a cause and its effect so that an examination of the divine sufficient reason would in theory render the effect intelligible. When Leibniz arrived in Paris he assumed that the world would have features that reflect or express this divine cause. Before moving ahead in his metaphysical enquiries, it was necessary to identify the relevant features of the world as a product of God. Only after a careful inventory of those features had been made could Leibniz proceed to construct the “true philosophy.”

In his *Philosophers’ Confession* of 1672, Leibniz identifies harmony as the dominant feature of the world that God had sufficient reason to create. He writes: “God is the ultimate reason of things, i.e., the sufficient reason of the universe” which itself is “most

rational" and "most supreme in beauty and universal harmony" (A VI.iii 126). Harmony is the most supreme unity within the greatest variety and is that feature of the world that follows from God's nature (A VI.iii 122f). In an important essay of 1676, entitled "On the Secrets of the Sublime" he proclaims: "After due consideration I take as a principle the harmony of things: that is, that the greatest amount of essence that can exist does exist" (A VI.iii 472: Pk 21). In order to attribute as much goodness as possible to the universe, Leibniz assumes that essences are good and then reasons that the more (compatible) essences in the world the better. It is important that Leibniz is not just after the greatest possible number of essences, he wants to make every positive aspect of the world as full as possible. He states: "It follows from this principle that there is no vacuum among forms; also that there is no vacuum in place and time. . . . From which it follows that there is no assignable time in which something did not exist, nor is there a place which is not full" (A VI.iii 473: Pk 23). Although he is uncertain about the exact consequences of this "plenitude of the world," he thinks that "it is true that any part of matter, however small, contains an infinity of creatures, i.e., is a world" (A VI.iii 474: Pk 25). It becomes clear in the course of the essay that this commitment to plenitude is only one part of the principle of harmony and that proper maximization will occur only within the context of a divinely arranged elegant simplicity. God is the kind of "intelligent substance" and "perfect mind" who finds what is "most harmonious" to be "most pleasing" and who "arranged all things from the beginning" such that "all things are in general good" (A VI.iii 474ff.: Pk* 25ff.). The suggestion is that God's creation combines the greatest possible elegance with the greatest possible variety. Leibniz emphasizes the harmonious simplicity of the universe in an essay written a few months later: "Harmony is just this: a certain simplicity in multiplicity. Beauty and pleasure also consist in this. So for things to exist is the same as for them to be understood by God to be the best, i.e., the most harmonious" (A VI.iii 588: Pk 113).

From these and related texts it is clear that by 1676 Leibniz has committed himself to a principle of harmony according to which the world is as full as possible while also being rational, elegant, and good. In such a way the universe reflects the "divine wisdom" of its cause.

3.2 *Mind and activity*

While Leibniz was deciding upon harmonious plenitude as the dominant feature of God's creation, he was also concerned with developing his theory of substance along consistent lines. It was surely of immediate importance to explain how the principles of activity in substances could accommodate such harmony. In section 2, we argued that the success of Leibniz's second account of substance depended on two specific innovations: first, that the principle of activity or mind in substance could create with its matter, by the constant activity of the one on the other, a single substantial nature; second, that the organization created by mind acting on matter could be more or less expansive. In 1672–76, Leibniz develops these points in ways consonant with harmony.

During the period, Leibniz emphasizes the connection (explicit in the PSA) between activity and substantiality: he emphasizes the fact that a substance is "a thing that acts" and acknowledges that minds insofar as they act are themselves "incorporeal substances" (e.g., A VI.iii 78ff.). But he is also explicit about the fact that there are no disembodied or spiritual substances. According to Leibniz, "God alone" is a substance "separate from matter" (A VI.iii 395: Pk 49). He puts his view succinctly in 1673–75:

once we hold that every substance is active and every active thing is called a substance . . . we can show from the inner truths of metaphysics that what is not active is nothing . . . [and] that, in fact, every finite soul is embodied, even the angels are not excepted. (A VI.iii 158: W*64f.)³¹

The ontology is clear. There is an infinite number of active incorporeal substances. Of these, only God does not form an hypostatic union with some portion of matter. Created reality therefore consists of an infinity of individual corporeal substances and their modifications.

Leibniz also expands upon the connection (implied by the conjunction of the PSS and PSA) between the activity and self-sufficiency of substances: mind produces an indestructible and indivisible unit with the matter it organizes and it constitutes both the source of identity and individuation of that organization.³² Each of these new characterizations of mind depends on its constant activity, each is at

least partly motivated by theological concerns, and each becomes an important tenet in his mature philosophy.

For Leibniz, the activity of mind renders it naturally indestructible: "whatever acts cannot be destroyed" (A VI.iii 521: Pk 81), nor "can [it] be dissolved naturally" (A VI.iii 393: Pk 47). That is, once God creates a mind, it is naturally unstoppable and hence indestructible. But what about the proposed indestructibility and indivisibility of the organization or unit it forms with matter? Since matter is divisible and since "whatever is divided is destroyed" (392: Pk 45), it is not immediately clear how the union of matter and mind is supposed to avoid divisibility and destruction. Once again, however, the activity of mind guarantees survival. According to Leibniz, whatever has one mind will be indivisible: "there comes into existence a body which is one and unsplitable, i.e., an atom, of whatever size it may be, whenever it has a single mind" (393: Pk 47). Mind takes some portion of matter, acts as the "cement" of "the parts of matter," and thereby produces a "naturally indestructible" atom (A VI.iii 474ff.: Pk 25ff.). Nor should the term *atom* mislead us: for Leibniz, an atom is indestructible, but it is not invariable; it is the fundamental unit of the physical world, but it is constituted of mind and matter. Mind functions as the metaphysical glue or "cement" of an atom or corporeal substance by persistently producing an organization with some chunk of matter; exactly which chunk it organizes is unimportant. When Wanda cuts her hair, her organization remains constant however much matter she sheds. The indivisibility and indestructibility of her unity follows from the organizational persistence of her mind. The organization will persist as long as her mind continues to act, as it always will, through some matter. Thus, the natural indivisibility and indestructibility of the union formed by mind and matter follow from two features of mind: that it is naturally unstoppable and that it will organize some matter as long as it acts.

Two other functions of mind are closely related to its role as the metaphysical "cement" or organizational principle in the world. As the active principle in substance, mind constitutes both the identity of the substance whose cement it is and the source of its individuation. Leibniz is most explicit about the importance of this dual function of mind in his comments about resurrection. In some important notes from the winter of 1675–76, he claims that one can easily solve

the theological problem by offering a proper account of the identity of the body. Because “all bodies” are made from “the same matter,” it is not difficult “for the very same thing to be reproduced”; all that is required is that the same mind cause the reproduction (A VI.iii 240). That is, since the soul “is firmly planted in a flower of substance” which “subsists perpetually in all changes” and which can be “dif-fused” through the entire body or only some small part of it, it follows that “in the same way that individual salts” become reconstituted after being dissolved in water, so “any human individual” can be reconstituted after death (A VI.iii 478f). Because substantial identity depends wholly on the mind, as long as the mind remains the same so will the body or corporeal substance, regardless of which particular bits of matter come and go. There is then a very straightforward explanation of what occurs at resurrection: the flower of substance or soul, which at death shrank down to some minute portion of the original body, diffuses itself through an appropriate amount of matter (as it did during the individual’s original growth from fetus to adulthood, only faster) and thereby becomes the same body it was at death. The same body or atom exists both before and after the resurrection; it has merely changed significantly in size. The transformation that occurs at resurrection is a model (however dramatic) of what happens constantly among the bodies in the world.

In the Paris years, Leibniz attaches increasingly greater metaphysical importance to the activity of created minds and thereby makes substances increasingly more self-sufficient: by acting constantly on the matter to which it is attached, the mind or the principle of activity renders the resultant union a single, unstoppable, and naturally unsplitable thing such that, however much the matter may vary, the thing remains the same as long as its mind does. In short, the activity of mind is the source of the indestructibility, indivisibility, individuality, and identity of corporeal substance. These are important developments in Leibniz’s theory of substance; it is now time to explore the precise relevance they have for his conception of harmonious plenitude.

3.3 *Mind and plenitude*

One of the striking things about Leibniz’s notes on physics of 1672–73 is the theological importance attached to the activity of mind. An

argument that recurs throughout the period is one that proves the existence of minds from the diversity and harmony of things in the world. Its basic structure is as follows: because matter is everywhere the same, if there were only matter in the world, there would be no activity, diversity, or harmony; the world has such features: therefore, there must be minds (e.g., A VI.ii: 57, 67, 72, 79, 100, 146). Leibniz thinks that this argument from diversity and harmony has far-reaching consequences: "all the most beautiful truths" concerning the universe, such as the variety of things and "the greatest of all truths," namely, harmony, depend on mind (A VI.iii 67). Because the world, as a product of God, has the greatest possible harmony and because mind is "the unique efficient cause of things," it follows that mind is the cause of the activity, diversity, and harmony of the world (146). It also follows that God, as the creator of mind, exists (see A VI.iii 67, 101). According to Leibniz, "nothing else demonstrated by me has greater significance" (A VI.iii 67).

We have seen that between 1672 and 1676 Leibniz increases the metaphysical work of minds: they act constantly on the matter to which they are attached and thereby produce an indestructible corporeal substance. It is significant that in his notes on physics of 1672 Leibniz replaces the momentary minds of the pre-Paris years with eternal ones and that in 1676 he claims that harmonious plenitude entails the eternity of minds. According to Leibniz, "every mind is of endless duration" and "is indissolubly implanted in matter. . . . There are innumerable minds everywhere" which "do not perish" (A VI.iii 476f.: Pk* 31).³³

It is one thing for minds to be indestructible and quite another for them to be eternal: the constant activity of minds guarantees the natural indestructibility of substances, but it does not by itself guarantee their eternity. Once created, such substances will persist forever only if God deems their survival harmonious. But this is problematic: it is not at all obvious exactly how the eternity of substances is supposed to *increase* harmonious plenitude. For example, if God were to replace one infinite set of substances with a new one (say, one every millenium), would the universe not be rendered fuller?

Leibniz explains his position in 1676. At the same time he reveals the motivation behind his doctrine of marks and traces and part of the motivation behind his hypothesis of expression.³⁴ He writes:

“There are beautiful discoveries and ingenious images with regard to the harmony of things” (A VI.iii 476: Pk 29). One of the most ingenious images of his mature philosophy is presented in his essay “On the Secrets of the Sublime” of February, 1676, in which Leibniz first proclaims his commitment to harmony as a principle. He writes: “Particular minds exist, in sum, simply because the supreme being judges it harmonious that there should exist somewhere that which understands, or, is a kind of intellectual mirror or replica of the world” (A VI.iii 474: Pk 25).³⁵ Leibniz explains his intention when he applies this metaphor to God: “A most perfect being is that which *contains the most*. Such a being is capable of ideas and thoughts, *for this multiplies the varieties of things*, like a mirror” (475, Pk 29; our emphasis). Created minds cannot contain all perfections, but they can reflect them all. That is, the image of a mirror, a prominent fixture of Leibniz’s later philosophy, is motivated by a desire to increase the variety and content of the world as much as possible. It allows Leibniz to go beyond the maximization of objects to that of their images and ideas. He greatly increases the multitude and variety of things by giving each indestructible mind at every moment of its eternal existence a perception or idea of the entire world.

Within a few weeks of exhibiting this picture of the mind as a mirror, Leibniz expands upon it. He writes in March, 1676 that all minds have thoughts, each one of which is an action of mind; that each mind “senses all the endeavors” or activities of all the other minds; and that no activity of any mind “is ever lost” (A VI.iii 393: Pk 47). That is, minds not only sense all the activities of all the minds in the world, they also retain a memory or trace of them as well. In Leibniz’s words, “[i]t is not credible that the effect of all perceptions should vanish in the future” (A VI.iii 510: Pk 61), rather they must be “stored up in the mind” (A VI.iii 393: Pk 47). In April he presents the original version of what comes to be his doctrine of marks and traces: “there is present in any matter something which retains the effect of what precedes it, namely a mind”; but also “there is in it a quality of such a kind as to bring this [state of substance or effect] about” (A VI.iii 491: Pk 51). We will have the opportunity to talk about the significance of the doctrine of marks and traces for Leibniz’s theories of expression and causation in the next section. In the present context its importance is that it adds significantly to the plenitude of the world: each mind at every mo-

ment includes an effect or trace of all it has done and sensed as well as a quality or mark of all it will do and sense. According to Leibniz, “no endeavor in the universe is lost; they are stored up in the mind, not destroyed” (A VI.iii 393: Pk 47). By making minds eternal, by allowing them to sense all endeavors, and by giving them traces of all that has gone before and marks of all that will occur, Leibniz has made each mind a mirror of the entire course of the world at every moment in time. Each mind reflects or expresses the entire world – past, present and future – at every moment of the mind’s existence.

But it is not enough for minds to be eternal, they must also be diverse. That is, harmonious plenitude requires not just that substances eternally express the entire world, it demands that each does so from its own point of view. Leibniz writes:

It seems to me that every mind is omniscient in a confused way; that any mind perceives simultaneously whatever happens in the entire world. . . . But time is infinitely divisible, and it is certain that at any moment the soul perceives various things. . . . Again, it is not surprising that any mind should perceive what is done in the entire world, since there is no body that is too small to sense all other things, given the plenitude of the world. And so a wonderful variety arises in this way, for there are as many different relations of things as there are minds, just as when the same town is seen from various places. So God, by the creation of many minds, willed to bring about with respect to the universe what is willed with respect to a large town by a painter, who wants to display delineations of its various aspects or projections. The painter does on canvas what God does on the mind.

(A VI.iii 524: Pk* 85)

The image here is a powerful one. Each mind mirrors every aspect of the world from its own point of view so that there is not merely an infinity of substances and an infinity of complete pictures or reflections of the world, there are infinitely many *different* pictures or expressions as well.

The difference among perspectives is worth emphasizing. The desired pictorial fecundity requires that each substance be distinctive: in order to maximize the variety of images, each substance must have a perspective that is different from every other. This means that no two perspectives will be similar and, hence, that no two substances will be the same. We will have more to say about Leibniz’s principle of the identity of indiscernibles below, but it is worth noting here that within a month of formulating this idea of minds as

eternal mirrors he gives the first articulation of this principle (see A VI.iii 491: Pk 51).

3.4 *Mind and harmony*

Substances not only express the world in their own diverse ways, they do so in harmony with one another. As early as 1673–75, Leibniz is prepared to write: “once we hold that every substance is active . . . we can show from the inner truths of metaphysics . . . that all forces act for the highest mind whose will is the final reason for all things, the cause being the universal harmony.” Leibniz maintains that “it is the task of Metaphysics to examine the continuous temporal modifications in the universe” and that the truths about these modifications will follow “once the true and inevitable concept of substance is understood” (A VI.iii 156f.: W* 62ff.).

In early 1676 Leibniz was prompted to consider exactly how his theory of substance could fully explain “these continuous modifications” and act toward universal harmony. The results of his ruminations include some of the central tenets of the metaphysics of the *Discourse*, namely, the doctrine of preestablished harmony, the principle of the identity of indiscernibles, and the idea that each substance expresses the entire universe. We propose that the combination of the original metaphysical principles and the newly proposed principle of harmony encouraged the development of these doctrines in the spring of 1676.³⁶ Since Leibniz maintains his characteristic silence about his deep motivations, the case for this proposal must be circumstantial, based on clues that Leibniz leaves along the way.

Much of the progress Leibniz made in his account of the harmony among minds is inspired by his original principles; it therefore will be helpful to review some of the relevant implications of those principles. It follows from the PCS that p is a property of a substance S if and only if the nature of S is the cause of p . Given the PSR and the notion of a complete cause, this means that every property of S is caused by the nature of S in the sense that the nature of S constitutes the necessary and sufficient conditions of p . Given the PSR and the PSA, it follows that all the events in the world reduce to modifications of substances. This consequence is important: when coupled with the Logical Assumption it implies that there are necessary and sufficient conditions for every state of the world and that these

conditions reside in the nature of substances; when combined with the Intelligibility Assumption it implies that these conditions are in theory both intelligible and discoverable in those natures. Thus, substances are the ultimate subjects of predication and in theory can offer an intelligible explanation for every event of the world. Moreover, once Leibniz gives each substance its own active principle or mind so that it is the mind of *S* that constitutes its active principle, it follows that every property of *S* must originate in that mind in the sense that it is the mind of *S* that begins the process that produces the property. For instance, the property of Wanda walking is one that originated in some action in Wanda's mind although the complete reason for that property involves both the mind and the matter or passive principle through which it acts.

There are two problems or tensions which the implications of these principles make evident but which are not resolved in Leibniz's original metaphysics. According to the PSS and the PCS, the relation between a substance and property is such that the complete cause and explanation of the property is supposed to be discoverable in the nature of the substance to which it belongs. However, a problem lurks here due to a slight tension between the PCS and the PSR: on the one hand, the PSR demands that there be a sufficient explanation for a property; on the other, the PCS claims that a property cannot be said to belong to a substance unless that explanation lies in the nature of the substance. What this means is that if the PCS extends only to some properties (say, essential ones) and not to others (say, accidental ones), then the latter cannot strictly be said to exist in the substance. In the early writings, Leibniz does not explain exactly how far the PCS extends. While he clearly believes, for instance, that Wanda's walking down the street is caused by her nature, it is unclear what he thinks about the mud on her boots. Since the complete cause and explanation of the mud would seem to involve substances other than just Wanda, it is not at all clear to whom or what the property belongs.

The second problem arises from an epistemological asymmetry in the relation between a cause and its effect in Leibniz's original principles. The notion of complete reason maintains that the understanding of a cause entails full knowledge of its effect: one sees exactly why the effect and no other occurred. But the principles are silent about any such entailment from effect to cause. Since the Intelligibil-

ity Assumption implies that a property p of a substance S is rendered intelligible (at least in theory) by a consideration of S 's nature, one would think that a full understanding of p requires that one know enough about S to see exactly how S caused p . In other words, the principles suggest that a thorough understanding of p would involve S in fairly significant ways. It is therefore odd that neither in the principles nor in his articulation of the early metaphysics does Leibniz say anything explicit about the epistemological work that an effect does for its cause.

We have argued that Leibniz's conception of harmony influenced his investigations about the activity of substances; in particular, we have suggested that some important doctrines (e.g., that minds have marks and traces) were developed in response to that conception's demand for plenitude and variety. The principle of harmony also prodded him to think a bit harder about the precise relationship between substantial natures and the properties they cause. In particular, its demand for mutual coordination among substances led Leibniz to develop a more thoroughgoing account of the relationship between the actions of minds and the production of substantial properties. As we shall see, in 1676 he developed solutions to the problems just noted. We will now trace the steps that Leibniz took toward those solutions.

On 11 February 1676, in the same essay in which he first explicitly states his principle of harmony, Leibniz articulates his assumptions about the harmonious activities of minds. He ends "On the Secrets of the Sublime" by noting that "God arranged things from the beginning" so that minds can "understand their function" and accordingly attain the "wonderful uses" to which they "are destined by providence" (A VI.iii 477: Pk* 31).³⁷ In an essay of early 1676 he offers a definition crucial to his account of how God might so arrange things: "A rule [*regula*] is an instrument of action, determining the form of the action by the perpetual and successive application of the agent to the parts of the instrument." From the examples he gives it is clear that a rule not only specifies what the actor does, but the order in which she does it. According to Leibniz a footpath across a plain is a rule, but a compass is not. He explains: "The instruction which an emperor gives to a deputy . . . is a rule if it is written so that the deputy, in his action, can only follow it in order" (483: Pk 39). With this conception of a rule as an instrument of

action, Leibniz was in a position to articulate a production rule for the activities of minds.

In a series of essays written in March and April, he analyzes the relationship between God and the universe. These essays are both important and obscure: they offer critical insight into the evolution of Leibniz's ideas on our topic, but they also depend on certain difficult neo-Platonic and Aristotelian doctrines. Fortunately we need not bother with the complicated details of the latter.³⁸ What is significant about these texts is that they offer two somewhat different characterizations of God's relation to the world. Each of these provides a clue to Leibniz's underlying assumptions about how minds function as the source of the world's harmony.

Leibniz defines God as "the subject of all absolute simple forms – absolute, that is affirmative" (A VI.iii 519: Pk 79). "Form" here refers to a kind of Platonic form or essence, so that God contains all positive essences. Thus, God can be thought of as "the conjunction in the same subject of all possible absolute forms or perfections (521: Pk 81)." Particular substances arise when the combinations or modifications of these forms are instantiated in a subject: "The various results of forms, combined with a subject, bring it about that particulars result" (523: Pk 85). Each subject is distinct, although each expresses both the world and the essence of God. The difficult details of this account of creation are extraneous to our topic. What is important for our present purpose is that in describing the relationship between the creator and its creation Leibniz reveals a good deal about how the individual creatures function in that world. He writes:

since the ultimate reason of things is unique, and contains by itself the aggregate of all the requisites of all things, it is evident that the requisites of all things are the same. So also is their essence. . . . Therefore the essence of all things is the same, and things differ only modally, just as a town seen from a high point differs from the town seen from a plain.

(A VI.iii 573: Pk 93f.)³⁹

We need to proceed cautiously here. In this passage Leibniz explains that God (the ultimate reason of things) is unique and contains the necessary and sufficient conditions for the existence of all things. It is supposed to follow that the essence of all things is the same. But this seems problematic since it appears to conflict with his view

that each substantial nature differs from every other. Leibniz offers the crux of a solution in a related text:

It seems to me that the origin of things from God is of the same kind as the origin of properties from an essence; just as $6 = 1+1+1+1+1+1$, therefore $6 = 3+3$, $= 3 \times 2$, $= 4+2$, etc. Nor may one doubt that the one expression differs from the other. . . . So just as these properties differ from each other and from essence, so do things differ from each other and from God.

(A VI.iii 518f.: Pk 77)

With this material in hand we can resolve the apparent tension and discern the first significant evidence of Leibniz's production rule for the activities of mind.

According to Leibniz, each created substance is an expression of God's essence and in this sense each has the same essence. But each nonetheless differs from every other because it is a *different* expression of that essence or, as Leibniz suggests in the previous quotation, it is a modification of that essence. An analogy may help to grasp Leibniz's point. We can think of the essence expressed in the world as a series of true propositions and each modification of that essence as a corresponding series of sentences in a language. Following this analogy, each substance expresses the same series of propositions, but each does so in a different language. Because the sentences in, say, Italian will be different from those in Arabic which will be different again from those in Russian, each series will be a different way of expressing the same thing. According to Leibniz, then, there is an essence (of infinite complexity) that God has chosen to instantiate in the world by means of an infinite number of different expressions. On this account, God creates each substance so that it will express that essence in its own way. As each series of sentences is a different expression of the same propositions, so each substance is a different expression of the same essence.

There is good textual evidence to support this interpretation of the relation between the essence of God and the expression of substances. The analogies used by Leibniz during the period offer particularly vivid support. In the comparison to arithmetical expressions (examples of which we have already seen), there is an essence, say 6, that God intends to express in different ways, say, $3+3$, $2+4$, $1+5$, etc. In the analogy to ideal representations of a town (an example of which occurs in the long quotation on p. 92), the point seems to be that in

order to represent or express the essence of the town, the best one can do is to represent it from a variety of perspectives. An important use of the town analogy appears in December, 1676:

There is no doubt that God understands how we perceive things; just as someone who wants to provide a perfect conception of a town will represent it in several ways. And this understanding of God, in so far as it understands our way of understanding, is very like our understanding. Indeed our understanding results from it, from which we can say that God has an understanding that is in a way like ours. For God understands things as we do but with this difference: that he understands them at the same time in infinitely many ways, whereas we understand them in one way only.

(A VI.iii 400: Pk 115)

As in the arithmetical case, in creating the world, God creates different perspectives or expressions of the same thing. It is in this sense that our understanding or perspective "results from" God. Each substance is created by God so as to be a unique expression of the divine essence; and it is the nature of the individual substance to be that unique expression.⁴⁰

The second way in which Leibniz characterizes the relation between God and the world in the relevant essays provides another important clue to his views about the means by which minds act harmoniously. Elaborating on the Aristotelian notion of active intellect, Leibniz defines God as "the primary intelligence, in so far as he is omniscient." This same omniscience is "ascribed in a limited way to other things which are said to perceive something," i.e., to minds (A VI.iii 520: Pk 79). Leibniz also maintains that there are "infinitely many" perceptions of mind which "are not explicable in terms of each other," but which follow from mind "as properties result from essence" (521: Pk 81). He writes:

it can be shown that the mind is continually changed, with the exception of that in us which is divine, or, comes from outside. In sum, . . . there is something divine in mind, which is what Aristotle used to call the active intellect, and this is the same as the omniscience of God.

(A VI.iii 391: Pk 43)

It is important that this divine, omniscient element in mind comes "from the outside," remains the same through its constant changes, and acts as the cause of those changes. Leibniz distinguishes between mind and its actions by noting that the former "remains

always the same during change," while the latter are discrete productions of the soul or mind (A VI.iii 326; see also A VI.iii 524: Pk 85).

But what precisely is it about mind that is both omniscient and divine? We propose that these features apply to a mind insofar as God has given it a production rule in terms of which it can act in harmony with all other minds and express the entire universe. The production rule is a kind of blueprint for the continuous production of the discrete states of the substance so that each mind is a principle of activity replete with its own set of instructions that tells it how to act and what to perceive at every moment of its existence. Following Leibniz's definition of a rule, we assume that the production rule for substantial properties is something that the mind "can only follow . . . in order." So, if *S* lives from *tI* to *tn* and is in a different state at each moment of its existence, then at every moment of *S*'s life there will be some instruction about what to do or what to express next. The present state *q* occurring at *t* together with the instructions will determine what *S* does at *t+1*. In this case, the complete cause and full explanation of *q+1* will be found in the nature of *S*. In other words, the *complete* cause of each state of the substance is the conjunction of the principle of activity, the production rule, and the previous state.⁴¹

That in early 1676 Leibniz needed a way to explain the coordination and harmony among substances is clear, as is the fact that the explanation had to be simple and had to accommodate the other features of substance (e.g., their indestructibility and eternity). With the development of the production rule for the activities of mind Leibniz had procured an elegant way to achieve these ends. As Leibniz puts it in December, 1676:

The harmony of things requires that there should be in bodies beings that act on themselves [*quae agerent in se ipsa*]. On the nature of a being that acts on itself: it acts by the simplest means, for in that there is harmony. Once it has begun, it is eternal. There are ideas in it of those things it has sensed and done, as there are in God; the difference is that in God the ideas are of all things and are simultaneous. . . . Thought [*cogitatio*] or the sensation of oneself, i.e., action on oneself, is necessarily continued.

(A VI.iii 588: Pk 113)

By means of a divinely arranged production rule, each mind acts simply and eternally on itself expressing the divine essence from its

own perspective but in perfect harmony with the infinite number of other eternal representations of that essence.

The evolution of Leibniz's production rule for the activities of mind is a dramatic achievement. But how dramatic? We propose that it gave Leibniz the conceptual means to construct the original version of the doctrine of preestablished harmony. This doctrine, which is one of the central tenets of Leibniz's mature thought, claims that God created finite substances so that they do not causally interact, but harmonize with one another in virtue of their internal nature. The doctrine is interpreted in various ways, but is usually understood to include the following three claims: (1) that each state of an individual substance is caused by something internal to its nature, (2) that the states of substances correspond perfectly with one another, and (3) that substances do not causally interact or, more precisely, that no state of a substance has as a real cause some state of another substance.

Because of the central role this doctrine plays in his mature thought, it is important to proceed with care. The production rule for the activities of mind is equivalent to (1), but Leibniz's acceptance of (1) does not by itself entail commitment to either (2) or (3). We will now argue, however, that by April, 1676 Leibniz was committed to these three doctrines, although he did not yet call their conjunction *preestablished* harmony.⁴²

' During the same two months in which Leibniz was so intensely examining the relation between God and the world and the means by which minds act, he was analyzing what explains the coherence of our sensations. On 15 April, in an important essay entitled "On Truths, the Mind, God, and the Universe," he writes:

On due consideration, only this is certain: that we sense, and that we sense in a consistent way [*congruenter*], and that a certain rule [*regulam*] is observed by us in sensing. For something to be sensed in a consistent way is for it to be sensed in such a way that a reason can be given for everything and everything can be predicted. (A VI.iii 511: Pk* 63)

According to Leibniz here, on the basis of the consistency of our sensations we can infer that there is a reason for everything, that everything can be predicted, and that in sensing we observe a rule. Two questions arise at this point: what exactly is the cause of the consistency of sensations and how is that cause a rule? From the text

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so far quoted, the consistency of sensations could be caused either by something internal to the mind, like a production rule, or by something external to it, like the physical world. Leibniz clarifies matters in what follows. He continues:

This is what existence consists in – namely, in sensation that follows certain laws [*leges*]. . . . Further, it consists in the fact that several people sense the same, and sense consistently [*consentientia*]; and that diverse minds sense themselves and their own effects. From this it follows that there is one and the same cause that causes our own and others' sensations. Nevertheless it is not necessary either that we act on them or that they act on us, but only that we sense with such conformity; and necessarily so, on account of the sameness of the cause. . . . Therefore there is no reason why we should ask whether there exist certain bodies outside us. . . . [I]t does not follow that there exists anything but sensation, and the cause of this sensation and its consistency. (A VI.iii 511: Pk* 63f.)

This text makes clear that, in order to explain existence, it is unnecessary to resort to outside bodies. Leibniz proposes that we reduce existence to the consistency of sensations, where the latter includes both the consistency of the sensation within a mind and the coordination among minds. There is no reason to ask whether bodies exist outside us because the consistency of sensations and coordination among minds can be explained elsewhere. Although Leibniz is not explicit about what this cause is, he offers some details about what it does: the cause produces the consistency of sensations within a mind and the coordination of sensations among minds; it offers a reason for everything and a means of predicting everything; and it somehow involves diverse minds sensing “themselves and their own effects” in a way that does not require that they act on one another. That is, assuming that the cause is somehow internal, what the cause does is produce preestablished harmony.⁴³ Leibniz writes:

the mind will be created by God, since it will exist and remain by the will of God, that is, by the will of the good intellect. For to exist is simply to be understood to be good. Existence is stated equivocally of bodies and of our mind. We sense or perceive that we exist; when we say that bodies exist, we mean that there exist certain consistent sensations, having a particular constant cause. Just as 3 is one thing, and 1, 1, 1 is another – for 3 is 1 + 1 + 1. In such a way, the form of 3 is different from all its parts; so creatures differ from God, who is all things. Creatures are certain things.

(A VI.iii 512: Pk* 65f.)

We noted in section 1 that Leibniz describes his papers of the period as “poorly expressed vestiges of hasty reflections” (A VI.iii 533), and his essays of March/April, 1676 are surely obscure. But large sections of these texts are rendered transparent once we see them as describing a world in which each substance expresses the essence of God from its own perspective and does so *because* of its production rule (Cf. A VI.iii 508f.: Pk 57ff.; 514: Pk 69; and esp. 588: Pk 113).⁴⁴ For example, once we realize that the missing “single cause” in “On Truth, the Mind, God, and the Universe” is the essence of God and once we grasp that the notion of rule employed there is that of a production rule for the activity of mind (the instantiation of that essence in a single substance), we are able to make out the full significance of the text. In short, once we understand that the notes of March/April, 1676 assume the production rule, we can discern the doctrine of preestablished harmony.

Other texts offer further evidence for the acceptance of claims (2) and (3). In an essay of December, 1676 Leibniz maintains: “We have no idea of existence, other than that we understand things to be sensed. . . . Without sentient beings, nothing [in the created world] would exist. Without one primary sentient being, which is the same as the cause of all things, nothing would be sensed” (A VI.iii 588: Pk 113). We sense things not because there are external objects acting on us, but because God has given each mind a “certain rule.” It is because of this rule that there is a reason for everything and everything can be predicted.

We have already noted that in “On Truth, the Mind, God, and the Universe” Leibniz proposes that there is a rule that “several people sense the same, and sense consistently.” In the same work he talks about the coherence “among minds” (A VI.iii 512: Pk 67). The implication is that the states of substances correspond perfectly because each state of an individual substance is caused by something internal to its nature and because those internal natures have been coordinated. Leibniz makes this point explicit in the same essay in which he first presents his definition of a rule. He writes: “if we were perfectly knowing, i.e., if we were gods, we would easily see that those things which, because of our ignorance, now appear to exist at the same time by accident, co-exist by their very nature, i.e., by the necessity of the divine intellect” (A VI.iii 484: Pk 41).

Nor should we be surprised that Leibniz develops his doctrine of preestablished harmony during this period: in a fairly straightforward way it follows from the second conception of substance, the PSR, and the PCS when the latter is extended to all substantial properties. As we noted earlier, there is a tension between the PSR and PCS. The unresolved problem of the pre-Paris years was whether or not to extend the PCS to all substantial properties or only some (say, the essential ones). Leibniz's production rule for the activities of mind gave him a way to extend the PCS to all substantial properties and his desire for harmony demanded that the activities of created minds be harmonized so as to reflect God's goodness. The result is a world of substances whose self-sufficient natures extend to all their properties, both essential and accidental.

In 1676, Leibniz also managed to solve another problem left over from his pre-Paris years. His solution constitutes another important advancement in his thought; and it offers further evidence of his acceptance of preestablished harmony. As noted at the beginning of this section, there is an epistemological asymmetry between a cause and its effect in his original metaphysical principles. While the principles suggest that a thorough understanding of a property p would require significant knowledge of the substantial nature to which p belongs (or at least the part of that nature that caused p), Leibniz is silent on this matter. He breaks this awkward silence in April, 1676 when he first begins to claim that "[a]n effect is conceived through its cause" (A VI.iii 514: Pk 71). Nor should Leibniz's sudden interest in the epistemological connection between an effect and its cause come as a surprise: given his Logical and Intelligibility Assumptions, his newly developed production rule for the activities of minds entails that the necessary and sufficient conditions of any state (or effect) of a substance S would exist in S and in theory be intelligible.

Leibniz argues at length for just this sort of relation between a substance and its states in one of the most important essays of the period. He begins "A Meditation on the Principle of the Individual" of 1 April 1676 by writing: "We say that the effect involves its cause; that is, in such a way that whoever understands some effect perfectly will also arrive at knowledge of its cause. For it is necessary that there is a certain connection between a complete cause and the effect" (A VI.iii 490: Pk* 51). Leibniz then poses an appar-

ent counterexample to this theory: in some cases "different causes can produce an effect that is perfectly the same." His immediate response to this potential problem is important. He denies that there could ever be such a case and claims that "we are certain, from some other source, that the effect does involve its cause," and therefore that "it is necessary that the method of production must always be discernible" in the effect.⁴⁵ It is "impossible" that two effects could be perfectly similar "for they will consist of matter" which "will have a mind" such that "the mind will retain the effect of its former state." He does not explain what this "other source" of certainty is, but attempts to demonstrate his claim by means of a *reductio ad absurdum*. He argues that if any two individuals were perfectly similar, three unacceptable conclusions would result: "the effect would not involve its cause"; "the principle of individuation" would be "outside the thing, in its cause"; and "one individual would not differ from another in itself." It is important that Leibniz does not feel the need to explain why these results are absurd. He seems to have taken their untenability to be obvious. And of course it is obvious given his newly developed ideas: since each mind has its own production rule of the sort articulated above and since harmonious plenitude requires that each substance expresses God's essence from its own perspective, it follows that each substance has its own *distinct* production rule. That is, because a rule would make each substance distinct from every other, the principle of individuation of the substance would have to be in the thing itself and because no two rules could be the same, no two individuals could be the same either.

So far so good. But how exactly does the effect involve its cause? Leibniz continues his discussion:

But if we admit that two different things always differ in themselves in some respect as well, it follows that there is present in any matter something that retains the effect of what precedes it, namely, a mind. And from this it is also proved that the effect involves the cause. For it is true of it that it was produced by such a cause; therefore right up to the present there is in it a quality of such a kind as to bring this about, and this quality . . . has about it something that is real. It is evident what great consequences follow from such little premises. (A VI.iii 491: Pk 51)

Great consequences indeed: the effect involves its cause because, for any effect, it is caused by the mind in the substance from which

it results and that mind not only has traces of all it has done, it has a quality that acts as the real cause of that effect. If we understand this quality to be conjoined with a production rule, then it would seem to follow, as Leibniz put it at the first of the essay, that “the effect involves its cause . . . in such a way that whoever understands some effect perfectly will also arrive at knowledge of its cause.” But what is it one knows when one knows the cause? Our notion of a production rule reveals Leibniz’s point: since a complete cause includes the necessary and sufficient conditions of an effect, through a perfect understanding of the effect one would acquire knowledge of at least the previous state of the substance and the relevant part of the production rule. That is, for some effect or state q of a substance S , a perfect understanding of $q+1$ would lead to knowledge of q and the part of the production rule that would entail $q+1$ given q . One of the “great consequences” of Leibniz’s essay is that it assumes something quite like our notion of a production rule in an attempt to show that every effect involves its cause. Moreover, an effect would not involve its cause in the way Leibniz’s argument demands, if claims (1) and (3) were not both assumed.

We propose that Leibniz’s sudden desire to show that “whoever understands some effect perfectly will also arrive at the knowledge of its cause” grew out of his newly evolved conception of a production rule. Once Leibniz had decided upon the latter and decided that substances do not causally interact, he was free to reform the epistemological asymmetry of his original principles. Before an effect could lead back to its cause, there had to be only one way to produce an effect. Or, to put it another way, once Leibniz decided to extend the PCS to all the properties of a substance (i.e., once he came to accept claims (1) and (3)), it would follow that an effect could be produced in only one way and hence that every effect would have to be “conceived through its cause.”⁴⁶

We are now prepared to return to a point we made in section 3.3 about plenitude and the original version of the principle of the identity of indiscernibles, which first appears in “A Meditation on the Principle of the Individual.” We suggested there that Leibniz’s desire for both substantial and pictorial fecundity may have been part of the motivation behind the development of that principle. We can now see that the principle constitutes one of the fundamental as-

sumptions of the essay. Leibniz assumes from the outset that no two individuals can be exactly similar. It would seem that once Leibniz had developed the idea of a production rule, he had a neat way of making each individual distinct: each substance has its own unique "instrument of action."

But there was another important result of Leibniz's newly evolved preestablished harmony. In the winter and spring of 1676, Leibniz was making great strides in the development of his views about the activities of mind. He was not as successful on the topic of matter. In an essay of March, 1676 he poses a number of problems for which he does not have answers.⁴⁷ One of the most pressing of these concerns the precise relation between body and mind. According to Leibniz: "As mind is something which has a certain relation to some portion of matter, then it must be stated why it extends itself to this portion and not to all adjacent portions; or why it is that some body, and not every body, belongs to it in the same way" (A VI.iii 392: Pk 45). It was not until late 1676 that we find a solution to this problem. His solution, which constitutes an important development in Leibniz's views about body, might well have been inspired by the development of his original version of preestablished harmony, especially claims (1) and (2). For the first time Leibniz makes a distinction between bodies as aggregates and bodies as elements. He writes: "Every body which is an aggregate can be destroyed. There seem to be elements, i.e., indestructible bodies, because there is a mind in them" (A VI.iii 521: Pk 81). Atoms are "the fundamental elements" out of which "cohering bodies arise" so that "all things come from" them (A VI.iii 585: Pk 109). In other words, there are bodies whose parts are separable and bodies whose parts are not; the latter make up the former (A VI.iii 473f.: Pk 23f.). One of the most explicit statements of this position appears in December 1676. Leibniz writes:

A substance or complete Being is for me that which alone involves all things, or for the perfect understanding of which, no other thing needs to be understood. A figure [*figura*] is not of this kind, for in order to understand from what a figure [*figura*] of such and such a kind has arisen, there must be a recourse to motion. Each complete being can be produced in only one way: that figures [*figurae*] can be produced in various ways is enough to indicate that they are not complete Beings. (A VI.iii 400: Pk* 115)⁴⁸

Once Leibniz has conceived of the minds in corporeal substances as capable of perceiving and sensing everything else in the world in a harmonized fashion, it is not difficult to think of a collection of such atoms forming an aggregate among themselves. Such an entity would not be a substance, but would be formed of substances; and, as a collection of atoms, it could be produced in any number of ways. It would not be a complete being itself because it would not have its own principle of activity to which it owed its being; rather it would owe its being to the activity of the minds in the atoms which make it up.

A final point to make about the evolution of Leibniz's thought during 1672–76 is that the materials are in place for the development of his complete concept theory of substance. According to that theory, *S* is an individual substance just in case its concept contains all and only the concepts of those properties that may be attributed to it. According to Leibniz in the quotation above, “[a] substance or complete Being is for me that which alone involves everything, or for the perfect understanding of which, no other thing needs to be understood” (A VI.iii 400: Pk 115). Such a position would follow fairly straightforwardly from Leibniz's notion of a production rule for the activities of minds: to understand perfectly the production rule would be to understand “everything” about the substance. As we shall now see, it would not take Leibniz long to characterize substance as that which has a complete concept.

4 1679 TO THE *DISCOURSE ON METAPHYSICS*

In April, 1679 Leibniz formulated an original series of logical systems for testing formal validity (C42–92). It is in these papers that Leibniz put front and center the concept containment account of truth, which he then presented as the source of his metaphysics of individual substance in *The Discourse on Metaphysics*, and the subsequent correspondence with Antoine Arnauld. Indeed, the systems developed in the April, 1679 papers are all based on the concept containment account of truth, i.e., put somewhat loosely, the thesis that an affirmative categorical proposition is true just in case the concept of its predicate is contained in the

concept of its subject. In the second of the papers in the series Leibniz said as much.

In order to make evident the use of characteristic numbers in propositions it must be considered that every true categorical affirmative universal proposition signifies nothing other than some connection between predicate and subject (in the non-oblique case, which is always meant here), so that the predicate is said to be in the subject, or contained in the subject, either absolutely and regarded in itself, or at any rate in some instance, i.e., the subject is said to contain the predicate in the fashion stated. That is to say that the concept of the subject, either in itself or with some addition, involves the concept of the predicate. (C 51: PLP 18–19)

Note that in this passage Leibniz began with a version of the concept containment account of truth restricted to universal propositions. But in the closing sentence of the passage, with the phrase “or with some addition,” Leibniz prepared the way for a generalization of the concept containment account of truth to all categorical affirmative propositions. Leibniz’s logical papers from this period make it plausible to ascribe to him the view that an adequate theory of truth for categorical affirmative propositions will settle the truth conditions for all propositions. Hence, although a full statement of Leibniz’s concept containment account of truth would be quite complex, the idea that truth is a matter of relations among concepts is surely its basis.

Numerous problems arise for the student of Leibniz by virtue of ascribing the concept containment account of truth to him, including these two crucial questions: (1) what tempted him to accept it, and (2) what did he take to be its relevance for his metaphysics of substance? The first question is surely burning, since the concept containment account of truth seems to imply that a proposition is true just in case it is conceptually true, and, hence, to imply that a proposition is true just in case it is necessarily true. Yet we know from a number of papers written during our time period that Leibniz rejected the thesis that if a proposition is true then it is necessarily true.⁴⁹ So why on earth did Leibniz accept an account of truth that, as he himself noted, exacerbates the problem of establishing that there are contingent truths? In his seminal work, *La Logique de Leibniz*, Couturat suggested that Leibniz saw the concept containment account of truth as a consequence of the principle of sufficient

reason, a thesis that he took as an axiom in his system.⁵⁰ Fabrizio Mondadori has recommended an alternative account, again utilizing the bedrock character of the principle of sufficient reason in Leibniz's system. His idea is this: the fact is that given Leibniz's sharpest characterizations of the truth definition and the principle of sufficient reason, the latter is a consequence of the former. Hence, Mondadori suggests, Leibniz accepted the former because it has the latter as a consequence.⁵¹

There is a lot to be said for these efforts, especially Mondadori's subtle account. We want to recommend consideration of an alternate strategy in which the concept containment of truth is viewed as motivated, at least in part, by what Leibniz considered to be its consequences for the metaphysics of individual substances. It is well to have a number of alternative explanations for Leibniz's intellectual motivations for accepting the concept containment account of truth, since all answers to our first question seem underdetermined by the textual evidence currently available. And there is no reason to expect the discovery of a "smoking gun" text on this matter; here we have a question that probably will not receive a definitive answer.

Let us look at the second question. Paragraphs 8 and 9 of the *Discourse on Metaphysics* surely suggest this answer: Leibniz claimed that the concept containment account of truth, when applied to singular propositions, has the consequence that the concept of an individual substance is complete, i.e., "is sufficient . . . to allow the deduction from it of all the predicates of the subject to which this concept is attributed." And in Paragraph 9 Leibniz seems to have claimed that the thesis that an entity is an individual substance if and only if its concept is complete has the following weighty metaphysical consequences: the identity of indiscernibles, the thesis that substances begin only by creation and perish only by annihilation, and the thesis that each substance expresses every other and, hence, is quasi-omniscient and quasi-omnipotent since each substance perceives every other and is such that every other substance accommodates, in some measure, to it.

When we examine relations among the concept containment account of truth, the complete concept theory of individual substance, and various Leibnizian theses about individual substances

(including those just noted from *Discourse 9*), the conclusion just has to be that matters are vastly more complicated than Leibniz's easy prose in these paragraphs would suggest and that versions of the deep metaphysical principles unearthed in section 1.2 are at work once again. Indeed, we suggest that the following description of Leibniz's reasoning provides at least as plausible an account as does the more traditional one limned above. First, we propose that the original metaphysical principles conjoined with the decision to extend the PSS and PCS to all substantial properties entails that each of a substance's properties is related to it in such fashion as to imply that the concept of an individual substance is complete. We then note that this result makes plausible the claim that the concept containment account of truth holds for affirmative categorical singular propositions whose singular subject terms refer to individual substances. Next we note that in the traditions in which Leibniz worked "individual substance" was code for a basic individual in one's ontology, so that once truth conditions were set for affirmative categorical singular propositions whose singular subject terms refer to individual substance, truth conditions are set for propositions of the same variety about individuals, basic or nonbasic. The general structure of Leibniz's proposal for extending the truth definition may be gleaned from the April 1679 logical papers previously noted.

Various authors have attempted explanations of Leibniz's reasoning along lines similar to those just recommended.⁵² It is not our purpose here to offer the details of such an explanation, but rather to note Leibniz's use of the deep metaphysical principles in formulating and refining his ideas about individual substances in the seminal period from the April, 1679 logic papers through *The Discourse on Metaphysics* and the ensuing correspondence with Antoine Arnauld. It is in this period that Leibniz solidified his thinking concerning the intension of the term "individual substance," characterizing it in terms of his various metaphysical theses about the nature of complete entities. Among the relevant metaphysical theses are these: where *S* is an individual substance, Leibniz held in this period that *S* remains genuinely numerically the same over time; each state of *S* contains traces of all that *S* has been and marks of all that *S* will be (the doctrine of marks and traces); the identity of indiscernibles holds of *S*; each state of *S*, other than its initial state and any of its

states caused miraculously, is caused by preceding states of *S* (the doctrine of spontaneity); *S* is incorruptible and ingenerable; *S* expresses the entire universe; *S* is indivisible; and *S* has true, substantial unity.⁵³

While Leibniz was confident in the time period under consideration that an entity must satisfy the conditions just noted in order to be an individual substance, a complete entity, i.e., a basic individual, he was less secure than he was to become about what sorts of entities satisfy those conditions. We know that his final position is that only monads satisfy all the requisite conditions; we know that in our period he held that only entities with substantial forms satisfy all the requisite conditions. A disputed question is whether he held in our period that there are extended entities informed by substantial forms that satisfy all the requisite conditions, which are basic individual entities. In part, resolution of this question of interpretation turns on obtaining proper perspective on Leibniz's attitude toward the attribute of extension in the time period under consideration.⁵⁴

Leibniz's early metaphysical writings are brilliant and original, indeed, idiosyncratic. In his metaphysical writings in the period from 1679 through 1686, Leibniz made a genuine effort to connect his views with traditional metaphysical offerings. In particular, he emphasized a connection he envisaged between his own idiosyncratic principles concerning individual substances, and the traditional notion that, in order to be a genuine individual substance, an entity must possess strict numerical identity over time. In a piece entitled "*De Mundo Praesenti*," contained in the *Vorau-sedition*, but otherwise unpublished, Leibniz provided a taxonomy of the kinds of being he was prepared to discuss, first distinguishing between real and imaginary beings, and then, within the class of real beings, between beings *per se*, and beings *per accidens*, arguing that beings through aggregation are instances of beings *per accidens*, and that in order to reach the level of a being *per se*, an individual must possess a substantial form (LH IV 7 C Bl 111–14; VE 416–23). These ideas are repeated in numerous places in *The Discourse on Metaphysics* and the correspondence with Arnauld. They are connected with the requirement of strict numerical identity over time in the important paper "Notationes Generales," part of which was published by Grua, all of which is contained in the

Vorausedition (Gr 322–34; VE 184–90). There Leibniz took a human person as a paradigm of an individual substance – a being *per se*, and an army as a paradigm of a nonbasic individual – a being *per accidens*. He wrote:

It is worth investigating in what way a being through aggregation, such as an army or even a disorganized multitude of men, is one; and in what way its unity and reality differ from the unity and reality of a man. . . . The chief point is this: an army accurately considered is not the same thing even for a moment, for it has nothing real in itself that does not result from the reality of the parts from which it is aggregated; and since its entire nature consists in number, figure, appearance and similar things, when these change it is not the same thing, but the human soul has its own special reality so that it can not come to an end by any change in the parts of the body.

A thing can remain the same, even if it is changed, if it follows from its own nature that one and the same thing must have diverse, successive states. Without doubt, I am said to be the same as he who was before because my substance involves all my states, past, present and future.

(Gr 323; VE 188–89).

In this passage Leibniz not only affirmed the metaphysical principle that an entity is an individual substance only if its properties are a consequence of its nature, but he connected the latter requirement with the traditional requirement that an entity is an individual substance only if it remains numerically identical over time in the strictest sense. Thus, in this passage Leibniz affirmed the conjunction of the Principle of Self-sufficiency and the Principle of Substantial Self-sufficiency and connected their conjunction with strict numerical identity.⁵⁵ In a number of texts in our time period Leibniz made use of these ideas without explicitly affirming them in order to argue that an entity whose essence is extension and which, therefore, lacks a substantial form, cannot satisfy the conditions requisite to being an individual substance. Thus, contemplating the supposition that the essence of body is extension, Leibniz wrote in paragraph 12 of *The Discourse on Metaphysics*: “if there were no other principle of identity in bodies than what we have just said, a body would never subsist more than a moment.” While amplifying on the point made in this passage, Leibniz wrote the following in a letter to Arnauld: “Extension is an attribute that can not make up a complete entity: no action or change can be deduced

from it – it expresses only a present state, not at all the future and past as the concept of a substance must do" (G II 72: MP 86). Here Leibniz claimed that any individual whose essence is extension will not satisfy the doctrine of marks and traces and, hence, will not be a substance. It is presupposed that any entity that lacks an internal principle of activity is no substance and that possession of an internal principle of activity of sufficient complexity to satisfy the doctrine of marks and traces and the doctrine of spontaneity yields an individual substance. These are but articulations of the ideas implicit in PSA.

Suppose we put aside problems generated by God's miraculous intervention and formulate the doctrine of spontaneity as follows: if x is an individual substance, then for any noninitial state S of x , there is some state S' of x such that x 's being in S' provides a causal explanation for x 's being in S . Given this simplified version of the doctrine of spontaneity, we may attribute the following account of substantial persistence to Leibniz, an account which, in the absence of the doctrine of spontaneity, would be unacceptable: finite substance x at t is strictly numerically identical with finite substance y at t' (with t' later than t) just in case some state of x at t is a causal ancestor of some state of y at t' .

We may conclude that much of Leibniz's mature metaphysics of substance consists in an elaboration of the deep metaphysical principles discussed earlier in this essay. Still, it is important not to exaggerate the interpretive progress these conclusions permit. A decent question is this: what induced Leibniz to think that possession of a substantial form by an individual x brought it about that x , unlike some entity whose essence is extension, satisfied the various doctrines and principles that constitute his metaphysics of substance? A tempting answer is that it is a matter of the definition Leibniz employed of the term "substantial form." That answer may be a beginning, but it is no more than that. Leibniz drew conclusions about substances and substantial forms, based on the conception of substantial form standard in the traditions he inherited. It would be important to make sure that the inferences he drew from the tradition are warranted given his own, perhaps idiosyncratic, use of the term.

Note that it is understandable why Leibniz would think that a substantial form itself satisfies the conditions required in order for an entity to be an individual substance. But the texts in our time

period suggest that Leibniz seriously considered the thesis that an extended entity with a substantial form may satisfy the relevant conditions and, hence, constitute a substance – a corporeal substance.⁵⁶ If we suppose that this is Leibniz's considered view in our period, then an important and difficult problem of interpretation arises: namely, what considerations induced Leibniz to come to a quite different conclusion in the final theory, i.e., the monadology? In Leibniz's final theory the only entities said to satisfy all the conditions required for possessing substantial unity are the monads. In the final theory Leibniz recognized various kinds of entities that may be treated usefully as individuals, although members of that kind do not possess substantial unity. Furthermore, in the final theory Leibniz made room for various levels of approximation toward substantial unity with so-called corporeal substances, for example, offering a closer approximation than mere aggregates thereof.

In our period Leibniz was already committed to many of these ideas. In particular, he recognized the usefulness of treating certain entities as individuals even though they lack the substantial unity required of individual substances. (See letter to Arnauld, 30 April 1687, G II 100–102: MP 126–28.) Furthermore, he was prepared to recognize various levels of approximation to full substantial unity. Moreover, the same candidates were under consideration with essentially the same ordering as in the final theory: “mere aggregates” (e.g., a flock of sheep, a pile of sand), followed by bodies (e.g., a grain of sand), and animate bodies (e.g., a sheep). The difference is that in our period Leibniz gave the appearance of being in a genuine quandary about whether animate bodies satisfy the strictest standards of substantial unity.

One element that is common to the texts from our period and the final theory is Leibniz's commitment to the idea that these non-substantial individuals need not be admitted into one's ontology, not “in metaphysical rigor.”⁵⁷ In the correspondence with Arnauld, after noting the utility in some cases of treating nonsubstances as individuals, Leibniz concluded:

But one must not let oneself be deceived and make of them so many substances or truly real beings; that is only for those who stop at appearances, or those who make realities out of all the abstractions of the mind. . . . Whereas I maintain that philosophy can not be better established, and reduced to something precise, than by recognizing the only substances or

complete beings endowed with a true unity with their different states following one another. All the rest are nothing but phenomena, abstractions, or relations. (G II 101: MP 126–27)

Leibniz's way with individuals that do not amount to individual substances in metaphysical rigor is to treat them as logical constructions. In the passage from "Notationes Generales" previously quoted, employing an army as an example of an aggregate and its soldiers as examples of substances, Leibniz noted that whatever is true of the aggregate, the army, may be restated utilizing propositions predicating properties of its component soldiers. Many of Leibniz's short, private pieces are exercises in logical construction.

The questions raised in this section are difficult ones. But we should not lose sight of the fact that the notion of substance employed here is a direct descendent of the metaphysical principles assumed by Leibniz in the 1660s. We have argued that those original principles prompted Leibniz to construct a theory of substance in 1670 that provides the framework for his metaphysical investigations through the period of the *Discourse on Metaphysics*. We propose that a closer study of the principles elaborated and a fuller analysis of the difficult texts surveyed will provide a more complete picture of Leibniz's mature philosophy. We have made a start here, but there is plenty of room for progress.

NOTES

- 1 Mercer is the author of sections 1–3; Sleigh of section 4. Most of the material of sections 1 and 2 appears in Mercer's Ph.D. thesis "The Origin and Development of Leibniz's Conception of Substance," Princeton (1989); section 3 is derived from a much expanded version of that work entitled *Leibniz's Metaphysics: Its Origins and Development*. The notes in the present chapter are truncated. For further argumentation and citation in support of the material presented in secs. 1–3, see Mercer's book. For a more detailed account of the metaphysics of the *Discourse on Metaphysics* and some of the issues of sec. 4, see Sleigh, *Leibniz and Arnauld: A Commentary on Their Correspondence*. We have greatly benefited from advice and criticism offered by Daniel Garber, Stephen Grover, Daniel Fouke, Nicholas Jolley, Ohad Nachtomly, and Donald Rutherford.
- 2 There has been little scholarly work done on the 1660s. The most complete studies remain Kabitz, *Die Philosophie des jungen Leibniz*,

- and Hannequin, "La Première Philosophie de Leibniz." For recent work that is helpful on some details, see Belaval, *Leibniz: Initiation à sa philosophie*; Moll, *Der junge Leibniz*, Vol. I & II; Garber, "Motion and Metaphysics in the Young Leibniz," pp. 160–84; Robinet, *Architectonique disjonctive automates systémiques et idéalité transcendante dans l'oeuvre de G.W. Leibniz*, 3.1–4.6; Catherine Wilson, *Leibniz's Metaphysics: A Historical and Comparative Study*, pp. 7–58; Fouke, "Metaphysics and the Eucharist in the Early Leibniz."
- 3 For one of the most explicit, relatively early statements of Leibniz's conception of the close connections among metaphysics, "Natural Theology," and "the mysteries of the faith," see A VI.iii 155ff; W 58ff. This provocative essay dates from 1673–75 and not the mid-1680s as Wiener claims. See A VI.iii 154. One recent scholar who has been concerned to explore the relationship between Leibniz's theological interests and his metaphysical development is Daniel C. Fouke whose excellent papers shed light on these and other important topics. See his "Metaphysics and the Eucharist," "Dynamics and Transubstantiation in Leibniz's *Systema Theologicum*," "Spontaneity and the Generation of Rational Beings in Leibniz's Theory of Biological Reproduction."
 - 4 The nature and significance of humanism has been much discussed. For the most important recent discussions and references to the vast literature on humanism and the humanists, see Grafton, *Defenders of the Text: The Tradition of Scholarship in an Age of Science, 1450–1800; The Transmission of Culture in Early Modern Europe*, eds., Grafton and Blair; and *The Impact of Humanism on Western Europe*, eds., Goodman and Mackay.
 - 5 *Philosophia Eclectica* (Aldorf, 1686). Sturm's works were widely read. Leibniz refers to them throughout his life (e.g., A VI.i 186 and G IV 399, 504), although he does not refer specifically to *Philosophia eclectica*. For a discussion of the role and use of Aristotle by Protestant German philosophers, see Bohatec, *Die cartesianische Scholastik in der Philosophie und reformierten Dogmatik des 17. Jahrhunderts*; Wundt, *Die Philosophie an der Universitaet Jena* and *Die Deutsche Schulmetaphysik des 17. Jahrhunderts*; and Petersen, *Geschichte der aristotelischen Philosophie im protestantischen Deutschland*.
 - 6 Motivated by the ground-breaking work of Charles Schmitt, there has recently been a re-evaluation of the role of Aristotelianism in the early modern period. See Schmitt, *Aristotle and the Renaissance* and his *John Case and Aristotelianism in Renaissance England*; Brockliss, *French Higher Education in the Seventeenth and Eighteenth Centuries* and "Aristotle, Descartes, and the new Science: Natural Philosophy at the University of Paris, 1600–1740," 33–69; and Mercer, "The Vitality and Importance of Early Modern Aristotelianism."

- 7 For a discussion of the eclectic Aristotelians who had the greatest influence on Leibniz, see Mercer, "The Seventeenth-Century Debate between the Moderns and the Aristotelians: Leibniz and *Philosophia Reformata*."
- 8 For some of Leibniz's most explicit accounts of his method, both early and late, see A VI.iii 155ff: W 58ff.; G III 606: L 654; GM VI 234ff.: AG 118ff., L 435ff.; G VII 127ff. For Leibniz's early commitment to the philosophy of Aristotle, see A II.i 57, L 107; A II.i 64; A VI.i 85; and esp. A VI.ii 434f.: L 94f. Mercer discusses the method in greater detail in her "Mechanizing Aristotle."
- 9 An asterisk (*) indicates a deviation from the translation cited.
- 10 See also A II.i 22, A II.i 10, and especially A VI.i 489ff: L 109ff. When Leibniz argues against the Moderns, he has standard mechanists like Hobbes, Descartes, and Gassendi in mind. When he claims that most of the philosophy of Aristotle is "certain and demonstrated" (A II.i 15: L 94), he has in mind his own eclectic brand of Aristotelianism, which can comfortably accommodate heavy doses of Platonism, about which we will say more below.
- 11 The PS first appears in 1668 (A VI.i 490: L 110). Loemker is mistaken about the date of the *Confession of Nature against the Atheists*: it was written in 1668 and not 1669.
- 12 The PSS first occurs in 1668 (A VI.i 508: L 115).
- 13 The PCS first appears in 1668 (A VI.i 492: L 112) and is first explicitly stated in 1669 (A II.i 23: L 101–2). During the late 1660s, the scope of the PS, PSS, and PCS appears to extend only to essential properties. By 1676, it has been extended to all properties. See sec. 3.4.
- 14 The PSA first appears in 1668 (A VI ii 508: L 115) but occurs frequently thereafter. It is most often used as the core of a definition of substance, but it is also combined with the PSS in discussions about the characteristics of substance.
- 15 The PSR is used in 1668 (A VI.i 492: L 112), but its first explicit statement occurs in the winter of 1668–69 (A VI.i 494). Leibniz's first demonstration of it appears in the winter of 1671–72; see A VI.ii 483.
- 16 The notion of complete reason is used in several places (A VI.i 95; A VI.i 176: L 80; A II.i 117: L 146), but its first appearance in an essay of metaphysical importance occurs in 1668 (A VI.i 490f.: L 111). Its first explicit formulation, where it is presented as the necessary and sufficient conditions for a thing, occurs in a note written in the winter of 1671–72 (A VI.ii 483).
- 17 For example, Gassendi writes in 1658: "It may be supposed that individual atoms received from God . . . the force [*vis*] requisite for moving, [and for] imparting motions to others. . . . All this to the degree that he

foresaw what would be necessary for every purpose . . . he had destined them for." See Bush, *The Selected Works of Pierre Gassendi*, pp. 400–401. Descartes is also clear about the original source of motion (although the precise relation between God and the motion of a body at a particular time is less easy to discern). He writes, for example, in the *Principles of Philosophy*, "God is the primary cause of motion. . . . Thus, God imparted various motions to the parts of matter when he first created them, and he now preserves all this matter in the same way, and by the same process by which he originally created it." See *The Philosophical Writings of Descartes*, trans., Cottingham, Stoothoff, Murdoch, Vol. I, p. 240. It is important to note that Hobbes is the exception. Unlike the other standard mechanical philosophers, he seems to think that motion does not need an immaterial cause.

- 18 Aristotle's notion of principle (the Greek is *archē*, the Latin translation for it became *principium*) has been much discussed. Suffice it to say here that a principle is the origin or source of something; a principle of activity therefore is the origin or source of activity. This sense of the term persisted throughout the early modern period, but is obviously different from what we think of as a principle today: a sort of basic truth or law. For a helpful introduction to the notion of principle and some related issues in Aristotle, see Witt, *Substance and Essence in Aristotle: An Interpretation of Metaphysics VII–IX*, pp. 15–19; for an excellent discussion of the notion among medieval philosophers, see Gracia, *Introduction to the Problem of Individuation in the Early Middle Ages*, p. 37, *passim*.
- 19 One feature of the theological essays which makes them so difficult is their imprecise terminology. Especially in the essays of 1668, Leibniz obscures the distinction between matter and body by often using "corpus" to refer to each. The distinction is however discernible, especially at A VI.i 502ff. and A II.i 10f.
- 20 It follows from the PSA that insofar as mind is a source of activity it is itself a substance, i.e., it follows that mind is both a substance and a constituent of the substance that it creates with body *qua* matter. We will say more about this in sec. 3.2. It is worth noting that, in the theological writings of 1668–69, Leibniz uses both "substantial form" and "mind" to designate the incorporeal principle or active element in substance, often in the same essay. See for instance A VI.i 508–12: L 115ff.
- 21 This is not occasionalism, but a kind of Platonized Aristotelianism in which God sustains the corporeal nature (by activating its matter through an Idea) so that the nature is able to act as the efficient cause of motion in other bodies (A VI.ii 511–12: L* 118). For further discussion of these details, see Mercer's forthcoming book. For a fascinating discus-

- sion of neo-Platonic elements in the account that Leibniz and other scholastic philosophers (e.g., Aquinas) give of God's relation to the created world, see Fouke, "Emanation and the Perfection of Being: Divine Causation and the Autonomy of Nature in Leibniz."
- 22 In 1668 Leibniz gives both his first systematic argument against the mechanists (A VI.i 489ff.: L 109ff.) and his first presentation of his original conception of substance (A II.i 10f.).
- 23 Leibniz was especially concerned to treat satisfactorily "the mystery of the Eucharist," a topic on which he wrote a number of papers in connection with the "Catholic Demonstrations." See A VI.i 501ff. For an interesting discussion of the importance which the problem of the Eucharist had for early Leibniz, see Fouke, "Metaphysics and the Eucharist."
- 24 For someone in search of such a principle in the seventeenth century, the most obvious candidates were mind, soul, and substantial form (as some Aristotelians had defined it). Leibniz uses all three terms to designate the incorporeal principle in substances, though he favors "mind" (*mens*) in the theological essays.
- 25 There are four important changes which Leibniz makes to the published version of his April, 1669 letter to Thomasius. Compare (1) A II.i 20, line 34 with A VI.ii 440, line 20; (2) A II.i 22, line 24 with A VI.ii 442, line 5; (3) A II.i 23, line 32 with A VI.ii 443, line 18; and (4) A II.i 23–24 with A VI.ii 443, line 19. In his edition of Leibniz's 1670 letter (VI, pp. 162–74) Gerhardt's list of changes is significantly incomplete. Garber mentions change (3) in his "Motion and Metaphysics in the Young Leibniz," p. 171. For a commentary on this letter, which includes an analysis of the changes, see Mercer, *Leibniz's Metaphysics*.
- 26 He also gave himself a more dramatic way of demonstrating the immortality of the soul: given that "mind consists in a point" and that "a point is indivisible and therefore cannot be destroyed," it follows that the mind or soul is immortal (A II.i 113). He presents this argument throughout the period.
- 27 The notion of cause here is obscure. That there is a causal relation between the mind and the matter is obvious; what is not obvious is how exactly to conceive that relation. The most likely causal model is the neo-Platonic *influxus* one. For an excellent discussion of this model in the seventeenth century, see O'Neill, "Influxus Physicus," pp. 27–55. For further details about Leibniz's notion of intrasubstantial causation in his philosophical development, see Mercer's forthcoming book.
- 28 For a good introduction to the difficulties and tensions in the philosophy of the *Discourse* and for a survey of the literature about them, see C. Wilson, *Leibniz's Metaphysics*, chapter III.

- 29 Leibniz arrived in Paris in March, 1672 and left in October, 1676. Between early 1673 and late 1675, Leibniz applied most of his energies to mathematics; nearly all of his philosophical work falls on either side of this period.
- 30 None of the relatively few studies of the Paris years has recognized its full importance. For the most helpful recent work see Catherine Wilson, *Leibniz's Metaphysics*, chapter II; Fouke, "Leibniz's Opposition to Cartesian Bodies during the Paris Period (1672–76)"; Parkinson, "Introduction," *De Summa Rerum* and "Leibniz's *De Summa Rerum*: A Systematic Approach," pp. 132–51; Kulstad, "Causation and Preestablished Harmony in the Early Development of Leibniz's Philosophy"; pp. 93–117. Wilson and Kulstad include references to the preceding literature.
- 31 Between 1668 and 1676 there is no mention of any disembodied incorporeal substances other than God. Cf. A VI.iii 74; 518: Pk 76.
- 32 A mind is the source of the individuation of a substance in that it renders the substance the individual it is; it is the source of the identity of a substance in that it makes the substance the same thing over time. The distinction, often blurred in contemporary discussions, has been important in the history of philosophy. For an excellent discussion of these and related topics, see Gracia, *Introduction to the Problem of Individuation in the Early Middle Ages*, chapter 1.
- 33 According to Leibniz, nonhuman substances exist from the creation of the world and never cease to be. Human substances, on the other hand, are created by God in the course of the world, but then exist eternally.
- 34 The doctrine of expression as it appears in the mature philosophy is notoriously difficult to articulate. There has been a good deal of discussion in the literature both about what exactly the doctrine is and what motivated it. See, e.g., Mates, *Philosophy of Leibniz*, pp. 37ff; Sleigh, *Leibniz and Arnauld*, pp. 170ff; Kulstad, "Causation and Preestablished Harmony," pp. 93ff. We address only the latter topic here and side-step the former altogether.
- 35 Leibniz compares a mind to a mirror in some of his pre-Paris notes, but he does not develop the image. See, e.g., A VI.i 438; 464; 482.
- 36 Although scholars agree that Leibniz's doctrines of expression and preestablished harmony stand at the center of the metaphysics of the *Discourse*, there has been a good deal of disagreement about when the doctrines first emerge, about what might have motivated their development, and about their interrelation. The earliest date that has been given for the emergence of either is 1678–79 and most commentators have placed their development at the time of the *Discourse*. For a summary and analysis of the most important secondary literature on these topics, see Kulstad, "Causation and Preestablished Harmony," pp. 93–117.

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- 37 In his pre-Paris papers, Leibniz refers to the harmony among substances, but he does not develop the notion. See A II.i 79, 174; A VI.i 492: L 112; A VI.ii 283.
- 38 Scholars have noted Leibniz's many references to Plato, and a few French scholars have argued convincingly for Platonic elements in Leibniz's thought, but there has not yet been a careful study of this difficult topic. For a helpful bibliography and an excellent introduction to Platonic elements in Leibniz's conception of the relation between God and creation, see Fouke, "Emanation and the Perfection of Being."
- 39 Just before departing for Paris, Leibniz claims that a requisite is a necessary condition and "all the requisites are the sufficient reason" for the existence of a thing (A VI.ii 483).
- 40 For the arithmetical analogy, see A VI.iii 512: Pk 67; 523: Pk 83. For the town analogy, see A VI.iii 573: Pk 95; A VI.iii 523: Pk 83. Leibniz soon ceases to use the former analogy, but uses the latter in some of his most important later works. See, e.g., *Discourse* par.9; G IV 434: AG 42; *Monadology*, par. 57, G VI 616: AG 220; *First Truths*, C 521: AG 33, L 269. Note that previous datings of the latter paper have been incorrect: the editors of the Akademie edition assign this much discussed text to 1689. See *Vorausedition*, Faszikel 8, p. 1998.
- 41 The development of this interpretation of Leibniz's production rule for the activities of mind was much aided by discussions with Ohad Nachtomy. For more details about how the production rule works, see Mercer's book.
- 42 Scholars have often wondered about the precise relationship between the philosophy of Spinoza and that of Leibniz. There are striking resemblances and it has been proposed that the former influenced the latter. It is a consequence of our interpretation that the philosophy of the *Ethics* could have had no extensive influence on the development of preestablished harmony and the related doctrines articulated in sec. 4 since Leibniz neither saw a copy of the *Ethics* nor talked with its author about it until November, 1676. However, Leibniz had been made aware of some of Spinoza's doctrines earlier in that year. See A VI.iii 380, 384f; A VI.iii 580; A VI.iii 510: Pk 61; A II.i 304. For some recent literature on this topic, see Catherine Wilson, *Leibniz's Metaphysics*, pp. 69, 85ff.; Kulstad, "Causation and Pre-established Harmony," pp. 110ff.
- 43 We saw in sec. 3.2 that, according to Leibniz, minds cannot act except through the matter to which they are attached and hence that the only active things in the created world are corporeal substances. Therefore, Leibniz's denial that "we act on them" and that "they act on us" is an explicit denial of intersubstantial causality.

- 44 It is not surprising that most of the commentators who have considered these passages have attributed to Leibniz a form of scepticism. See Brown *Leibniz*, pp. 39ff.; Catherine Wilson *Leibniz's Metaphysics*, pp. 66ff.
- 45 We assume that this would not be true of aggregates of substances since an aggregate is not strictly an individual. For a discussion of the development of Leibniz's view of aggregates, see below.
- 46 Late in 1676 (after his meeting with Spinoza) Leibniz pushed the relation between cause and effect a bit further and developed a principle that became important to his work on physics. In December, 1676 he writes: "There is nothing without a cause, because there is nothing without all the requisites for existing. The entire effect is equipollent to the full cause, since there must be some equality between cause and effect, passing from one to the other" (A VI.iii 584: Pk 107). In the same month he explains more precisely what he means: "the cause is equipollent to the effect not in perfection but in expression" (A VI.iii 584: Pk 109). For the importance of this principle to Leibniz's physics, see Garber (this volume), sec 1.
- 47 By far the most important of these was the problem of the continuum: "One must unravel, with the greatest rigour, the entire labyrinth concerning the composition of the continuum" (A VI.iii 475: Pk 27). Leibniz wrote a dialogue on this and related issues in the fall of 1676, see A VI.iii 528–71.
- 48 The Latin word "*figura*" is ambiguous in an important way. It can mean figure or shape, but also nature, kind, or species. When talking about the stuff of which bodies are made, Leibniz employs the latter sense where the idea is that the matter is an organized arrangement that makes up the nature of the body. See A II.i 10f., 18; A VI.i 502.
- 49 See, for example, "De Libertate," (FC 178–85: P 106–11) written in 1689, in which, Leibniz wrote: "Once I had recognized the contingency of things, I then began to consider what a clear notion of truth would be, for I hoped, not unreasonably, to derive from it some light on the problem of distinguishing necessary from contingent truth." Then, having summarized the concept containment account of truth, he added "But this only seemed to increase the difficulty for if, at a given time, the concept of the predicate is in the concept of the subject, then how, without contradiction and impossibility, can the predicate not be in the subject at that time . . . ?" (FC 179: P107).
- 50 Couturat, *La Logique de Leibniz*, pp. 208–18.
- 51 Mondadori, "Reference, Essentialism, and Modality in Leibniz's Metaphysics."
- 52 See, for example, Adams, "Predication, Truth, and Transworld Identity in Leibniz," pp. 235–83; and Sleight, *Leibniz and Arnauld*, pp. 126–32.

- 53 All of these doctrines are to be found in *The Discourse on Metaphysics* and the correspondence with Arnauld. For details, see Sleigh, *Leibniz and Arnauld*, chapter 5.
- 54 For a brilliant defense of the thesis that in this period Leibniz took extended entities to be basic individual substances, see Garber's seminal essay "Leibniz and the Foundations of Physics: the Middle Years" pp. 27–30. For doubts about Garber's view, see Sleigh, *Leibniz and Arnauld*, pp. 110–15. For doubts about Sleigh's doubts, see Garber's review, *The Journal of Philosophy*, 1992, especially pp. 52–55.
- 55 Aside from "Notationes Generales" and "De Mundo Praesenti," the following texts from the *Vorauedition* are worth consulting on this matter: "Definitiones," pp. 411–12; and "Mira de natura substantiae corporeae," p. 294.
- 56 This is particularly true of the Arnauld correspondence, see Garber, *op. cit.*
- 57 When Leibniz was about to place his ontological cards on the table he often said that he was speaking "in metaphysico rigore" or "dans la precision metaphysique," or "à la rigueur metaphysique."