

LEIBNIZ'S METAPHYSICAL LOGIC

by Baruch Brody

At the beginning of this century, Russell and Couturat made the important discovery that some of Leibniz's most fundamental metaphysical views (his view that substances do not interact, his theory of pre-established harmony as a solution to the mind-body problem, etc.) were based upon his intensional analysis of the truth of propositions, upon his logical principle that the predicate is contained in the subject in every true proposition.¹

Since their discovery, this principle has been the subject of much controversy. Did Leibniz think that it applied to existential judgments? What is its relation to the principle of sufficient reason, another of Leibniz's fundamental principles? Does it have the consequences that Leibniz thought it had? Strangely enough, throughout all of this controversy, little attention has been directed to Leibniz's reasons for maintaining this principle. It is just this that I want to consider in this paper. I hope to show that (a) it is more or less original with Leibniz, and not something that he borrowed from his predecessors, (b) he had a variety of interesting and important arguments for it, and (c) these arguments reveal that this logical principle was based upon certain of Leibniz's fundamental metaphysical presuppositions. In light of this last result, I shall also argue for a reevaluation of the relation between Leibniz's logic and his metaphysics.

There are two preliminary points that must be noted before we can proceed. The first is that Leibniz, in drawing his implications from this principle, supposes that it applies just as much to singular propositions as to universal general propositions; indeed, it is its application to these singular propositions that leads to the important metaphysical consequences concerning individual substances. The second is that Leibniz means something much stronger than the truism that the predicate is truly applicable to the subject. He means that:

The content of the subject must always include that of the predicate in such a way that if one understands perfectly the concept of the subject, he will know that the predicate appertains to it also.²

Baruch Brody is Professor of Philosophy at Rice University.

It is important to keep in mind the full import of this principle (which we shall refer to from now on as the predicate-in-subject principle) as we discuss its roots and origins.

I

Beck offers the following account of the origin of the predicate-in-subject principle:

This thesis was not original with Leibniz; it can be found in Aristotle and many scholastic writers as well as in Arnauld and Nicole's *L'Art de Pensée*. It was almost a commonplace; but Leibniz took it more literally and more seriously than anyone else and gave it a metaphysical as well as a logical interpretation.³

I should like to show in this first section that Beck's account is mistaken.

Let us begin with Aristotle. Beck gives no reference to indicate what passages in Aristotle he is referring to, but Loemker, who holds a similar view, does refer to several passages.⁴ The trouble is that none of them supports the thesis in question, and several, on the contrary, challenge it.

One passage that Loemker refers to is *Categories* (1a), where Aristotle talks of things predicable of a subject and things present in a subject. This view that there are things present in a subject cannot, however, be the source of Leibniz's principle for two reasons: (a) on Aristotle's account, predicates are predicable of a subject but are not usually present in a subject. Thus, for example, Aristotle says that 'man' is predicable of subjects but not present in them. But it is predicates that are, according to Leibniz, present in subjects; (b) as Aristotle makes clear in the passage in question, he means by 'present in a subject' that the entity cannot exist apart from the said subject. There is no reference here to the Leibnizian idea of the predicate being part of the concept of the subject.

Loemker also refers to *Posterior Analytics* (I, 4), where Aristotle distinguishes essential from accidental attributes. There is no doubt that Aristotle does refer (73b18) to some of the essential attributes as being contained in their subjects. Nevertheless, this passage will not do as the source of Leibniz's doctrine for two reasons: (c) in the very same passage, Aristotle says that it is the subject that is contained in the predicate in some cases of essential attribution, and this is certainly not what Leibniz had in mind; (d) Aristotle would certainly say that the predicate is not contained in the subject in the case of accidental attribution, and this contradicts Leibniz's predicate-in-subject principle. This last point reminds us how un-Aristotelean Leibniz's doctrine is, reminds us that it contradicts the fundamental Aristotelean claim that there is a distinction between the essential and the accidental properties of an object. It also makes it evident that Beck and Loemker are clearly wrong when they say that Leibniz took his principle from Aristotle.

It should be kept in mind as well that Leibniz thought of his principle as providing an account of truth. This is, once more, a most un-Aristotelean theme. Aristotle's account of truth is the familiar one that "to say of what is that it is, and of what is not that it is not, is true,"⁵ and there is nothing in that account that even suggests the Leibnizian thesis that the truth of the proposition consists of the predicate being contained in the subject.

One final point. It might be suggested that Leibniz's predicate-in-subject principle is an unthinking or incautious extension of Aristotle's views about essential attribution. Such a suggestion is made by William and Mary Kneale:

the peculiarity of his [Leibniz's] philosophy is due in large part to the fact that he also fell into the opposite mistake of trying to treat propositions about individuals as though they were like the laws we express by universal statements. When he uses the phrase *praedicatum inest subjectio*, he thought not only of the sense in which wisdom may be said to inhere in Socrates, but also of the sense in which animality may be said to be contained in humanity; and the second predominated so far that he often talked as though there were a concept or essence of each individual which necessarily involved all the attributes predicable of that individual.⁶

Such an account seems objectionable for two reasons: (e) as we shall see in section two of this paper, Leibniz argued at great length for his position; it is, therefore, misleading to suggest, as the Kneales do, that it was just something he fell into, that it was just an unthinking extension of Aristotle's views; (f) in any case, such an account leaves so many things to be explained (why did the second sense predominate even in cases where it seems so inappropriate?) that it seems to be no account at all.

Leaving Aristotle, we turn to Beck's claim that Leibniz's principle is to be found in the scholastics. Beck once more gives us no references, so we can only speculate as to what he had in mind. Nevertheless, there are strong reasons for rejecting this suggestion. To begin with, most of the medievals adopted the Aristotelean distinction between essential and accidental properties, and this is, as we have seen, in opposition to the Leibnizian principle. Secondly, none of their accounts of truth⁷ involves the predicate's being in the subject. This is certainly true of the Arabic definition (mistakenly attributed by St. Thomas to Isaac Israeli) that truth consists in the adequacy of the understanding and the thing, of Boethius's definition that truth consists in the sign signifying the existence of what exists or the non-existence of what does not exist, and of Anselm's definition that truth consists of rightness perceived by the intellect. It is true that St. Thomas talks of the subject and predicate signifying what is in fact the same thing when a proposition is true,⁸ and it is true that Ockham does say that it is necessary and sufficient for the truth of a singular proposition that the subject and predicate stand for the same thing.⁹ Neither of these definitions can be the source of Leibniz's principle, however, for they must be understood extensionally: they must be understood as saying that the denotation of the subject is part of, or identical with, the denotation of the predicate.

After all, St. Thomas says in the very next sentence that his definition holds even when the predicate is only an accidental predicate of the subject, and Ockham explicitly contrasts his account with the account (which would be close to Leibniz's) that the predicate must belong to the essence or the quidditative concept of the subject. In short, then, Leibniz did not find his principle in the medieval theories of truth. Finally, it should be noted that Leibniz explicitly says that the scholastics disagreed with his intensional analysis,¹⁰ so it is most implausible to say that they are the source of his predicate-in-subject principle.

We turn finally to the claim that Leibniz found his principle in the writings of his contemporaries. Beck, in the above-quoted passage, follows the suggestion of Loemker,¹¹ that the principle is to be found in the *Port Royal Logic*.¹² Even Loemker recognized, however, that Leibniz would have to be taking the principle much farther than Arnauld, for Arnauld had never claimed that the predicate is contained in the subject in every true proposition. All that Arnauld had claimed was that one can have certain knowledge only when one sees that the predicate is contained in one's clear and distinct idea of the subject and that this bit of knowledge can be taken as an axiom only if one can see this with just a little attention to the idea in question. And even these claims are questioned by Arnauld in a later chapter.¹³ So we still have to find out why Leibniz reaffirmed the first of them and extended it to all true propositions, and not merely to those of which we have certain knowledge.

Even less helpful is E. M. Curley's view that it was Hobbes who influenced Leibniz.¹⁴ Curley has an interesting account (discussed in section II) of the roots of the principle as applied to singular propositions, but he feels that Hobbes is the source of the view in connection with general propositions:

the theory that all general truths are true by definition had already been announced by Hobbes (cf. *Leviathan*, chs. 4, 5), and this seems to have been one aspect of Hobbes's theory of truth with which Leibniz had no quarrel (cf. G., VII, 190-94). I think Hobbes is a much more likely source of this view than Arnauld, who has sometimes been suggested.

There are a great many difficulties with this suggestion: (g) while Hobbes certainly emphasizes the importance of definitions, he never says in the cited chapters that all general truths are true by definition; (h) on the contrary, he explicitly offers there an extensional definition of the truth of general propositions:

When the names are joined together into a consequence, or affirmation, as thus: a man is a living creature, or thus: if he be a man, he is a living creature, if the latter name, living creature, signify all that the former name signifies, then the affirmation or consequence is true; otherwise, false.¹⁵

There are other passages in which this extensional analysis is even more explicit:

A true proposition is that, whose predicate contains, or comprehends its subject, or whose predicate is the name of each thing of which the subject is the name; as man is a living creature is therefore a true proposition, because whatsoever is called man, the same is also called living creature.¹⁶

(i) in his account of the distinction between necessary and contingent truths, Hobbes explicitly denies the Leibnizian principle for contingent general propositions:

in every necessary proposition, the predicate is either equivalent to the subject . . . or part of an equivalent name. . . . But in a contingent proposition, this cannot be; for though this were true, every man is a liar, yet because the word liar is no part of a compounded name equivalent to the name man, that proposition is not to be called necessary, but contingent, though it should happen to be true always.¹⁷

Let us end our comparison of Leibniz and his contemporaries by examining the views of Locke on this matter.¹⁸ This comparison is particularly valuable because Locke wrote the *Essay* in the 1670s and the 1680s, the very period of time during which Leibniz used the predicate-in-subject principle as the foundation of his metaphysics.

Locke began his discussion by distinguishing two types of trifling propositions, the identical propositions in which the predicate is identical with the subject, and the propositions in which the predicate is only part of the subject. In either case, of course, the predicate is contained in the subject. Now Locke's views about these trifling propositions contrast very sharply with Leibniz's views. For Locke, not all true propositions are trifling. Locke does not even agree with Arnauld's weaker thesis that all propositions that can be known with certainty are trifling. Indeed, he thinks that our only significant knowledge is of the non-trifling propositions:

We can know then the truth of two sorts of propositions with perfect certainty. The one is, of those trifling propositions which have a certainty in them, but it is only a verbal certainty, not instructive. And, secondly, we can know the truth, and so may be certain in propositions, which affirm something of another, which is a necessary consequence of its precise complex idea, but not contained in it. . . . this is a real truth, and contains with it instructive real knowledge.¹⁹

We can see then that Leibniz's views were not a commonplace in his time.

In summary, then, the claim that Leibniz's predicate-in-subject principle is to be found in his predecessors and/or contemporaries rests either upon a misunderstanding of Leibniz's claim or on a misreading of his predecessors and/or contemporaries or on both. Leibniz's thesis represents a radical departure from philosophical tradition and the views of his contemporaries, and we must turn to his writings to see if we can discover an account of the roots of his radical predicate-in-subject principle.

II

Leibniz discussed his predicate-in-subject principle in both his metaphysical and his logical writings. Since the first discussions in the latter preceded the first discussions in the former, we shall begin by considering his logical writings. And although he may have written earlier fragmentary treatments, we shall begin our discussion with his essays of 1679, essays that already contain some of his more mature thoughts.

The first of his papers that we shall consider is the one usually called "Elements of a Calculus."²⁰ In that paper, where he is primarily concerned with the analysis of general propositions, both universal and particular, he sets out his analysis of truth as follows: "the concept of the subject, either in itself or with some addition, involves the concept of the predicate."²¹ Already in 1679, Leibniz recognized that his intensional analysis faced difficulties when applied to particular propositions like 'some metal is gold.' After all, the property of being gold does not seem to be part of the concept of being a metal. Leibniz's solution, alluded to in the above-quoted definition, is that the property of being gold is part of a concept which is formed by making some addition to the concept of being a metal:

although metal does not by itself contain gold, nevertheless some metal, with some addition or specification (e.g., 'that which makes up the greater part of a Hungarian ducat') is of such a nature as to involve the nature of gold.²²

Why did Leibniz prefer this more complicated intensional analysis to the simpler extensional analysis that, in a true general proposition, the whole or a part of the extension of the subject is contained in the extension of the predicate? Leibniz raises this question when he compares his views to the extensional analysis of the scholastics, and he offers this argument for his analysis: "I have preferred to consider universal concepts, i.e., ideas, and their combinations, as they do not depend upon the existence of individuals."²³ This argument seems to come to this: (a) a universal proposition can be true even if the subject-term applies to nothing real; (b) this could not be so on the extensional analysis; (c) therefore, one should reject the extensional analysis.

It is interesting to note that Leibniz, later on in his life,²⁴ was well aware that step (a) of the above argument, the claim that universal affirmative propositions lack existential import, conflicts with the traditionally accepted conversion *per accidens* of such a proposition, an inference which is valid only if such propositions have existential import. Rather than giving up conversion *per accidens*, he found a solution to the problem both from his intensional and the scholastic extensional point of view. His solution from the extensional point of view was that the domain of discourse contains possible as well as actual entities. 'All *A*'s are *B*'s' can be true even if there are no actual *A*'s and still entail 'some *B*'s are *A*'s' because the possible *A*'s are *B*'s and there are therefore some *BA*'s. Given this analysis, however, Leibniz's initial argument

against extensionalism is destroyed, because its step (b) would be false. Even if the subject-term applies to nothing actual, the universal affirmative proposition viewed extensionally can be true by virtue of holding for the possible objects to which the subject-term applies.

There is a very different argument that appears in another of his logical papers written in 1679. In "On the General Characteristic," Leibniz argued:

no matter how often a predicate is truly affirmed of a subject, there must be some real connection between subject and predicate.²⁵

This theme is developed and amplified in the *Discourse on Metaphysics* (1686):

it is evident that every true predication has some basis in the nature of things, and even when a proposition is not identical, that is, when the predicate is not explicitly contained in the subject, it is still necessary that it be virtually contained in it.²⁶

We shall, in a moment, look more carefully at this argument. Let us just note for now that it reveals, in Leibniz's logical writings of 1679, metaphysical as well as logical reasons for the predicate-in-subject analysis. In Leibniz's later logical writings, even in the fundamental *General Inquiries* of 1686, he does not seem to have returned to a defense of his intensional analysis; indeed, in his logical writings after 1690,²⁷ he sometimes adopted an extensional analysis, he sometimes analyzed propositions both extensionally and intensionally, and he only occasionally followed his intensional analysis exclusively.

In turning to the arguments he used in his metaphysical writings of the period in question ("First Truths," the *Discourse on Metaphysics*, and the *Correspondence with Arnauld*), we shall begin with the argument quoted above. What exactly was this argument? It is easy to see to what Leibniz was objecting. Leibniz found it objectionable to say that 'all *A*'s are *B*'s' is true just because every *A* happens to be a *B* and '*a* is *A*' is true just because *a* happens to be an *A*. There must, he claimed, be a real connection between the object (or objects) and the property in question, one based upon the nature of things. Now it is unclear (a) exactly what these claims mean and (b) why Leibniz felt that these demands can be satisfied only if the property in question is contained in the concept of the object (or objects) in question. But this need not concern us for now. The crucial thing to note for our purposes is that the argument rests upon the assumption that there cannot be mere *de facto* connections between an object and its properties. There will be more to say about this argument, which we can label the argument from no *de facto* connections, below; for now, note that it is an argument based upon a metaphysical principle (that there can be no *de facto* connections of the type in question) for the logical predicate-in-subject principle.

A second argument, which we shall label the argument from identity through time, occurs in Leibniz's letter to Arnauld of May 1686:

it must needs be that there should be some reason why we can veritably say that I endure, or, to say, that the me which was at Paris is now in Germany. . . . To be sure, my inner experience convinces me a posteriori of this identity but there must also be some reason a priori. It is not possible to find any other reason, excepting that my attributes of the preceding time and state, as well as the attributes of the succeeding time and state are predicates of the same subject. . . . Now what is it to say that the predicate is in the subject if not that the concept of the predicate is found in some way involved in the concept of the subject.²⁸

Again, writing in July of the same year, Leibniz said, "it must be that the concept of myself unites or includes different conditions. Otherwise it could be said that it is not the same individual."²⁹ As we look carefully at this argument, it seems clear that, while the argument begins with identity through time, its heart is elsewhere. Leibniz pointed out that *a* at *t*₁ having *P*₁ is identical with *b* at *t*₂ having *P*₂ just in case *P*₁ at *t*₁ is an attribute of the same entity as *P*₂ at *t*₂. Leibniz then claimed, for reasons to be discussed below, that this can be so only if both properties are found in the concept of the subject. In short, the argument is best thought of as an argument from the successive presence of a group of properties in a single object.

Looked at from this perspective, the argument is analogous to still another argument that Leibniz presented to Arnauld in November and December 1686. Leibniz raised the question as to why two diamonds, even when juxtaposed, do not form one substance, and he gave the following response, "Substantial unity calls for a thoroughly indivisible being, naturally indestructible since its concept involves all that must happen to it."³⁰ This is a difficult passage, one that is made even more difficult by Leibniz's introduction of indestructibility. But what emerges is the idea that a true substance is one because its predicates are contained in the concept of it; other subjects of predication are not true substances just because this is not true of them. We can label this the argument from substantial unity.

Having seen this much, we observe that the argument from identity through time and the argument from substantial unity are essentially making the same point. Leibniz is grounding the unity of a substance, whether through the successive or simultaneous instantiation of different properties, on the fact that all of these different properties are contained within the concept of the substance.

This argument, like the argument from no *de facto* connections, contains many obscure elements. One especially wonders why Leibniz would not accept it as a brute fact that one substance can, both simultaneously and successively, have many different properties? In response to this wonder, I believe that we might reasonably conjecture that he would have felt that this would involve a *de facto* element in the connection between a substance and its properties, one that is ruled out by the principle against mere *de facto* connections. If this conjecture is correct, then the argument from identity

through time and the argument from substantial unity are merely variations on the initial argument from no *de facto* connections.

We turn finally to another set of arguments, the argument from God's choice and the argument from individuality. The first argument³¹ starts from Leibniz's thesis that God has to choose which individuals to create:

my supposition is not merely that God wanted to create an Adam whose concept was vague and incomplete but that God wished to create a particular Adam sufficiently determined as an individual. This complete individual concept, in my opinion, involves the relation to the whole sequence of things.³²

The argument here is that God, in choosing to create a specific individual, must first pick out that individual from all other possible individuals, and he can do that only if he has a concept of that individual which contains everything that happens to that individual. But is all that really required? Is it not enough that God has a concept of that individual that contains a property that individuates it, a property that only it actually has? Such objections miss the point that Leibniz is making. God has to pick out that individual from all possible objects, and not merely from all actual objects, so it is not enough that God's concept contains a property that is had by only one actual object. After all, other possible objects might have this property, and so a concept that contains it cannot be used, merely because it contains it, to pick out the object in question from all other possible objects. Another way of putting this point is to say that Leibniz felt that only by choosing to instantiate a concept that contains the full history of an individual could God actually choose to create one definite individual from among many possible individuals that greatly resemble each other.

One thing is clearly presupposed in this argument: that there is no subset of an object's properties which it and only it has in all possible worlds; if there were, then God's having a concept which contained only those properties would be sufficient for God's picking out that individual. This argument, therefore, rests upon certain metaphysical assumptions about identity through possible worlds.

The last of the arguments that we shall consider, the argument from individuality, is particularly important because it occurs in response to an objection by Arnauld in which Arnauld challenged Leibniz's predicate-in-subject principle by referring to the traditional Aristotelean distinction between essential and accidental properties. Arnauld, in May 1686, had written to Leibniz:

I have no other rule in this respect except to consider whether the properties are of such a character that a sphere would no longer be a sphere if it did not have them. . . . The same principle I apply to the individual concept me. . . . I am able to think that I will make a certain journey or that I will not, being perfectly assured that neither the one nor the other will prevent me from being myself. I maintain very decidedly that neither the one nor the other is involved in the individual concept me.³³

Leibniz, in response, insisted that this Aristotelean way of looking at things does not apply to individuals:

the concept of the sphere in general is incomplete and abstract . . . and consequently the concept does not involve that which is required for the existence of a certain sphere. The concept of the sphere that Archimedes had put upon his tomb is complete, and should involve all that pertains to the subject of this thing.³⁴

The argument here is obscure, but it seems to come to the following: each individual is a distinct individual, and it must, therefore, have individuating characteristics. These, assumed Leibniz, must be included in the concept of that individual object, and since, assumed Leibniz, these characteristics include all that happens to the object, all that happens to the object must be part of the concept of that object.

Both of the just mentioned assumptions seem implausible, and we might well wonder why Leibniz believed them. But I think that something can be said by way of explaining that. Let us begin with the first assumption, the assumption that the individuating characteristics of an object must be part of our concept of that object. One could argue for that as follows: if we are to think of an object, we must have a concept of it, a concept that is only of that object among all actual and possible objects, and we can have that only if the concept contains the individuating characteristics of the object. We turn now to the second assumption, the assumption that the only individuating characteristic of the object is the satisfaction of all of its properties. This, too, can be understood if one keeps in mind that the characteristic must individuate the object from all possible, as well as all actual, objects and if one assumes that any subset of that set can be satisfied by different possible objects.

Two points should be noted here. All that we are claiming is that the argument can be made plausible, not that it is sound. Secondly, thought of this way, there is little difference between this argument from individuality and the previous argument from God's choice. The only difference is that the latter starts from God's concept while the former starts from man's concept. But both claim that a concept can be a concept of a specific object only if it contains all that happens to that object.

Looking over the metaphysical arguments, then, one sees that they rest upon certain basic metaphysical assumptions about *de facto* connections and identity. In the final section of this paper, we will discuss the significance of this conclusion.

III

The results of the previous section can, I believe, be used to shed light upon such fundamental questions as the relation between Leibniz's logic and his metaphysics and the relation between the logical principle of the predicate-in-subject and the metaphysical principle of sufficient reason.

Couturat, at the beginning of his famous article, said that he had shown that "Leibniz's metaphysics rests entirely upon his logic."³⁵ Russell, writing about Couturat's work, said that "the general conclusion, that Leibniz's logic was the true foundation of his system, seems thus to be once for all demonstrated."³⁶ If this view has been attacked since their time, it has primarily been attacked on the grounds that there are aspects of Leibniz's metaphysics that were developed under the influence of his physics.³⁷ As far as I know, little attention has been paid to the possibility that the influence may have run at least as much in the opposite direction.³⁸ But this is just the view that emerges as we consider the evidence of the previous section.

One can certainly say, in favor of the Russell-Couturat view, that Leibniz's metaphysical writings of the 1680s rest upon the logical predicate-in-subject principle. But this logical principle is, as we have seen, argued for by Leibniz on the basis of certain metaphysical assumptions. And this means that the predicate-in-subject principle is not the fundamental principle of the metaphysics of the 1680s. Leibniz's metaphysics is then grounded upon his basic metaphysical assumptions and not on his logic.

In order to make this point more clearly, we will focus in on the relation between the predicate-in-subject principle, the logical principle, and the principle of sufficient reason, the metaphysical principle that rules out mere *de facto* connections. Couturat, as part of his program of basing the metaphysical on the logical, had the following to say about the relation between these principles:

it [predicate in subject] formulates precisely the famous principle of reason, of which the classical expression *nihil est sine ratione* is, according to Leibniz, only a popular formula borrowed from common sense. In its exact sense, this principle means that in every proposition the predicate is contained in the subject.³⁹

In support of his view, Couturat cited a famous passage in Leibniz's letter to Arnauld of July 14, 1686:

This [predicate-in-subject] is my fundamental principle, which I think all philosophers ought to agree to, and one of whose corollaries is that commonly accepted axiom: that nothing happens without a reason which can be given why the thing turned out so rather than otherwise.⁴⁰

This passage clearly will not do for Couturat's purpose since Leibniz is distinguishing the two principles and insisting that one is a corollary of the other. But it is also problematic for us, since the inference here is from the predicate-in-subject principle to the principle of sufficient reason and we saw in section two that Leibniz was arguing from the principle of sufficient reason to the predicate-in-subject principle.

There is still another passage, quoted by Couturat, that sheds light on this issue and supports our interpretation. At one point, Leibniz wrote:

The fundamental principle of reasoning is that nothing is without reason or . . . that there is no truth for which there is no underlying reason. However, the reason of the truth consists in the connection between the predicate and the subject, whether the predicate is contained in the subject. . . .⁴¹

This suggests the following reconciliation of the texts: Leibniz's fundamental principle is that there can be no *de facto* truths, that there is a sufficient reason for all truths. This leads Leibniz to adopt (although, as we have already pointed out in section two, hardly entails) the predicate-in-subject principle, for if it is true, then the demand for a sufficient reason is satisfied; when Leibniz talks, then, of the principle of sufficient reason as a corollary of the predicate-in-subject principle, all that he means, I submit, is that the predicate's being contained in the subject is the way in which the principle of sufficient reason is satisfied.⁴²

Saying this leads to another important conclusion. In my view, there may well be, for Leibniz, some propositions (e.g., the propositions asserting the existence of entities other than God) in which the predicate is not contained in the subject and for which the principle of sufficient reason must be satisfied in other ways. And this seems to me to be a merit of our interpretation, for it can well be argued⁴³ that this was Leibniz's view.

In conclusion, then, while Russell's and Couturat's metaphysics may well have been based upon their logics, this does not seem to have been the case for Leibniz.

NOTES

1. Bertrand Russell, *The Philosophy of Leibniz* (London: Allen and Unwin, 1900). Louis Couturat, "Sur la Metaphysique de Leibniz," translated and reprinted in H. Frankfurt's *Leibniz* (New York, 1972); all page references are to this translation.

2. *Discourse on Metaphysics*, paragraph 8, p. 13 of *Leibniz's Basic Writings* (LaSalle, Illinois: Open Court, 1968); all page references to the *Discourse* and to the *Correspondence with Arnauld* will be to this edition.

3. Lewis Beck, *Early German Philosophy* (Cambridge: Harvard, 1969), p. 208.

4. Leroy Loemker, *Leibniz's Papers and Letters* (New York: Humanities, 1970), p. 60.

5. *Metaphysics* (1011b25ff.) and elsewhere.

6. William and Mary Kneale, *The Development of Logic* (Oxford: 1962), p. 324.

7. For further information on these theories of truth, see P. Boehner's *Collected Articles on Occham* (St. Bonaventura: Franciscan Institute, 1958), pp. 174-267.

8. *Summa Theologica*, i, 13, 12.

9. *Summa totius logicae*, II, c. ii.

10. *Leibniz's Logical Papers* (Oxford, 1966), p. 20.

11. "Leibniz's Discourse of 1686," *Journal of the History of Ideas* (1947).

12. Part IV, chapter 6.
13. Chapter 12.
14. E. M. Curley, "The Root of Contingency," in Frankfurt, *Leibniz*.
15. *Leviathan*, chapter 4.
16. *English Works*, I, 35.
17. *Ibid.*, p. 38.
18. Found in the *Essay*, IV, 8.
19. *Ibid.*, IV, 8, 8.
20. *Leibniz's Logical Papers* (Oxford, 1966), pp. 17-24.
21. *Ibid.*, 9, 19.
22. *Ibid.*
23. *Ibid.*, p. 20.
24. In a paper written after 1690 usually called "Some Logical Difficulties," *ibid.*, pp. 115-121.
25. *Leibniz's Papers and Letters*, p. 226.
26. Paragraph 8, p. 13.
27. See papers 11-16 in *Leibniz's Logical Papers*.
28. *Correspondence with Arnauld*, pp. 112-113.
29. *Ibid.*, p. 128.
30. *Ibid.*, p. 161.
31. As far as I can determine, the only one to call attention to this argument is Curley, "The Root of Contingency." Unfortunately, he does not note the presence of the other arguments that we have discussed.
32. *Correspondence with Arnauld*, p. 104.
33. *Ibid.*, p. 98.
34. *Ibid.*, p. 106.
35. "Sur la Metaphysique de Leibniz," p. 19.
36. "Recent Work on the Philosophy of Leibniz," in Frankfurt, *Leibniz*, p. 385.
37. See, for example, the article by Hacking in Frankfurt, *Leibniz*.
38. I do not put this any stronger because I want to concede (as plausible; there is no textual evidence to support this claim) that Leibniz may have been confirmed in his belief in the predicate-in-subject principle by the success of his intensional logic.
39. Couturat, "La Metaphysique de Leibniz," p. 20.
40. *Correspondence with Arnauld*, p. 132.
41. L. Couturat, *Opuscules et fragments inedits de Leibniz* (Paris: 1903), Phil. I, 15.
42. Couturat, in identifying the two principles, was reducing the metaphysical to the logic. But one might identify the two, without reducing the one to the other, by insisting that they are two sides, two aspects, of the same truth. While more plausible, this view is also open to the arguments we have just given against Couturat.
43. And has been by Curley in Frankfurt, *Leibniz*.