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PREDICATION, TRUTH AND TRANSWORLD IDENTITY
IN LEIBNIZ

I. INTRODUCTION

Among the theses that Leibniz sent to Arnauld in February 1686, the one
that aroused Arnauld's initial objection was the statement,

Since the individual concept of each person contains once for all everything that will
ever happen to him, one sees in it the proofs *a priori* or reasons for the truth of each
event, or why one has occurred rather than another (G II, 12/L–A 5).[1]

All the predicates of an individual substance are contained in the concept
of that individual, according to Leibniz. This thesis gives rise to many ques-
tions about the relation of individuals to their predicates. Why should the
predicates be contained in the *concept* of the individual, and not just in the
individual itself? Why does Leibniz infer from the conceptual containment
thesis, as he does (DM 14), that all the states of an individual substance are
caused by previous states of that individual alone? We will come to these
questions, but the prevent investigation is organized around another issue.
Today we might call it the issue of "trans-world identity"; Arnauld raised it
in these words:

Since it is impossible that I should not always have remained myself, whether I had
married or lived in celibacy, the individual concept of myself contained neither of
these two states; just as it is well to conclude: this square of marble is the same whether
it be at rest or be moved; so neither rest nor motion is contained in its individual concept
(G II, 30/L-A 30).

Arnauld affirms trans-world, or counterfactual identity as a reason for
rejecting Leibniz's conceptual containment thesis. He denies that his actual
predicate of life-long celibacy is contained in his individual concept on the
ground that he is the same individual as one who would, under some possible
circumstances, have been married. In his response, as in a number of other
places in his writings, Leibniz made clear that he did not accept Arnauld's
assumption of trans-world identity. He held that no individual creature exists
in more than one possible world — that if Arnauld, for example, had married,
he would not have been Arnauld (or more precisely, that anyone who got

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married, in any possible world, would not have been Arnauld [cf. Gr 358]). The issue of trans-world identity being very much alive today, this aspect of Leibniz's philosophy has received a lot of attention from recent interpreters.[2] But I think there remains (and perhaps always will remain) enough obscurity about his reasons and motives to invite further exploration.

Right at the outset, we should note an important difference between Leibniz and present-day philosophers who are interested in trans-world identity. For the latter, talk about possible worlds serves to explicate the structure, if not the basis, of logical possibility and necessity. What is possible is what is true in (or at) some possible world; what is necessary is what is true in all possible worlds. From this point of view, the denial of trans-world identity seems to entail that no actual individual could possibly have had different properties from those it actually has. To say that Caesar, for example, could have turned back from the Rubicon is to say that there is a possible world in which he does; and that obviously must be a possible world in which he exists. But if there is no trans-world identity, then Caesar exists only in the actual world, in which he crosses the Rubicon. So it seems to follow that he could not have turned back. Leibniz emphatically rejects this conclusion, however. Much of Section 13 of his *Discourse on Metaphysics* is devoted to developing the thesis that, while the crossing of the Rubicon is contained in the individual concept of Julius Caesar, it follows "that it was reasonable and consequently assured that that would happen, but not that it is necessary in itself, nor that the contrary implies a contradiction."

David Lewis has developed his well-known "counterpart theory" as a way of rejecting trans-world identity without denying that we could have had somewhat different properties from those we actually have. According to Lewis no individual exists in more than one possible world, but there is a "counterpart relation" that obtains among sufficiently similar individuals in different possible worlds. Your counterparts are "people you might have been", so to speak. To say that it would have been possible for you to have done a certain thing that you did not do is to say that there is a possible world in which a counterpart of yours does it. Several recent interpreters (especially Mondadori, 1975, pp. 94–101) have pointed out that Leibniz has a use of proper names that suggests something like Lewis's counterpart theory. He speaks, for example, of "possible Adams" in the plural, meaning "possible persons, different from each other, who fit" a general description consisting of a part of the predicates of the first man in the actual world (G II, 41/L–A 45).

Margaret Wilson has argued convincingly, however, that it is a mistake to ascribe to Leibniz a counterpart-theoretical account of possibility and

necessity *de re* in terms of alternative possible Adams, alternative possible Caesars, alternative possible Arnaulds, and so forth. Leibniz never (so far as I know) gives such an account. And as Wilson points out, it would be inconsistent with his conception of God's freedom. For Leibniz holds that there are infinitely many possible worlds that God could possibly have created. And he never speaks of alternative "possible Gods" who could have created the different worlds. He seems to be committed, not only by this silence, but also by the doctrine of God's necessary existence, to the view that it would have been *the same* God that created whatever possible world was created. In other words, Leibniz seems to have accepted transworld identity for God while rejecting it for every other individual.

These apparent inconsistencies can be removed by a correct understanding of Leibniz's conception of possible worlds and its relation to his conception of necessity. I shall be somewhat dogmatic on this subject, having argued elsewhere (Adams, 1977) for my interpretation. According to Leibniz (from 1686 on), the difference between necessary and contingent truths is that necessary truths can be proved by analysis of their terms in a finite number of steps, whereas it could take an infinite analysis to establish a contingent truth. Even contingent truths, however, are seen by God to follow from the concepts of their terms, the predicate being contained in the subject, or the consequent in the antecedent. A contingent falsehood is possible, on Leibniz's view, in the sense that its denial cannot be proved by a finite analysis; but it remains *conceptually inconsistent* in the sense that the negation of its predicate is contained in the concept of its subject, although it would take an infinite analysis to render that containment explicit. (It will be useful for us to employ 'conceptually inconsistent' in this sense, although Leibniz does not.)

Leibniz's conception (at any rate, his principal conception) of possible worlds does not provide a semantics for this conception of necessity and possibility. In particular, he does not want to say that what is possible is true in some possible world. For it is possible to have a world as good as the actual world in other respects without the horrors of the Thirty Years' War; that is, such a state of affairs cannot be proved inconsistent by a finite analysis. For obvious reasons of theodicy, however, Leibniz will not admit that there is a possible world in which it is true that that much goodness occurs without the Thirty Years' War. For similar reasons, it will not do for Leibniz to say that a possible world is a world whose complete concept is possible in the sense that no finite analysis can prove it inconsistent. Possible worlds are worlds that God could have created, in a sense in which

He could not have created a world as good as the actual world without the Thirty Year's War.

On the other hand, it also will not do for Leibniz to say that a possible world is a world that God could have created without any conceptual inconsistency at all. For Leibniz is committed to the belief that it follows (though not by a finite analysis) from the concepts of God and of the actual world that He does create it, and from the concepts of God and the other possible worlds that He does not create them. I think that Leibniz's principal conception of possible worlds — the conception on which he depends in his theodicy — can be captured by saying that a possible world is a world that God could have created were it not for His goodness (or that He could have created were it not for the fact that some other world is better). For the way in which the actuality of actual things and the non-actuality of non-actual things follows from their concepts, according to Leibniz, is that it follows from their concepts (together with the concept of God and of all the alternatives He could have chosen) that the actual things belong to the best series of things He could have chosen, and the non-actual things do not; but this does not follow by a finite analysis. Suppose we say that the basic concept of a possible world is a concept that contains everything that would be true if that world were actual *except* that it contains nothing of the comparison that God would have made with other possible worlds in deciding to create that one. Then we can say that a possible world is one whose basic concept contains no conceptual inconsistency at all. It is a world which contains no conceptual inconsistency "in itself", though an inconsistency that cannot be finitely proved may arise when its internal features are put together with the idea of its having been created by a perfectly good God and the fact that some other possible world is better.

Now I take it that for Leibniz the individuality of Julius Caesar is defined by a (complete) concept of him that contains crossing the Rubicon at a fateful juncture in his career. This containment cannot be proved by a finite analysis; and, therefore, it is not necessary that he crossed the Rubicon then. (Cf. C 376f./P66, where exactly this is asserted about Peter's denying Jesus, which was the example Leibniz first intended to use in the place now occupied by Caesar's crossing the Rubicon in DM 13.) But a world in which Caesar turned back from the Rubicon at that juncture world contain a conceptual inconsistency in itself, and would therefore not be a possible world. Its basic concept would contain Caesar's not crossing the Rubicon at a time at which it follows from his definitive concept that he does cross it. Both his crossing

and his non-crossing would thus be contained, at least implicitly, in the basic concept of that world. In saying this, I assume that the containment of Caesar's crossing the Rubicon in his complete concept does *not* depend on the fact that if God compared all possible worlds He would find that the best is one in which Caesar crosses the Rubicon. Doubts may be raised about ascribing this assumption to Leibniz, but without it, the denial of trans-world indentity cannot be justified. For the assumption could hardly be false unless God had a choice between a possible world in which Caesar crosses the Rubicon and another possible world in which the same individual Caesar exists but does not cross the Rubicon.

Leibniz is not committed to making a corresponding assumption about God. He is, indeed, committed to the view that God's choosing this world that He has actually created, and His not creating any other possible world, are contained in the concept of God. But it is precisely because this is the world that He would find to be best, in comparing all possible worlds, that these choices follow from God's essential wisdom and goodness. I think this enables us to understand why Leibniz allowed God to have trans-world identity. One of Leibniz's main concerns in his thinking about possible worlds is to maintain the reality of God's choice. And the crux of this matter, as Leibniz perceived it, is that God (one and the same God, presumably) should have had a plurality of *internally* consistent worlds to choose from. It is not enough that the alternative worlds be free of finitely provable inconsistency; they must not have any conceptual inconsistency "in themselves." It is *not* required of each possible world, however, that there be no conceptual inconsistency in God's choosing to create it instead of all other possible worlds. On the contrary, it is required by the principle of sufficient reason, as I think Leibniz understood it, that there be a conceptual inconsistency in God's creating any other possible world than the one He has created. The reason why Leibniz is prepared to say that the same individual God could have been the creator of different possible worlds is that the sense in which He "could" have is that were it not for His wisdom and goodness, or were it not for their inferiority, He could have – not that His creating them would be perfectly consistent with His nature. But this very same conception of the sense in which God could have created a different world requires that no *creature* occur in any possible world in which something occurs which is contrary to the nature of that creature (considered apart from the reasons for God's choice among worlds). For then it would not be because of its inferiority, and His wisdom and goodness, but because of an internal conceptual inconsistency in that world, that God could not create it.

There is much more to be said, however, about Leibniz's reasons for denying trans-world identity to creatures. As Margaret Wilson (1979, p. 729) has remarked, "we know what *use* Leibniz wants to make of" this doctrine, theologically. "He wants to use it as a basis for denying that God is responsible for a created individual's misfortunes or bad choices, since *that individual* couldn't have existed unless he made those choices and experiences whatever he in fact experiences." Leibniz says that God "did not make Sextus wicked . . . . All he did was grant him existence, which his wisdom could not refuse to the world in which he is included" (T 416). Leibniz thought that this entitled him to hold that evil is not caused by God, but by the limitations inherent in the concepts of the creatures that it was best, on the whole, for God to create (DM 30, T 20). He also thought it provides an answer to complaints that individuals might be tempted to make against God. "You will insist that you can complain, why did God not give you more strength. I reply: if he had done that, you would not be, for he would have produced not you but another creature" (GR 327: cf. Conf 128 f).[3]

These theological motives are important for understanding Leibniz's denial of trans-world identity; but as Wilson suggests, he undoubtedly thought he could give other *reasons* for it. Two of them will detain us only briefly. A particularly bad argument is found in a letter that Leibniz sent to Arnauld in July 1686, but is missing (whether as a result of a later correction, I do not know) from the copy retained by Leibniz at Hanover. Responding to the claim "I find clearly in the individual concept that I have of myself that I shall be myself whether or not I take the trip that I have planned", Leibniz says,

If it is certain that *A* is *B*, what is not *B* is not *A* either. So if *A* signifies me, and *B* signifies the one who will take this trip, it can be concluded that the one who will not take this trip is not me; and this conclusion can be drawn from the certitude alone of my future trip, without having to impute it to the proposition in question (LW 39).

The last phrase ("without . . . ") in this passage is completely obscure to me, but Leibniz seems to be arguing that a contradiction would be involved in trans-world identity, on the ground that I, who am going to take a certain trip, cannot also have the property of not taking that trip. But of course, the question is not whether I could *also* have the property of not taking the trip, but whether I could have had that property *instead of* my actual property of taking the trip.

Another argument is suggested by the statement, "It follows also that it would not have been our Adam, but another, if he had had other events, for

nothing prevents us from saying that it would be another. Hence it is another"
(G II 42/L–A 46). This looks like an appeal to the principle of sufficient
reason: There is no compelling reason to say it would be the same individual
if different events happened to him; therefore, it would not be the same
individual. This is a weak argument. It leaps over vast stretches of disputed
territory. Arnauld was at least initially inclined to say, for example, that our
ordinary conception of a person keeps us from saying it would have been
another Adam if he had never sinned. One wonders, moreover, whether the
argument does not cut both ways. As Margaret Wilson (1979, p. 729) says,
"The question presents itself insistently: what prevents us from *denying*
it would be a different Adam if circumstances had been different . . . . ?"
Would it be any easier to find a sufficient reason for denying trans-world
identity than for affirming it? Leibniz seems to assume here that presump-
tion favors non-identity — that identity needs to be explained in a way that
distinctness does not, and hence that there is more need of reasons for
affirming than for denying identity. Perhaps that is correct. I think it is not
without plausibility in some cases. But not seeing how Leibniz would defend
it, I will pass on to other arguments.

II. THE CONCEPTUAL CONTAINMENT THEORY OF TRUTH

It is natural to turn next to the argument on which Leibniz himself laid the
greatest weight for the defense of his whole position regarding individual
concepts, including his denial of trans-world identity.

Finally [he wrote to Arnauld] I have given a decisive reason, which in my opinion ranks
as a demonstration; it is that always, in every true affirmative proposition, necessary or
contingent, universal or singular, the concept of the predicate is included in some way in
that of the subject, *praedicatum inest subjecto* [the predicate inheres in the subject] ; or
else I do not know what truth is (G II, 56/L–A 63).

This is the argument by which Arnauld confessed himself especially im-
pressed, when he gave up the debate with Leibniz about individual concepts
(G II, 64/L–A 77). We shall consider what is the theory of truth to which
Leibniz here appeals, what were his reasons for holding it, and whether it
does entail his denial of trans-world identity.

II.a. *What is the theory?*

As usually stated by Leibniz, the conceptual containment theory of truth
applies to categorical propositions — that is, to propositions of subject-

predicate form. He sometimes applied it to conditional propositions, holding that they are true if and only if the consequent is contained in the antecedent (e.g. C 401); but that need not concern us here. The six traditional types of categorical proposition, with an example of each, are:

universal affirmative	All men are married.
universal negative	No man is married.
particular affirmative	Some man is married.
particular negative	Some man is not married.
singular affirmative	Arnauld is married.
singular negative	Arnauld is not married.

Only two of these types, the universal and singular affirmatives, are mentioned in the formulation of the theory that I have quoted (as also in C 16f., 519). This is no accident, for Leibniz applies the theory more straightforwardly to these types than to the other four. Nevertheless, it is clear that he intends the theory to determine an interpretation of all six types. And he sometimes expresses it in a more sweeping form, claiming that in *every* true proposition without restriction as to type, the concept of the predicate is contained in the concept of the subject (DM 8; C 388/P 77).

The conceptual containment theory is closely connected with Leibniz's preference for what is nowadays called an "intensional" as opposed to an "extensional" interpretation of the categorical propositions. (Perhaps in some sense it *is* that preference.) Roughly, an *extensional* interpretation is one that treats the truth or falsity of propositions as depending on relations among the extensions of their terms, where the extension of a term is the class of things that satisfy it, or which it characterizes.[4] And an *intensional* interpretation is one that treats the truth or falsity of propositions as depending on relations among the intensions — that is, the concepts — of their terms.

Since Leibniz's discussion partner, Arnauld, was co-author of a famous logic text, the *Port Royal Logic*, it is of interest to note that a similar distinction is made in that book between the comprehension (*compréhension*) and the extension (*étendue* or *extension*) of an idea. The comprehension of an idea consists of "the attributes which it includes in itself, and which cannot be taken away from it without destroying it." The extension of an idea consists of "the subjects with which that idea agrees", or which contain it (Arnauld and Nicole, 1965, I.6, II.17). The extension of a general term, however, may be viewed in the *Port Royal Logic* as constituted by the species that fall under it as well as the individuals that fall under it. Both

relations of the comprehensions of terms and relations of the extensions of terms are used in the *Port Royal Logic* in justifying basic rules of traditional logic (Arnauld and Nicole, 1965, II.17–20).

Scholars have noted that Leibniz worked out quite a variety both of intensional and of extensional treatments of the logic of predicates, and that he preferred the intensional approach.[5] For the sake of brevity, I will abstract somewhat from this variety and discuss only the one intensional and the one extensional interpretation that are most closely related to the controversy between Leibniz and Arnauld. Leibniz did not have fixed terminology corresponding to "intensional" and "extensional"; so I will use these more modern terms. He distinguished the two principal types of treatment variously as in terms of ideas [*secundum ideas* (C 300) or *per ideas* (G VII, 215)] on the one hand, and in terms of instances [*per exampla subjecta* (G VII, 215)] or in terms of individuals belonging to the terms [*ex individuis terminorum* (C 300)] on the other hand (cf. C 53/P 20). In Leibniz, unlike the *Port Royal Logic*, the extensional treatment is almost always in terms of the individuals, not the species. that fall under the general terms.[6]

The contrast between the two interpretations is easiest in the case of *universal affirmative* propositions. As an example, take the proposition, 'All gold is metal'. Extensionally interpreted, it means that the extension of 'gold' is contained in the extension of 'metal': the class of gold things is contained or included in the class of metal things. Intensionally interpreted, it means that the concept of metal is contained in the concept of gold. Extensionally, the subject is contained in the predicate in this type of proposition, if the proposition is true. Intensionally, the predicate is contained in the subject. Leibniz noted this "inversion" of the containment relation, contrasting his own intensional interpretation with the extensional interpretation of "the Schools", who

... say that metal is wider than gold, and if we wished to enumerate the individuals of gold on the one hand and the individuals of metal on the other, the latter would certainly be more than the former, which will therefore be contained in the latter as a part in the whole (C 53/P 20).

'Some metal is gold' is a *particular affirmative* proposition. Extensionally interpreted, it means that the extension of 'metal' intersects the extension of 'gold': the class of metal things and the class of gold things have at least one member in common. The intensional interpretation of particular affirmatives is less obvious. Leibniz wants to say that in these propositions too "the concept of the predicate is contained in some way in the concept of the

subject" — but in what way? It does not seem to be true that the concept of gold is included in the concept of metal. For something can be metal without being gold.

Leibniz's solution to this problem is that "in a particular affirmative proposition it is enough that the thing should follow when something is added." He gives an example to show what sort of addition he means: "although metal does not by itself contain gold, nevertheless some metal, with an addition or specification (for example, that which makes up the greater part of a Hungarian ducat) is of such a nature as to involve the nature of gold" (C 51/P 19). This choice of an example is not a happy one. For it seems doubtful that the concept of gold is contained in the *concept* of metal that makes up the greater part of a Hungarian ducat.

Leibniz gives a better example elsewhere, suggesting that 'Some man is a laugher' could be understood as 'A laugher-man is a laugher'. Here the "addition" of the specification 'laugher' to the concept of man yields a subject concept (of laugher-man) which manifestly does contain the predicate of being a laugher. It might seem that this method of intensional interpretation has the unacceptable result that all particular affirmatives turn out to be true, since we can always "add" the predicate concept to the subject concept. But Leibniz denies that we can always make such an addition. The qualified subject concept resulting from the addition must be *consistent* in order to verify a particular affirmative proposition, on his interpretation. Thus, he says that "a laugher-stone would not be a laugher since a laugher-stone involves a contradiction" (G VII, 214/P 118). Intensionally interpreted, therefore, 'Some A is B' means that the concept of A, with some consistent addition, includes the concept of B.

The intensional interpretation of universal and particular *negative* propositions may be seen as following from that of the affirmatives. Leibniz says that "negative propositions merely contradict the affirmatives, and assert that they are false". A particular negative does nothing but deny a universal affirmative, and "a universal negative proposition merely contradicts a particular affirmative" (C 52/P 19f). This treatment of the negative propositions, as negations of the affirmatives, can, of course, be applied to the extensional as well as the intensional interpretation.

The two interpretations of the universal and particular propositions can be summarized as follows, using the traditional square of opposition. (In each case, I have numbered the extensional interpretation (1) and Leibniz's intensional interpretation (2).)

All A is B.
(1) The class of *B* contains the class of *A*.
(2) The concept of *A* contains the concept of *B*.

No A is B.
(1) The class of *B* does not intersect the class of *A*.
(2) The concept of *A*, with any consistent addition, does not contain the concept of *B*.

Some A is B.
(1) The class of *B* intersects the class of *A*.
(2) The concept of *A*, with some consistent addition, contains the concept of *B*.

Some A is not B.
(1) The class of *B* does not contain the class of *A*.
(2) The concept of *A* does not contain the concept of *B*.

With regard to universal and particular categorical propositions at least, the intensional interpretation is substantially equivalent to the conceptual containment theory of truth. The intensional interpretation of singular propositions, however, is both more problematic and more relevant to our present investigation. At this point, it will be helpful to take up some terminology from the Leibniz-Arnauld correspondence. Arnauld agreed with Leibniz that there is a *complete concept* which God forms of every individual and which contains all of the individual's predicates — everything that will ever happen to that individual. That much clearly follows from the doctrine of divine omniscience that was common property to the two thinkers. They agreed that complete concepts of individuals are known only to God, not to us; we have to think individuals by incomplete concepts. They also spoke of an *individual concept* of each individual, which is minimally characterized by Arnauld in the following words:

It seems to me that I ought to regard as contained in the individual concept of *me* only what is such that I would no longer be *me* if it were not in *me*; and that everything that is on the contrary such that it could be or not be in *me*, without my ceasing to be *me*, cannot be considered as being contained in my individual concept (G II, 30f/L–A 30).

Leibniz maintained that the individual concept of every created individual is its complete concept. Arnauld disputed this, at least partly on the ground that it seemed to imply the denial of trans-world identity. For it follows from the definition of an individual concept that I could not be me if I lacked any predicate contained in my individual concept; so if my complete concept is my individual concept, it seems to follow that I could not be me if I lacked any of my actual predicates.

It seems clear that Leibniz interprets *singular affirmative* propositions as meaning that the concept of the predicate is contained in the individual concept of the subject. For instance, 'Arnauld is married' means that the concept of being married is contained in the individual concept of Arnauld. Thus, the singular affirmative is treated in the same way as the universal affirmative.[7]

The question naturally arises, however, why the singular affirmative should not rather be treated in the same way as the particular affirmative. Leibniz's intensional interpretation demands of particular affirmatives only that the concept of the subject *with some consistent addition* contain the concept of the predicate. Why should more be demanded of singular affirmatives? Why shouldn't 'Arnauld is married' mean that the individual concept of Arnauld, *with some consistent addition*, contains the concept of being married? And why wouldn't Arnauld be correct in saying that the concept of *married Arnauld* is his individual concept with a *consistent* addition?

These questions appear even more pressing when we consider the interpretation of *singular negative* propositions. The singular negative is surely supposed to be the simple negation, the contradictory, of the singular affirmative. Now, suppose the singular affirmative means that the individual concept of the subject contains the concept of the predicate. Then its negation must mean that the individual concept of the subject does not contain the concept of the predicate. Thus, 'Arnauld is not married' will mean that the individual concept of Arnauld does not contain the concept of being married. On this interpretation, the singular negative is treated in the same way as the particular negative.

But, suppose, on the other hand, that the singular affirmative means that the individual concept of the subject, with some consistent addition, contains the concept of the predicate. In that case, its negation must mean that the individual concept of the subject, with any consistent addition, does not contain the concept of the predicate. Or, in other words, that the individual concept of the subject excludes the concept of the predicate, so that the predicate cannot consistently be added to it.[8] 'Arnauld is not married' will, therefore, mean that the individual concept of Arnauld excludes the concept of being married. On this interpretation, which Leibniz seems to prefer, the singular negative is treated in the same way as the universal negative.

The intensional interpretation thus seems to generate a complete new square of opposition, with four types of proposition, out of the two original types of singular proposition:

x is F.	*x is not F.*
The individual concept of *x* contains the concept of *F*.	The individual concept of *x*, with any consistent addition, does not contain the concept of *F*.
x is F.	*x is not F.*
The individual concept of *x*, with some consistent addition, contains the concept of *F*.	The individual concept of *x* does not contain the concept of *F*.

In this square, as in the traditional square of universal and particular propositions, the diagonally opposite propositions are mutually contradictory. All the logical relationships of the square of opposition are reproduced.

This is a strange result. Leibniz certainly wants to have two intensional types of singular proposition instead of four. Yet, any choice of only two out of the four types in the square seems to run some risk of being arbitrary. Furthermore, Leibniz seems inclined to choose the top two types in the square, the two that correspond to the universal propositions; and there is a serious objection to that choice, in that those two types are not contradictories but contraries, which can both be false together. On the other hand, if he refused to choose, he would be left with four types of singular proposition, and would have to regard the two ordinary forms of singular proposition ('*x* is *F*' and '*x* is not *F*') as ambiguous — which also seems undesirable.

We do not have to guess what Leibniz's solution to this problem would be, for a considerable part of the problem occurred to him and was discussed by him.

Some logical difficulties worth solution have occurred to me. How is it that opposition works in the case of the singular propositions — e.g., 'The Apostle Peter is a soldier' and 'The Apostle Peter is not a soldier' — whereas elsewhere a universal affirmative and a particular negative are opposed? Should we say that a singular proposition is equivalent to a particular and to a universal proposition? That's right . . . . For some Apostle Peter and every Apostle Peter coincide, since the term is singular (G VII, 211/P 115).

Here Leibniz sees that there is a problem about treating the singular negative as the contradictory of the singular affirmative, and that the problem arises from the possibility of interpreting the singular propositions either as analogous to universal propositions or as analogous to particular propositions. His solution is to insist that the two interpretations of each singular proposition are equivalent, "coincide", and so collapse into one.

But how is that equivalence possible, within the framework of a Leibnizian intensional interpretation? Inspection of the apparent square of opposition

for singular propositions will show that the reduction of the four types to the two desired types requires that the individual concept of x with any consistent addition be equivalent to the individual concept of x. This requirement will be satisfied if and only if there is no predicate not already contained in the individual concept of x which can consistently be added to it. What is required, in other words, is precisely that the individual concept of x be a complete concept.[9] For a complete concept, as we shall see in Section II.f, is one to which no new predicate can consistently be added.

II.b. *The treatment of Actuality*

Leibniz says that as opposed to an extensional calculus based on relations of classes of individuals, "I have preferred to consider universal concepts or ideas and their combinations, because they do not depend on the existence of individuals" (C 53/P 20). I think we can guess what the advantage is that Leibniz thus claims for the intensional interpretation. There are well-known difficulties in maintaining the validity of the traditional inferences in the square of opposition, under an extensional interpretation, if the subject or predicate concept (or one of their complements) has an empty extension, because of the way in which the truth of the propositions, extensionally interpreted, depends on the existence of individuals satisfying (or not satisfying) the concepts. Leibniz could justify all the traditional inferences, under his intensional interpretation, without assuming anything about the actual existence of individuals, but assuming only that the subject and predicate concepts (and their complements) are consistent (and hence *possibly* exemplified).

From another point of view, however, the fact that under an intensional interpretation, the truth of the categorical propositions does not depend on the existence of individuals can be seen as a serious *disadvantage*. Many of the propositions to be interpreted are normally understood to be about the universe of actually existing things in such a way that their truth or falsity *ought* to depend on the existence of individuals. From the standpoint of common sense, it may be implausible to say (as the usual extensional interpretation does) that 'All centaurs are made of metal' is true if no centaurs exist, but it is at least as implausible to say (in accordance with the intensional interpretation) that 'Some dogs are green' is true if the concept of a green dog is consistent.

Leibniz will not be speechless in the face of this problem. He had a method for dealing with it. If 'Some pious man is poor' means that the poverty of a pious man is not just possible but actual, Leibniz will state it as 'A poor

pious man is existent', where 'existent' means existing in the actual world (C 270–273). Intensionally interpreted, this yields 'The concept of a poor pious man, with some consistent addition, contains the concept of existing in the actual world.' Here, we must think more about what is meant by 'consistent addition'. Does it mean an addition that could be made without engendering a *demonstrable* inconsistency – that is, an inconsistency that could be proved by a finite analysis? Or does it mean an addition that would not result in any conceptual inconsistency at all? I think the latter must be meant. For the interpretation is intended to apply to contingent propositions, which it would take an infinite analysis to prove or disprove (cf. C 272). Indeed, 'A poor pious man is existent' is such a proposition.

So interpreted, 'Some pious man is poor' will be true if and only if the concept of existing in the actual world can be added to the concept of a poor pious man without generating any conceptual inconsistency. And that will be true if and only if a poor pious man exists in the best of all possible worlds. For given the necessary existence of a God of perfect wisdom, power, and goodness, a conceptual inconsistency is involved in the actuality of any world but the best. This interpretation is borne out by Leibniz's attempts to define 'existence' and 'existent' in terms of entering into the most perfect series of things, or being compatible with more things than anything incompatible with it is, or being pleasing to God (C 9, 360, 376, 405/P 51, 65f; cf. Gr 325). I doubt that he was committed to any such definition, but I think it is clear that his intensional interpretation of propositions that are intended to be about the way things actually are will work only on the assumption that the concept of existing in the actual world and the concept of existing in the best of all possible worlds can be added, without any conceptual inconsistency, to exactly the same concepts.

Universal propositions can be treated in an analogous way. For example, if 'Every man sins' means, not that sinlessness is conceptually inconsistent with humanity, but only that sin is actually universal among men, it can be rendered as 'The concept of a man that does not sin contains the concept of not existing in the actual world' (cf. C 271). As for singular propositions, 'Arnauld is (actually) celibate' can presumably be rendered as 'The concept of celibate Arnauld contains the concept of existing in the actual world' – which will be true if and only if Arnauld exists, and is celibate, in the best of all possible worlds.

II.c. *An Anti-semantical Theory of Truth*

Leibniz held a very austere view of conceptual containment. He thought that all true propositions are either "identities" or reducible by (a perhaps infinite) analysis of terms to identities. Among categorical propositions, identities have such forms as '*A* is *A*', '*A* is not non-*A*', and '*AB* is *A*' (C 518, 369/L 267, P 59). And the reduction by analysis of terms proceeds by the use of definitions, or by substitution of (more complex) equivalent terms for the original terms of the proposition (see C 518, 68; G VII, 44/L 267). I take it from this that in truths that are not explicitly identical, conceptual containment is supposed to be based on a formal logical construction of the terms of the proposition out of simpler concepts. And this construction, at least insofar as it is relevant to the truth of the proposition, proceeds by the simple logical operations of conjunction and negation. Leibniz does speak of other "*simple particles* or primitive syncategorematic terms", such as 'in' (C 358/P 49), which play a part in the composition of concepts; but conceptual containment and exclusion seem always to turn on conjunction and negation. For if a predicate is contained in a subject concept, it is because they are identical or the subject concept is a conjunction one of whose conjuncts is identical with the predicate. And if a subject concept excludes a predicate, that is because it is the negation of the predicate (or *vice versa*), or because the subject or predicate or both are conjunctions of concepts and one of them is, or includes as a conjunct, a concept that is the negation of the other or of one of the other's conjuncts. I cannot see that Leibniz's theory of conceptual containment allows for any other relation of implication or inconsistency between concepts than these.

Leibniz may be contrasted with Descartes on this point. In his early *Rules for the Direction of the Mind*, Descartes held that we are acquainted with a number of "simple natures", which cannot be analyzed into anything simpler. In spite of their simplicity, he thought these natures may have a necessary connection with each other; one may be

. . . so implied in the concept of another, by some confused reason, that we cannot conceive either distinctly, if we judge that they are separated from each other. Thus figure is conjoined with extension, motion with duration or time, and so on, because it is impossible to conceive of a figure that has no extension nor of a motion that has no duration (Descartes, 1913, X, 421/1955, I, 42).

Descartes could not explain these implications in the way proposed by Leibniz, for Descartes maintained that figure, extension, motion, and duration are simple, and explicitly denied that they can be analyzed. He could not,

therefore, regard them as conjunctions of simpler properties. In other words, Descartes supposed that there are primitive necessary implications between concepts, which are not to be explained by structures of conjunction and negation within the concepts. He was less explicit about primitive inconsistencies between concepts, but he did say that the simple natures can be sorted into those that are ascribed to the intellect, those that are ascribed to bodies, and those that are common to both (Descartes, 1913, X, 419/1955, 41). Implicit in this division, I think, is the assumption that there is some sort of necessary incompatibility between the purely intellectual and the purely material natures, even though they are simple. Knowledge and doubt, for instance, cannot have a shape.

Descartes's position is plausible. If there are any simple concepts, I should think there probably are primitive implications and inconsistencies between them. Leibniz will have none of it, however. He maintains an account of conceptual implication and inconsistency which is an ancestor of the attempt to explain all logical necessity and all logical implication in terms of analyticity. One place in his philosophy where something hangs on this is in the proofs of the divine existence. Early and late he gives an argument for possibility of God's existence that presupposes that conceptual inconsistency cannot arise except by conjunction of concepts one of which is the negation of the other (A II, i, 271f/L 167f; Mon 45; cf. texts published in Janke).

The consequence of defining truth in terms of conceptual containment, so formally understood, is a radically anti-semantical theory of truth. That is, it is a theory in which the truth or falsity of a proposition does not depend at all on what objects — or even on what properties — are represented by the concepts making up the proposition. Truth or falsity depends only on the logical structure of the proposition and the internal logical structure of its concepts. In this sense, truth is not a semantical but a purely syntactical property of propositions, according to Leibniz's theory.

The point is underlined by two consequences that follow from the theory, although Leibniz may not have recognized them. (1) Suppose, as Leibniz did, that all concepts are ultimately composed of simple concepts. It follows from Leibniz's theory that God does not need to know what simple concepts are involved in a proposition P, or what properties are represented by the simple concepts in P, in order to know whether P is true or false. He has only to know the logical structure of P in order to know whether P is true. Suppose, for example, that God intuits a representation of a complete analysis of P, in which each simple concept is represented consistently and uniquely by a symbol. He could know whether the represented proposition is true or false

without knowing what the symbols stand for. Of course, Leibniz would insist that God does know what simple concepts are involved in every proposition (and what properties they represent, if that is different); but his knowledge of the truth and falsity of propositions does not depend on that.

(2) The world is perfectly symmetrical with respect to simple concepts, if Leibniz's theory of truth is correct. Take any true proposition P. Suppose A is a complete analysis of P; perhaps A is infinitely complex. And let F and G be two simple concepts occurring in A. Now consider the proposition Q formed by interchanging F and G at all of their occurrences in A. It follows from Leibniz's theory that Q is true if P is, because they have exactly the same logical structure and therefore Q's subject concept will contain Q's predicate if and only if P's subject concept contains P's predicate.

This is not to say that there is no place in Leibniz's philosophy for a semantics — that is, for a theory of how thought and/or language represent things distinct from themselves. On the contrary, Leibniz believed that each of us has infinitely many thoughts that "express", and constitute "perceptions of", things outside our own minds; and he devoted a lot of attention to this relation, which is, in a broad sense, a semantical relation. It is just that in his philosophy the truth and falsity of propositions are determined independently of this semantical relation (or perhaps more accurately, prior to it). This makes it all the more difficult to answer the question to which we turn next.

II.d. *Why Did Leibniz Hold This Theory?*

Clearly, the conceptual containment theory of truth is an extraordinary doctrine. Why did Leibniz believe it? Leibniz saw some advantages for formal logic in an intensional interpretation of the logic of predicates; but those formal considerations are inconclusive, and Leibniz knew it. (See especially Kauppi, 1960, pp. 247–252.) Recently, Robert Sleigh (1982) has expressed confidence that the "explanation of why [Leibniz] thought that true propositions about actual substances were true in virtue of certain connections among concepts" is to be found in "Leibniz's story of creation". I am sure at least a large part of the explanation is there. Specifically, I do not believe Leibniz would have adopted the conceptual containment theory of truth had it not been for his prior adherence to a form of the Principle of Sufficient Reason that makes every truth follow, in some sense, from the necessary existence and nature of God. In the works of the 1680s and after, Leibniz sometimes proposes a derivation of the Principle of Sufficient Reason from the conceptual

containment theory of truth (C 519/L 268; cf. G VI, 414). Couturat (1972, p. 20f) even held that Leibniz identified the Principle with the theory. But it is not plausible to suppose that Leibniz accepted the Principle of Sufficient Reason *because* he believed the conceptual containment theory of truth. The Principle was one of his first metaphysical commitments. In a letter to Magnus Wedderkopf (in 1671) and in *The Philosopher's Confession* (in 1673), we see the young Leibniz wrestling with the apparently deterministic implications of the Principle; but the conceptual containment theory of truth makes no appearance there (A II, i, 117f/L 146f; Conf). Leibniz would have believed in the Principle of Sufficient Reason even if he had never thought of the conceptual containment theory of truth. But the theory does provide an *explanation* of *how* there is a sufficient reason for every truth; and I think that is the point of the passages in which Leibniz seems to derive the Principle of Sufficient Reason from the theory. (Cf. Brody, 1977, p. 53f.)

Perhaps the theory was practically forced on him by his commitment to the Principle. He may have been unable to see a *sufficient* reason as having been given for any truth that has not been shown to follow from concepts. That is not the only way in which the Principle of Sufficient Reason can be understood, but it is one way. Historically, the most important alternative, I think, is to suppose that the decision of a free will can constitute a sufficient reason for a truth that does not follow from concepts; but Leibniz firmly rejected this view when it was proposed to him by Clarke (G VII, 359f, 363, 367, 371f/L–C 20f, 25, 30, 36; cf. Rowe, 1975, Ch. 2, and Adams, 1978).

Leibniz presents his conceptual containment theory to Arnauld, however, not as a consequence of the Principle of Sufficient Reason, but as an analysis of the notion of truth. Apart from the theory, he says, "I do not know what truth is" (G II, 56/L–A 63). So, we still want an explanation of why he thought the theory is required for an understanding of the notion of *truth*. And the first question that will occur to most of us in this connection is, 'Why didn't Leibniz define the truth of propositions in terms of their *correspondence with facts*?' After all, as I noted at the end of Section II.c, Leibniz did believe that our concepts and true beliefs express a world of things distinct from us.

Some remarks of Michael Dummett (1981, p. 442) about Frege may shed some light on this aspect of Leibniz's thought:

Frege, although a realist, did not believe in the correspondence theory of truth . . . . The truth of a (complete) sentence or of the thought which it expresses is not relational: there is no question of our having first to discover the state of affairs which the sentence is intended to describe, and then to compare the sentence with it to see whether or not it

corresponds; the sentence is simply true or false without qualifications. Facts, in Frege's ontology, are not further constituents of reality, . . . alongside objects, truth-values, concepts, relations, and functions. They are, rather, to be identified with true thoughts.

Much of what Dummett says here about Frege could also be said about Leibniz. Facts have no more independent a place in Leibniz's ontology than in Frege's. This world, for Leibniz, is the totality of (finite) things, not of facts. It is virtually defined as *aggregatum rerum finitarum*, "the aggregate of finite things" (G VII, 302/L 486). If reality is composed of things rather than of facts, it falls primarily to concepts rather than propositions to correspond with reality; for it is concepts that express (or fail to express) things. That may be why it was natural for Leibniz to think of a proposition as a complex of concepts or terms — a conception of the proposition for which there was also precedent in medieval logic. And given that what one is doing in framing or asserting a proposition is connecting concepts or terms in a certain way, the realist's demand that every truth should have "some foundation in the nature of things" (DM 8) naturally comes to expression as a demand that there should be "some real connection between" the terms of the proposition that is true (G VII, 300/L 226; cf. C 518f, G II, 56/L 267, L–A 63).

I think that what has just been said is, indeed, important for an apprecia-tion of the conceptual framework in which Leibniz saw the issue, but the objection that was raised in terms of a correspondence theory of truth can still be raised in these new terms. At least for propositions about actual things, we may ask, why can't the real connection between the terms of the proposi-tion be a containment of the predicate in the concrete thing to which the subject concept corresponds? Isn't that, indeed, the normal understanding of the Aristotelian formula "*praedicatum inest subjecto*" ("the predicate inheres in the subject") to which Leibniz so often appeals? Why must the predicate be contained in the *concept* of the subject?

The *Port Royal Logic*, which was largely Arnauld's work, seems to hold this view that the predicate of a true proposition is contained in the *concrete* subject, without implying that it is contained in the *concept* of the subject. It states, for example, that "it is true that lions are all animals, that is to say, that each one of the lions includes the idea of animal" (Arnauld and Nicole, 1965, II, 17). This statement presents an easy target for Leibniz. For how does an individual, concrete lion include the *idea* of animal? Presumably, lions do not conceive or understand the idea of animal. And we who do have the idea in the sense of conceiving or understanding it are not animals *because* we conceive or understand it; we also understand the idea of lion, but are not

therefore lions. If lions are animals because the *idea* of animal is contained in something, the idea or concept of lion seems to be the likeliest container. And, indeed, the concept of lion does in the relevant sense include the concept of animal.

But, if lions are animals by virtue of *containing* something other than the *idea* of animal, what would it be? Two candidates come to mind. (1) Could it be the universal property, animality? Like other early modern philosophers, Leibniz was no Platonist about universals. The only universals he recognized were concepts and "possibilities in resemblances" (NE III, vi, 32). And since he thought that relations between substances exist only in the mind, he would have to say that a lion's resemblance to other animals is contained, strictly speaking, in the concept that a mind forms of lions by comparing them with other animals, rather than in the lion itself – though he would also say that it must be "expressed" by something in the lion itself. (2) There are, of course, concrete particular animals; and if identity can be regarded as a (degenerate) case of containment, we could say that each of the lions contains an animal – namely, itself. But Leibniz might well have thought this *too* degenerate a case of containment to satisfy his belief that predication should be explained in terms of containment. These considerations may also be at least part of the explanation of Arnauld's ready approval of Leibniz's conceptual containment theory of truth.

These are technicalities, however; and we ought not to lay too much weight on them. If Leibniz had wanted to avoid the conceptual containment theory, he could have said that (at least in some cases) the real connection between the terms of a proposition on which its truth depends is that its predicate corresponds with, or expresses, the concrete individual things that its subject concept corresponds with or expresses (or some of them, if the proposition is particular). Besides which, we shall see that the containment of predicates in concrete individual substances was not for Leibniz a rejected alternative to the conceptual containment theory of truth; there is a sense in which he was inclined to affirm it as a concomitant of the conceptual containment theory. In fact, I believe it was largely because of his views about the structure of concrete individual substances that he found it plausible to include all their predicates in their concepts.

II.e. *Conceptual Containment and Trans-World Identity*

Before taking up these considerations about the structure of individual substances, however, I want to point out an important flaw in the argument

against trans-world identity from the conceptual containment theory of
truth. Leibniz and Arnauld appear to have assumed that the denial of trans-
world identity follows from Leibniz's theory of truth. This is a natural
assumption to make, but it is incorrect. The two doctrines are logically
independent: neither entails the other.

Let us note first that the denial of trans-world identity does not entail
the full conceptual containment theory of truth. If each possible individual
exists in only one possible world, I think it does follow that the concept of
each possible individual contains (in some relevant sense) its whole history
in the one possible world in which it occurs. But it does not follow that the
concept of each possible individual contains an answer to the question
whether that individual (actually) exists, or whether its possible world is
actual. For there would be no inconsistency in denying trans-world identity
(in agreement with Leibniz) while holding a voluntaristic doctrine of creation
(in sharp disagreement with Leibniz). In such a voluntaristic doctrine it would
be held that God could create an inferior world — indeed, any world at all —
without doing anything conceptually inconsistent, and hence that no answer
to the question which possible world is actual, or which possible creatures
exist, is contained in any concepts. And, so far as I can see, that is perfectly
compatible with the claim that each possible individual creature exists in
exactly one possible world; but it is not consistent with Leibniz's conceptual
containment theory of truth, which is explicitly applied to *all* propositions
(including existential propositions).[10]

More important, for our present purpose, is the fact that the denial of
trans-world identity does not follow from the conceptual containment
theory of truth. I shall try to establish this fact by sketching a view in which
both the conceptual containment theory and the trans-world identity of
created individuals are affirmed. This view starts with Leibniz's thesis that
individual concepts are complete concepts. Completeness can be understood
here as a purely logical property of concepts. "An individual or complete
term" may be defined as one to which it is "superfluous" to add any other
term whatsoever (C 375/P 65; cf. Kauppi, 1960, pp. 168, 231). A complete
concept, in other words, is one to which no predicate not already contained
in it can be added (without conceptual inconsistency). Or what comes to the
same thing, it is a concept which contains one member of every pair of
mutually contradictory predicates. Such a concept obviously will contain all
the predicates of anything that satisfies it.

Completeness is a very interesting property of concepts from a logical
point of view. The part of logic that most interested Leibniz is the logic of

predicates. He thought of all concepts as generated, principally by conjunction and negation, from predicates which are absolutely simple. In this generation, there are two types of concepts that are distinguished from all others as the extreme cases of simplicity and complexity. Both of the distinguished types of concepts are associated with distinguished features of Leibniz's metaphysics. At one extreme, the absolutely simple concepts are associated with God, who may be defined as the being that satisfies all the absolutely simple concepts (see A II, i 271f/L 167f). At the other extreme are the complete concepts, which are reached by conjoining more and more predicates until no new predicate can be added without some conceptual inconsistency; and these concepts are associated with individuals. Indeed, Leibniz uses the idea of completeness to provide a purely logical characterization of individual substance; he virtually *defines* an individual substance as a thing whose definitive concept is complete (DM 8; cf. C 375/P 65).

What are the predicates with respect to which individual concepts are complete? That is, what are the predicates with respect to which an individual concept, according to Leibniz, contains one number of every mutually contradictory pair? Does the individual concept of Leibniz, for example, contain eactly one of the predicates 'is more than one meter tall' and 'is not more than a meter tall'? Presumably not; for Leibniz was less than one meter tall in 1647 and more than one meter tall in 1670. For this reason, the predicates with respect to which Leibnizian individual concepts are complete will in general be indexed to times, as Benson Mates (1972, 108f) has pointed out. The individual concept of Leibniz will contain the predicates 'is not more than one meter tall in 1647' and 'is more than one meter tall in 1670' (which are perfectly consistent with each other).

As Mates also points out,

But, if Leibniz considered [an individual] concept as containing a time-parameter, it is hard to see why he did not also build in a parameter relating to the different possible worlds. Thus the complete individual concept of Adam would not only indicate what attributes he had at what time, but what attributes at what time (or other time-like relation) *in what world*.

In this way, Mates suggests, Leibniz could accept trans-world identity "and yet could retain the principle so important to him that every individual concept involves all that would ever happen to a corresponding individual and reflects all the other individual concepts that are compossible with it." (Mates, 1970, p. 109). In other words, the individual concept of an individual that exists in more than one possible world could be complete — complete with respect to world-indexed predicates.

Completeness with respect to world-indexed predicates is not in itself enough for Leibniz's conceptual containment theory of truth. For, if the individual concept of Arnauld contains the predicates 'is married at some time in some possible world' and 'is always celibate in some possible world', the conceptual containment theory will require that the individual concept of Arnauld also contain an answer to the question whether the *actual* world is one in which Arnauld is married or celibate. And the world-indexed predicates do not directly tell us that. The solution to this problem would be easy for Leibniz, however. It is essentially the same as his solution to the problem of accounting for actual existence and actual non-existence in terms of conceptual containment. On the view suggested by Mates there would be no *internal* conceptual inconsistency in a possible world in which Arnauld marries, but Leibniz could still say that there would be an external conceptual inconsistency in God's actualizing it, because it is an inferior world. The predicate of *actually* marrying is, therefore, not contained in Arnauld's individual concept, which contains rather the predicate of *actual* perpetual celibacy because it contains a history of perpetual celibacy for Arnauld, not as the only possible history for him, but as the history that is indexed to the world that is, in fact, the best of all possible worlds.[11] Thus, actual celibacy and actual existence would be contained in Arnauld's individual concept in exactly the same way. Since an account of trans-world identity in terms of world-indexed concepts can satisfy the conceptual containment theory of truth in this way, the theory does not require a denial of trans-world identity.

III CAUSATION AND PERCEPTION AS INTERNAL TO SUBSTANCES

The richly deserved prestige of Russell's and Couturat's work on Leibniz set a fashion of trying to see as much of his philosophy as possible as derived from his logic and philosophy of logic. And much in Leibniz's own work, including his anti-semantical theory of truth as well as such papers as 'First Truths (C 518–523/L 267–270) seems to invite this approach. But the deductive order in which Leibniz presents his doctrines, especially in his writings of the mid-1680s, is misleading. An adequate foundation of the system – or even a fully adequate explanation of his having held it – cannot be found in his philosophy of logic. We have to turn to his nonformal views, not only about God and creation, but also about causation and perception, in order to understand the motivation for his philosophy of logic, which was as much shaped by them as they by it (Cf. Mondadori, 1977.) In particular, it is clear

that he found in his views about causation and perception reasons for denying trans-world identity.

Trying to respond to the common-sense appeal of Arnauld's affirmation of trans-world identity, he wrote,

It seems to us indeed that this square of marble brought from Genoa would have been exactly the same if it had been left there, because our senses let us judge only super-ficially, but at bottom because of the connection of things the whole universe with all its parts would be entirely different, and would have been another universe from the be-ginning, if the least thing in it happened otherwise than it does (G II, 42/L–A 46).

This passage does not present a fully articulated argument. But I take it Leibniz means that, if we combined our ordinary conceptions of individuality and individual identity with a correct understanding of the connections of things, we would not make the "superficial" judgments of counterfactual identity that common sense, in fact, makes, but would conclude that no actual individual would exist in a world that differed from the actual in respect of "the least thing".

In particular, Leibniz probably supposes, plausibly, that Arnauld's belief that he could have married and would still have been himself is based on the assumption,

> (A)   In some possible world, w, there exists a man whose charact-eristics and history are exactly like those of Antoine Arnauld in the actual world until some time at which, in w, the man marries.

Leibniz seems to be saying that this assumption is mistaken. Indeed, it appears that he is not only denying (A) but also committing himself to

> (B)   There are no two possible worlds that are qualitatively identical before a certain time but different thereafter,

and

> (C)   No individual substances in (qualitatively) different possible worlds are exactly alike, qualitatively, during an initial portion of their histories.

Leibniz seems still to be committed to (C) twenty-four years later in the *Theodicy*, where he says that among those possible worlds that "differ from the actual world only in one particular thing and its consequences" there are worlds

... in which will be found, not exactly the same Sextus that you have seen [in the actual world] (that is impossible; he always carries with him what he will be), but similar Sextuses, who will have everything that you already know of the real Sextus, but *not everything that is already in him*, without being noticed, nor consequently everything that will yet happen to him (T 414, my italics).

It follows from (C) that an Arnauld who married, in another possible world, must have had there, from the very beginning of his existence, different characteristics from those of the actual Arnauld. And Leibniz evidently thinks those differences would be sufficient grounds for denying trans-world identity. This is not the place to discuss at length whether trans-world identity must, indeed, be denied if (C) is accepted and (A) is rejected. I think Leibniz's inference at this point is at least plausible. Our strongest intuitions of trans-world identity are of individual identity in alternative possible continuations of the history of a world — that is, in alternative possible continuations of exactly the same history of the world and of the individual until the time at which the continuations diverge. A convincing argument against the possibility of such alternative continuations of the same history would greatly weaken the intuitive support for trans-world identity, in my opinion.

But does Leibniz have a convincing argument against that possibility? He rejects it "because of the connection of things". But the "connection" referred to is presumably a feature of the *actual* world — the laws or order in accordance with which every actual event has always been prefigured in its causes and will always be recorded in its effects, as Leibniz believes. Why couldn't some other *logically* possible world, by virtue of a difference in its laws, or by a miracle, diverge qualitatively form the actual world only after a certain time? And why wouldn't that permit trans-world identity? Our next task is to investigate these questions, considering how individual substance is related, first, to laws of nature, and second, to the possibility of miracles, according to Leibniz. Then, in the third place, we shall consider the extent to which the "connection of things" referred to here is to be understood in terms of perception.

III.a. *Substance and Law*

To the question, why there couldn't be a possible world that is just like the actual world up to some time but diverges qualitatively thereafter, due to some difference in the *laws* of that possible world, I think Leibniz would reply that any difference in the laws of the universe would imply a qualitative

difference between the possible worlds from the very beginning — indeed, that it would imply a qualitative difference in every individual substance from the very beginning. This is connected with Leibniz's views about trans-temporal identity. Almost immediately after the passage I have quoted about the marble from Genoa, Leibniz goes on to say,

Since then we suppose . . . that it is I who exist during the time AB and who am then in Paris, and that it is still I who exist during the time BC and who am then in Germany, there must necessarily be a reason that makes it true to say that we endure — that is to say, that I, who have been in Paris, am now in Germany. For if there is no [reason], one would have as much right to say it is someone else. It is true that my inner experience has convinced me *a posteriori* of this identicalness, but there must also be a reason *a priori* (G II, 43/L—A 46).

The unsupported assertion that there must be a reason *a priori* may strike us at first as merely a question-begging assertion that the reason must be conceptual containment; but I think that is an anachronistic reading of the text. Leibniz does not usually use '*a priori*' in the epistemological sense to which we have become accustomed since Kant, but in its older, original sense, in which *a reason a priori* is an argument from the causes rather than the effects of the fact to be proved. For Leibniz a proof *a priori* explains the fact proved; a proof *a posteriori* does not; that is the crucial difference between them.[12] Here Leibniz is saying that there must be a reason that explains why different states at different times should be said to belong to the same substance. Or, in other words, he is saying that there must be a reason that explains his own identity through time; he does not think that that identity can be an inexplicable primitive.

Its explanation is, indeed, to be sought in a conceptual containment, according to Leibniz.

Now it is impossible to find another reason [for this identicalness] except that my attributes of the preceding time and state are predicates of one and the same subject; *insunt eidem subjecto* [they inhere in the same subject]. Now what is it to say that the predicate is included in the subject, except that the concept of the predicate is included in some way in the concept of the subject? And because, from the time I began to be, it could truly be said about me that this or that would happen to me, it must be acknowledged that these predicates were laws included in the subject or in my complete concept, which makes what is called me, which is the foundation of the connection of all my different states and which God knew perfectly from all eternity (G II, 43/L—A 47).

We may wonder why Leibniz thought that the inclusion of earlier and later states in a single *concept* is peculiarly apt to explain a trans-temporal identity. Surely he did not suppose that a concept arbitrarily framed to include his

own youth and the old age of Sir Isaac Newton could ground the trans-temporal identity of an individual as well as his own identity through time is grounded by his individual concept. What is it, then, about individual concepts that fits them to explain trans-temporal identity?

The answer to this question is to be found in the claim that "these predicates were *laws* included in the subject or in my complete concept, . . . which is the foundation of the connection of all my different states". I think the laws here are conceived of as *causal* laws, and as founding a connection of successive states not only in thought but also in reality. The greatest threat to our understanding of this part of Leibniz's philosophy is a prejudice that may have its historical roots in Locke and Hume — an assumption that conceptual connections cannot also be causal connections, that they impose necessity only on our thought, and cannot explain why anything occurs in reality. Leibniz certainly did not make this assumption, as is clear from his conceptual containment theory of truth and his use of it to explain the Principle of Sufficient Reason. Leibniz thought that conceptual connections are precisely what do ultimately explain the existence of all real things and the occurrence of all real events. He adhered to the Aristotelian notion of formal cause [cf. NE III, vi, 13 (G V, 288)], according to which a good definition is not just a structure of thought but expresses an essence which is a causal power in anything that satisfies the definition, making it act in accordance with the definition.

This view of the matter is more fully developed in Leibniz's later writings, with the aid of his metaphysical conception of "force". There are several texts in which Leibniz seems to explain the trans-temporal identity of a substance in terms of "the perpetual law which makes the sequence of perceptions that are allotted to it" and in which "its individuality consists" [T 291 (1710)]. "That there is a certain persisting law, which involves the future states of that which we conceive as the same: that is what I say constitutes the same substance" [G II, 264/L 535 (1704)].[13] Successive momentary states belong to the same individual substance, according to Leibniz, if and only if they are produced by the same persisting individual *law*. Now, if we think of causal laws as abstract objects, we might think that the same law could be responsible for the sequence of states of several different individual substances. But Leibniz evidently has something else in mind. As Louis Loeb (1981, pp. 317–319) has pointed out, Leibniz's criterion of trans-temporal identity depends on his denial of causal interaction between created substances. The succession of states of each individual substance or "monad" forms an isolated causal series, so that two states occurring at different times

belong to the same individual substance if and only if the earlier is a cause of the later. "Perception is the operation proper to the soul, and the nexus of perceptions, according to which the subsequent ones are derived from the preceding ones, makes the unity of the perceiver" [G II, 372/L 599 (1709)].

The "law" or "nexus" that constitutes the unity through time of an individual substance is for Leibniz not merely a formula that describes the series of states. It is concretely realized in the substance — indeed in every momentary state of the substance — and can be called a "force" that produces all its subsequent states. The concept of force is given a central metaphysical role in Leibniz's later writings. "The very substance of things consists in the force to act and be acted on", and therefore a denial of "lasting force" to created things, reserving it to God alone, comes to the same thing as Spinoza's "doctrine of most evil repute", "that God is the very nature and substance of all things" (G IV, 508f/L 502; cf. RML 421, G II, 133/L–A 167, G IV, 594). The force that constitutes the very substance of things is the "primitive force" that Leibniz discusses in his correspondence with de Volder. Primitive forces are dispositional properties; they are "internal tendencies of simple substances, by which according to a certain law of their nature they pass from perception to perception" (G II, 275). But they can also be identified with laws; "the primitive force is as it were the law of the series" of successive states of an enduring thing (G II, 262/L 533). This "law of the series" is surely also the "persisting law" which constitutes the trans-temporal identity of an individual substance and which is included in its individual concept. Thus a part at least of the individual concept is more or less identified with a concrete force or tendency in the concrete substance.

We began this section of our investigation with the question, why there couldn't be a possible world that is just like the actual world up to some time but diverges qualitatively thereafter, due to some difference in the laws of that possible world. I think we are now in a position to see that Leibniz rejects an assumption that gives rise to that question. He rejects the assumption that causal laws and relations are imposed from the outside on individuals that are causally neutral in their individual nature (G IV, 507, 584/L 500; cf. Nobis). Causal powers, dispositions, or forces are primitive features of reality as Leibniz conceives of it; they are not to be analyzed in terms of causally neutral states plus extrinsic laws. Leibniz thinks that the laws are *internal* to individual substances, and that they are permanent and unchanging throughout the substance's history. In a possible world that had different laws from the actual world, therefore, every individual substance affected by the difference must always have been constituted by a "primitive force" that is

qualitatively different from that which constitutes the corresponding indi-
vidual in the actual world. In that respect, the individuals of that other
possible world differ qualitatively from their actual counterparts from the
very beginning of their existence. I think Leibniz could plausibly claim that
that difference, in something so basic as the primitive force that constitutes
them, is enough to rule out trans-world identity and make them distinct
individuals.

We are also in a better position now to understand Leibniz's assumptions
about the relation between concepts and reality. If the internal constitution
of an individual substance contains a causal force or law which is the founda-
tion of the trans-temporal identity and trans-world non-identity of that
individual, surely the individual or definitive concept of that substance should
be or include a representation of its internal causal structure. "It will be
insisted that [Julius Caesar's] nature or form corresponds to" his complete
concept — and Leibniz does not reject this assumption, though he combats
an objection that is based on it (DM 13). He took for granted that the defini-
tive concept (God's concept) of a substance would represent its internal
causal structure, as his Aristotelian ideal of "real" and "causal" definition
(DM 24, G IV 424f./L 293) and conception of formal causation would lead
one to expect. That, I think, is why he saw no need to justify his inference
from the claim that all the states of a substance follow from its individual
concept to the claim that the substance by itself is a sufficient cause of all
its states.[14] In the same way, we can see that the containment of Adam's sin
in Adam's individual concept is not an *alternative* to the containment of the
sin in Adam himself. For Adam's individual concept represents Adam's
permanent internal causal structure, so that whatever sin follows from the
one follows from the other also.

III.b. *Substance and Miracle*

What I have been suggesting is that Leibniz may have assumed that two
possible worlds cannot be qualitatively identical before a certain time but
then diverge by virtue of a difference in their laws, on the ground that,
in his opinion, a difference in the laws implies a qualitative difference in
the individual substances of the two worlds from the very beginning of
their existence — a qualitative difference in the primitive forces of the sub-
stances, as he would have said in 1704. It remains to consider why he should
not have thought that two possible worlds, with the same laws, could differ
qualitatively only after a certain time in one of the worlds. Shouldn't an

omnipotent God be able to suspend the operation of any created forces and work a miracle for which there was no preparation in the previous qualitative history of the world?

Admitting that God could, by a miracle, prevent Antoine Arnauld's primitive force from having its natural effect of lifelong celibacy would undermine the case we have been developing for denying Arnauld's trans-world identity with a possibly married man. It is easy enough to see why Leibniz would think that a man whose primitive force was qualitatively different from the beginning of his existence would not be identical with Arnauld; but why would a miracle preclude trans-world identity? Suppose there is a possible world, w, whose history is exactly like that of the actual world up to 1632. In w, of course, there is a man, a, born in 1612, who is qualitatively identical with the actual Arnauld for the first twenty years of his life. In particular, the primitive force that a has in w is qualitatively identical with the primitive force that Arnauld has in the actual world, and would have lifelong celibacy as its natural effect. But we are to suppose that in w, a marries in 1632 as a result of a miracle that prevents a's primitive force from having its natural effect. The occurrence of one such miracle does not seem to me a plausible reason for denying that a could be, in w, numerically the same person as the actual Antoine Arnauld. Leibniz could support his rejection of trans-world identity more easily if he denied that there is any such possible world as w. But would his commitment to divine omnipotence permit him to deny it?

The tradition of Christian Aristotelianism, to which broadly speaking Leibniz's views on causality belong, had limited the dependence of causality on God's will more than many moderns would. Many medieval philosophers held, for example, that while God could choose to create or not to create fire, He could not have withheld the (causal) power of heating from fire if He did create it. These predecessors of Leibniz would generally have said, however, that once God has created a substance with certain causal powers, He could miraculously *suspend* those powers, or prevent them from operating, and could miraculously annihilate the creature, and could equally refrain from doing any such miracle. God's miraculous powers are so important to orthodox Christianity that it would have been difficult for Leibniz to deny them. We are not surprised to find him saying, in the *Preliminary Discourse to the Theodicy* (Section 3), that "the laws of nature are subject to the dispensation of the Legislator", and that "God can dispense creatures from the laws that he has prescribed for them, and produce in them what their nature does not hold, in doing a *Miracle*". We shall have to see in what sense he can have accepted this.

The possibility of miracle was a sensitive issue for Leibniz. It engages his attention in several sections of the *Discourse on Metaphysics*, where he explicitly asks "how it is possible for God sometimes to influence men or other substances by an extraordinary or miraculous occurrence, since it seems that nothing extraordinary or supernatural can happen to them, given that all their events are only consequences of their nature" (DM 16). His reply depends on a distinction between two types of law. Miracles "are always in conformity with the universal law of the general order" (DM 16), but not with certain "subordinate maxims, or laws of nature" (DM 17: cf. DM 6–7). The same view, which we must now examine more closely, is stated briefly when Leibniz introduces the subject of miracles in his correspondence with Arnauld (G II, 51/L–A 57).

The universal law of the general order is a law that governs the mutual relations of absolutely all substances and events in the universe. By definition, it is without exception; any law to which there is an exception is not universal in the relevant sense. Leibniz thought we can see that every possible world has an order of this sort. He appealed to geometrical examples. No matter what sort of line is drawn,

... it is possible to find a concept or rule, or equation common to all the points of that line, in virtue of which [its] changes [of direction] must occur . . . . Thus it can be said that in whatever way God had created the world, it would always have been regular and in a certain general order. But God has chosen the one that is the most perfect, that is to say, that is the simplest in hypotheses and the richest in phenomena (DM 6, G VII, 312)

Leibniz regarded it as a trivially necessary truth, therefore, that the universe is ordered by a universal law to which there are no exceptions – not even miraculous exceptions.

The general order of the actual world, however, cannot be comprehended by any created mind (DM 16). (How that is consistent with the preeminent simplicity of the actual general order, Leibniz does not explain, so far as I am aware.) On the other hand, "everything that is called natural depends on less general maxims that creatures can comprehend" (DM 16). These less general maxims include the "laws of nature" that human science can in principle discover. And there can be exceptions to them; indeed, Leibniz believes that miracles are such exceptions.

For our present purpose, the most important question here is how these two types of law are related to the primitive force that constitutes a created substance. For if the universal law of the general order is incorporated in the

primitive force of a particular substance to which a miracle is not going to happen, that substance would have to have had a qualitatively different primitive force if a miracle were going to happen to it, and two possible worlds could no more differ with respect to miracles than with respect to laws without differing qualitatively from the beginning. But if it is only the laws of nature that are incorporated in the primitive forces of individual substances, then two possible histories of a substance could be qualitatively the same up to a certain time, proceeding from the same primitive force, and could then diverge by a miracle, which would require an interference with the operation of the primitive force in one of the histories.

So far as I know, Leibniz does not directly answer this question about primitive forces. The conception of primitive force is not even fully developed (nor the term 'primitive force' employed) in the *Discourse on Metaphysics*. But he does propose there a distinction between the "essence" and the "nature" of an individual substance, corresponding to the distinction between the two types of law.

That could be called our essence or idea which includes all that we express, and as it expresses our union with God himself, it has no limits and nothing goes beyond it. But that which is limited in us can be called our nature or our power [*puissance*], and in this regard what goes beyond the natures of all created substances is supernatural (DM 16).

Two interpretations of this passage are possible. (1) It is the "nature or power" that here corresponds to the "primitive force" of Leibniz's later writings. It is a causal force in the concrete substance, but the "essence" is only an idea in the mind of God. It is only the subordinate laws of nature that are incorporated into concrete substances. (2) It is the "essence" that here corresponds to the "primitive force" of the later writings. It is not only an idea in the mind of God, but also a causal force in the concrete substance, which thus incorporates the universal law of the general order. I believe the second interpretation is to be preferred, at least as an understanding of the predominant tendency of Leibniz's thought; but there is a case to be made for the first interpretation, and we will begin with it.

One might try to argue for the first interpretation on the ground that, for Leibniz, later states of a free creature (Caesar's crossing the Rubicon, for example) are only contingently connected with their earlier (DM 13; cf. Gr 387). But this is a weak argument. For Leibniz also holds that actions of a free creature are only contingently connected with the creature's complete concept, but at the same time denies that there is a possible world in which a creature satisfying Caesar's complete concept turns back from the Rubicon.

So, why couldn't he also deny that there is a possible world in which the contingent connection between Caesar's previous states and his action fails? The contingency in both cases can be understood in terms of the non-existence of a finite proof, which is not enough to establish a possible world (as discussed in Section I, above).

The strongest evidence I have found for the first interpretation is in a letter of April 1687 to Arnauld, a letter which surely must have left Arnauld thinking that Leibniz believed in miracles and helps of grace ("extraordinary cooperations of God") that are not produced by anything in creatures. I am inclined, in the end, to think that Leibniz meant to be (misleadingly) non-committal, asserting nothing about extraordinary cooperation, when he wrote in this letter, "Setting aside extraordinary cooperation, [God's] ordinary cooperation consists only in conserving the substance itself in conformity with its previous state and the changes that [that state] holds" (G II, 91f./L–A 115). But a reader might be pardoned for taking Leibniz to mean that in metaphysical rigor, God does something more than conserve a substance when He makes it an object of His extraordinary cooperation. And a similar implication might easily be drawn when Leibniz, in the same letter, asserting that "the actions of minds change nothing at all in the nature of bodies, nor bodies in that of minds", adds that "God changes nothing there [i.e. in their nature] on their occasion, except when he does a miracle" (G II, 93/L–A 117). But what is especially striking about the treatment of miracle in the letter is that Leibniz offers an explicit criterion of the miraculous:

I admit that the authors of occasional causes will be able to give another definition of the term, but it seems that according to usage a miracle differs internally and by the substance of the act from an ordinary action, and not by an external accident of frequent repetition; and that strictly speaking God works a miracle when he does a thing that surpasses the forces that he has given to creatures and conserves in them (G II, 93/L–A 116; cf. G VII, 366/L–C 30).

In reading this definition, we should bear in mind that Leibniz and Arnauld attacked occasionalism from quite different directions. Leibniz repeatedly accused the occasionalists of implying that all events in nature are miraculous (e.g. in G II, 57f./L–A 65). Occasionalists would not admit this; Malebranche held that most events in nature are not miraculous because God produces them not by particular but by general volitions (for instance, not by willing that I see red on this occasion, but by willing that all human minds shall see red when their bodies are affected in a certain way, in which man happens now to be affected.) Leibniz here suggests that this leaves the occasionalists with too superficial a conception of miracle. His comments accurately reflect

a fundamental difference between him and Malebranche, which is that Leibniz recognizes created substances as true causes, whereas Malebranche accepts only God as a true cause. And Leibniz proposes a criterion of the miraculous that does leave Malebranche with too many miracles.

It threatens to leave Leibniz himself with too few miracles, however. This is a serious matter in his correspondence with Arnauld, who already feared that Malebranche would end up, not with too many miracles, but with none, or with miracles inadequately distinguished from God's ordinary activity (RML 219–222). Leibniz will end up with no miracles, by his own criterion, unless he thinks that God sometimes does to creatures things that "surpass the forces that he has given to" them. This letter clearly implies that Leibniz did think that, and it was at best disingenuous if he really thought that there is in each created substance a causal structure that produces *all* its states, miraculous as well as ordinary.

Yet, I think there is a good case for supposing that Leibniz was disingenuous in just this way, and that by 'forces' in this letter, and 'nature or power' in DM 16, he means only a part of the primitive force or total causal structure of a created substance. This is strongly suggested by DM 16, where he says,

If we include in our nature everything that it expresses, nothing is supernatural to it, for it extends to everything, since an effect always expresses its cause and God is the true cause of substances. But as that which our nature expresses more perfectly belongs to it in a special way, since it is in that that its power consists, and since [its power] is limited, as I have just explained, there are plenty of things that surpass the forces of our nature, and even those of all limited natures. Consequently, in order to speak more clearly, I say that miracles and extraordinary cooperations of God have this peculiarity, and that they could not be foreseen by the reasoning of any created mind, however enlightened it might be, because the distinct understanding of the general order surpasses them all.

There are three points to be noted in this passage. (1) The "effect" of which Leibniz says here that it expresses God as its cause is surely not just an idea in God's mind, but a concrete structure in the substances of which "God is the true cause". This agrees with the fact that Leibniz is prepared to say, not merely of an individual *concept*, but of "each individual substance", that in expressing the whole universe "it expresses also the aforesaid miracles" (G II, 40f/L–A 44). The nature construed as including everything expressed by the substance is clearly the same as "our essence . . . which includes all that we express", and can be identified with what Leibniz later calls "primitive force", if this talk about substances expressing even miracles is to be believed.

(2) The "power" of our nature consists only in "that which our nature

expresses more perfectly". What Leibniz "has just explained" (in DM 15) about the limited power of finite substances is that "practical" talk about such substances "acting" on each other, and thus "exercising power", can be understood in terms of differences in how well each substance "expresses" what is going on. The forms in which this recurrent Leibnizian theme is developed in DM 15, however, seem to me to shed less light on DM 16 than does Leibniz's later statement that a substance is "*active* insofar as what is distinctly known in it serves to give a reason for what happens in another, and *passive* insofar as the reason for what happens in it is found in what is distinctly known in another" (Mon 52). Now if something happens in a substance miraculously, in a way that does not agree with the laws of nature that finite minds can understand, the reason for that event will presumably be vastly less distinctly "known in" the substance (that is, it can much less easily be read off the previous states of the substance) than if it were produced in accordance with those laws of nature. And this will be a reason for saying that in the miraculous event the substance is not active, nor exercising any power, and that the event exceeds anything it has the "power" to produce — even though, in metaphysical rigor, the miraculous states of the substance are produced by the substance itself in accordance with the universal law of the general order that is included in the "essence" that God has given the substance. This interpretation of DM 16 is supported by the fact that in the summary of DM 16 that Leibniz sent to Arnauld in February 1686, " our nature", whose forces are surpassed by "the extraordinary cooperation of God", is equated with "our distinct expression, which is finite and follows certain subordinate maxims" (G II, 13/L–A 5f). Similarly, when Leibniz implies to Arnauld that God sometimes "does a thing that surpasses the forces that he has given to creatures", he may have meant only that God sometimes does a thing that is not distinctly expressed by creatures because it does not agree with the laws of nature that finite minds can grasp — though he can hardly have expected Arnauld to understand him in this sense. And, when Leibniz's letter carries a strong suggestion that in miracles God changes something in the "nature" of created substances, he may be thinking only of changes in (or exceptions to) the subordinate laws that are intelligible to us.

(3) The inability of created minds to foresee miracles and extraordinary cooperations of God, or to understand the order on which they depend, plays a central role in this interpretation. It is a point that is often emphasized in Leibniz's discussions of miracle (RML 203, C 508, G III, 353). The reason why we cannot foresee miracles is that the order on which they depend is too complex for us to grasp. Accordingly, Leibniz sometimes indicates that

miracles are distinguished from non-miraculous events by their *not* having *simple* explanations. In the copy he kept of his April 1687 letter to Arnauld, immediately after the definition of miracle that I have quoted, Leibniz says that if God decreed that any body swung in a circle in a sling should *always* continue in circular motion when released from the sling, "without being pushed or restrained" by any other body, this would be a miracle even though it happened regularly, "since this motion cannot be explained by something simpler" (G II, 93/L–A 116).[15] The simplicity of explanations plays a particularly decisive part in the discussion of miracles in a draft Leibniz wrote in 1702 for a reply to François Lamy, an occasionalist critic of the system of pre-established harmony. Here Leibniz repeats his objection that, if God is the sole cause of natural events and produces natural events whenever He acts according to general laws, then natural events will differ from miracles only by an external accident of frequent repetition; "the natural and the miraculous would not differ in themselves, but only by an extrinsic denomination taken from the antecedents and consequences. For what is preceded and followed by [events] like it would be natural, and what is not such would be a miracle". But in going on to explain that "there is an essential difference between the natural and the miraculous," what Leibniz emphasizes is that "not every sort of rule or law is fit to make a law of nature". For example, if God established a rule that a planet should always move in an elliptical orbit, without any mechanical action of other bodies to keep its path elliptical,

God would have established a perpetual miracle, and . . . it could not be said that the Planet went that way in virtue of its nature or following natural laws, since it is not possible . . . to give a reason for such a phenomenon . . . because that [elliptical] motion is composite, hence the reason must come from simpler motions.

Whereas, if the composite motion is caused by simpler motions of other bodies, "then it will be in these simpler reasons that the nature of the thing will consist" (G IV, 587f). In short, the essential, internal distinction of the miraculous from the natural seems here to depend on the *simplicity* of the explanations, or the system of laws, in accordance with which natural events are produced.

I would not claim that this conception of the difference between natural and miraculous events was fully or adequately thought through by Leibniz, nor that it is perfectly consistent with all his utterances. One problem that he does not notice (so far as I am aware) is that the free actions of creatures appear to be miraculous by the criteria of DM 16. For Leibniz certainly

thinks that free actions "could not be foreseen by the reasoning of any created mind" because of the complexity of the order on which they depend.

Despite such problems, I think the tenor of Leibniz's philosophy in general favors the view that the whole universal law of the general order is incorporated in the primitive force or concrete causal structure of each created substance. One further argument for this interpretation is the following. According to Leibniz, we — not only our concepts but also we concretely — express our whole universe, including all the miracles that occur in it. How do we express it? By virtue of our primitive force, from which always proceed perceptions of the whole universe. If our primitive force incorporated only the laws of nature and not the whole law of the general order of the universe, then the divine "clock-maker" would have to be adjusting the pre-established harmony at every instant in order to keep us perceiving the miracles that occur in the universe — a consequence that would certainly be unpalatable to Leibniz.

Leibniz himself points out a similar problem, in a curious section of the *Theodicy* where he suggests that the miracle of Cana (John 2: 1–11) may have been worked "by the ministry of some invisible substances, such as the Angels, as the Rev. Father de Malebranche also holds",[16] rather than by a direct divine intervention in nature.

If the changing of water into wine at Cana were a miracle of the first rank, God would have changed thereby the whole course of the universe, because of the connection of bodies; or else he would have been obliged to obstruct that connection, miraculously again, and to make the bodies not involved in the miracle to act as if no miracle had happened; and after the miracle was over, he would have had to restore everything, even in the bodies that were involved, to the state it would have come to without the miracle, after which everything would be returned to its original channel. Thus this miracle demanded more than it seemed to (T 249).

This is one of a group of texts from the last years of Leibniz's life, in which he speaks somewhat differently about miracles but draws the line between divine and creaturely action exactly where (in my opinion) his fundamental principles require it to be drawn. It is only "miracles of the first rank" (cf. G VII, 418/L–C 93) that require direct divine action. "The changing of water into wine would be a miracle of that [inferior] species" that angels might be naturally able to do. "But creation, incarnation, and some other actions of God surpass all force of creatures, and are truly miracles, or even mysteries" (T 249). Let us consider the principal actions that are reserved to God on this view.

One is creation (which presumably included conserving creatures in

existence). Leibniz nowhere suggests that any creature or finite being can cause the existence of another creature. God is the sole cause of the actual existence of things. But given the existence of a creature, produced by God, the creature itself produces *all* its own *states*; nothing more than the existence of the creature has to be supplied by God. That is what Leibniz generally says when he is not thinking about miracles, and it would be good if his conception of miracles could be made to agree with it.

Incarnation is a special case. Obviously, nothing would be an incarnation of God unless God participated directly in it. But incarnation is not a matter of causing states of a created substance; rather, it is a union of the divine nature with a human nature. There is another text in which Leibniz, proposing to account for most apparent miracles as produced through the ministry of angels, says,

Thus there would be no absolute miracles in these things, except the creation of things and the union of God with the first creature [that is, with the human nature of Jesus Christ]; the rest would happen by the laws of nature, but by laws that would apply to the first creature and the angels. Through the union, moreover, God would not change the laws of the first creature, since he would have no need of this change This union would therefore change nothing in the phenomena, even though the state of union differs internally from non-union (RML 413).

A third action that is reserved to God alone is annihilation. In his correspondence with Clarke, Leibniz introduces his distinction between "miracles of an inferior sort, which an angel can work", and "miracles which none but God can work . . . , of which kind are creating and annihilating" (G VII, 377/L–C 43).[17] Leibniz may have thought that God never, in fact, annihilates a created substance. In the text quoted in the previous paragraph, he says, "I prefer to say that God has not acted miraculously except in the Creation and the incarnation" (RML 413). But Leibniz certainly believed that God *can* annihilate created substances; that is the reverse of the coin of his frequently repeated orthodox belief that created substances are continually conserved in existence by God (DM 14, 28, 30; Gr 381). "*God is the conserver of all things*. That is, things are not only produced by God when they begin to exist, but they also would not continue to exist unless a certain continuous action of God terminated in them, on the cessation of which they themselves would also cease" (Gr 307). This does not mean that created substances are not the causes of all their own states. "I grant in some way . . . that God continually produces all that is real in creatures. But I hold that in doing it he also continuously produces or conserves in us that energy or activity which according to me constitutes the nature of substance and the

source of its modifications. And so I do not grant that God alone acts in substances, or alone causes their changes" (G IV, 588f).

What particularly concerns us here is *how* God can annihilate created substances, according to Leibniz. There are two possibilities. (1) No matter what individual substances, and the world, have been like hitherto, God can at any time withdraw His conserving action from any one created substance, or from all, thereby annihilating them, causing them to lapse into non-existence. (2) God does not act in time, although He causes the existence of things in time. The existence of created substances at any time (and at all times) is caused by a single timeless act of God, by which He actualizes the possible world that He has chosen. He can annihilate a created substance, in that He can, in His single creative act, cause the existence of a substance to have an end in time; but if He does so, that end must, by the very nature of substance, have been expressed and perceived in the substance from the very beginning of its existence, so that a substance that will not be annihilated must always have been qualitatively different from what any substance that God annihilated could have been.

Of these two interpretations, the second is consistent with propositions (B) and (C), and the first is not. The second is therefore more favorable to the rigorous exclusion of trans-world identity, insofar as that exclusion is supported by (B) and (C). Part of the second interpretation (God's acting timelessly to cause the existence of things in time) is certainly in agreement with Leibniz's views. I do not know that he ever addressed the issue of whether a creature annihilated must always have been qualitatively different from any possible creature that would not be annihilated. But I think an affirmative answer (as in the second interpretation) would agree best with the general structure of his philosophy, although it would be the more daring answer, in that it would impose an additional (presumably conceptual) limitation on the scope of God's omnipotence. Thus, while there is certainly a tension in this part of Leibniz's thought, we have not been compelled to conclude that Leibniz was committed to a treatment of the miraculous that is inconsistent with (B) and (C).

III.c. *Perception and Relations*

There is a similar tension in Leibniz's thought about relations, and here I think we will have to conclude that he was less successful in tying an individual substance's predicates as tightly to its internal structure as to its

concept, and hence less successful in grounding his denial of transworld identity. Issues about the possible existence of an actual substance in a world in which some of its actual relations would fail are not prominent in Leibniz's discussions of trans-world identity, which are much more concerned with whether there are possible worlds in which actual creatures act or suffer otherwise than they do in the actual world. A focus on the latter question is easily explained by Leibniz's (and Arnauld's) religious and ethical interests. Nonetheless, we can ask whether according to Leibniz there is a possible world in which Adolf Hitler, for example, does not exist, or is less malicious than in the actual world, but in which there is a man both numerically and qualitatively identical with the actual Antoine Arnauld (except, of course, for the merely "extrinsic denominations" that Arnauld actually has by virtue of his [distant] relations to Hitler).

This question can be divided into two parts: (1) Are there possible worlds in which there is a man *qualitatively* identical with the actual Antoine Arnauld, but no one qualitatively identical with the actual Adolf Hitler, except for purely relational properties of the individuals? (2) If there are such possible worlds, does at least one of them contain someone *numerically* identical with the actual Antoine Arnauld? Leibniz has little to say about the second of these questions, whether differences in purely relational properties would always preclude trans-world identity. His general denials of trans-world identity seem to commit him to answer the second question negatively if he answers the first affirmatively; but it might be difficult to make a negative answer to the second question plausible. In what follows, we will focus on the first question. Leibniz has a lot to say that bears on it – but perhaps not consistently.

A negative answer to it seems to be implied in the passage about the block of marble from Genoa. For Leibniz says there not merely that the *stone* would have been qualitatively different from the beginning if *it* were going to stay in Genoa, but that "because of the connection of things the whole universe *with all its parts* would be entirely different, and would have been another universe from the beginning, if *the least thing in it* happened otherwise than it does" (G II, 42/L–A 46, my italics). So, if Leibniz is denying that there are possible worlds in which the block of marble, or its counterpart, is qualitatively the same as in the actual world until the time of its actual transportation, but then stays in Genoa, he is equally denying that there are possible worlds in which one substance is internally different from its actual counterpart but other substances start out only relationally different from their actual counterparts. What is "the connection of things" which precludes

such possible worlds? We have seen that for Leibniz the primitive force of each individual substance provides the connection that precludes (if anything does) pairs of possible individual histories that differ internally after but not before a certain time. Is there something in Leibniz's conception of things that might play an analogous role in precluding pairs of possible individual histories that differ relationally but not internally?

The obvious candidate for this role is *perception*. Leibniz held that each substance always perceives everything that ever occurs in the whole universe. Throughout his life, Antoine Arnauld, for instance, perceived the existence of Adolf Hitler and every detail of Hitler's career, though of course Arnauld was not conscious of these perceptions. It seems to follow that if a possible world in which Hitler does not exist contained a man who is internally just like the actual Arnauld, that man would, in that world, "perceive" some things that do not exist. Perhaps this inference could be resisted by holding that any sufficiently complex internal state of a perceiving substance could be placed in one-to-one correspondence with *any* sufficiently complex possible world, with or without Hitler, and would therefore constitute an accurate perception of whatever world the substance existed in. Leibniz does often explain perception in terms of one-to-one correspondence, but I doubt that he would accept this trivialization of his concept of perception.

If he does not accept it, his alternatives are to admit that there are possible worlds in which some substance fails to perceive the whole world just as it is (fails to perceive it as not containing Hitler, for instance), or to deny that there are possible worlds that differ qualitatively solely with respect to the existence or internal properties of some but not all of their substances. There is much to incline Leibniz to the second alternative. He thought that it follows from the nature of substance (and, indeed, from the nature of truth) that there are no purely extrinsic denominations, and hence that every substance perceives the whole universe (C 520f/L 268f). Perhaps he thought that this precludes possible worlds in which any substance fails to perceive the whole world just as it is. (Of course, he recognized that there are false beliefs, but he thought that the beings that have them also, unconsciously, perceive the world exactly as it is.) On this view, the whole general order of the universe would be incorporated in the concrete substance as it is included in the substance's complete individual concept. The relational laws of the general order would be incorporated in the substance's perceptions as the laws of intrasubstantial causation are incorporated in its primitive force. And all of the substance's states and relations would follow from the force and the perceptions it has at any given time, so that there would be no

possibility of a predicate's being contained in the individual concept and not being contained in the concrete substance.

This has the very important advantage for Leibniz of providing a non-trivial sense in which possible individuals can fail to be *com*possible with each other. In thinking about the problem of evil in more or less Leibnizian terms, it is natural to ask, 'Why couldn't God have improved the world by replacing Hitler with a morally better individual, while leaving the excellences of more excellent individuals (such as Arnauld) unchanged?' One answer that Leibniz seems to want to give to this sort of question is that God could not do that because Arnauld (with his actual excellences) is not compossible with any such Hitler-substitute. But how are we to understand this incompossibility? Suppose that Hitler is replaced by a more virtuous substitute in some possible worlds that contain a man whose internal, non-relational qualities and states are exactly the same as Arnauld has. Of course if Arnauld's individual concept includes the whole history of the actual world, Arnauld himself will be absent, by definition, from any possible world containing such a substitute in place of Hitler. In that case, there will be a trivial sense in which Arnauld is incompossible with a Hitler-substitute. But this sort of incompossibility does not answer the question, why God could not have made a better world by replacing particularly vicious or unhappy creatures with better and happier ones while replacing his more excellent creatures with counterparts[18] that would have exactly the same excellences internally and would differ only in their extrinsic denominations. To this question, I suppose, Leibniz could reply that in the proposed replacement world the creatures that would be internally just like the excellent actual creatures, but in a world that is not just like the actual world, would thereby lack an important (relational) excellence of all actual creatures, in that they would not perceive their whole world just as it is. But in this reply it is not incompossibility but harmony that is called in to solve the fundamental problem.

Perhaps indeed the appeal to incompossibility just is a covert appeal to considerations of harmony. But it would be something more if Leibniz thought that the internal states of possible substances are perceptions that are conceptually connected with the existence and states of other substances, so that no individual in any possible world has exactly the same history of internal states as any individual in any other possible world. Then the internal histories of substances in one world would be incompossible with the internal histories of substances in any other world; and this incompossibility would put a constraint on God's options that would be quite independent of the constraints of harmony.

There is another, more speculative line of argument that might have influenced Leibniz to think that the same internal history of a substance cannot occur in more than one possible world. For suppose that is not the case. Then possible internal histories of substances will be independent building blocks of possible worlds, the same history occurring in different worlds. And the structure of each possible world will be of the form, 'There exists a substance with internal history H_1 *and* there exists a substance with internal history H_2 *and* so forth'. The coexistence of the substances, and their other relational properties, will then be conceptual consequences of this conjunction of existences; for Leibniz certainly did not think there could be relations between substances that are not conceptually contained in the internal properties of those substances. There are no primitive spatial relations, for example, between substances in Leibnizian possible worlds. If the internal histories of substances are logically independent, however, the relational properties of any one substance will not follow logically from *its* internal properties (its perceptions) alone, but rather from a conjunction asserting the existence and internal properties of all the substances involved in the relations. In this way, existence will be conceptually prior to coexistence.

There are indications, however, that Leibniz seriously entertained the idea of analyzing existence in terms of coexistence. "The Existent could be defined", he wrote, "as what is compatible with more things than anything else that is incompatible with it" (C 360/P 51), and "Nothing else is explicable in existence than entering into the most perfect series of things" (C 9). Now these are clearly suggested as analyses of the notion of *actual* existence. Strictly speaking, they could presuppose the notion of *existing in a possible world* as a primitive in terms of which the notions of being compatible with things and entering into a series of things are to be analyzed in their turn. But Leibniz would have a more elegant and radical analysis of existence if he did not presuppose the notion of existing in a world in this way; and I suspect he did not mean to presuppose it. He can avoid presupposing it if he does not think of possible worlds as composed of logically independent internal histories. For then he could say that to perceive a certain possible world *is*, by definition, to enter into that world; and he could define actual existence as entering into (i.e. perceiving) the best possible world. This complete reduction of the notion of existence would be achieved by making the perceptions (internal states) of each substance logically inseparable from its whole world.

Despite these reasons for ascribing to Leibniz the view that God could not

have actualized an individual substance without actualizing the whole possible world perceived by that substance, there is at least one text in which Leibniz explicitly contradicts it; and indeed, it is hardly to be reconciled with his conception of the pre-established harmony. Every student of Leibniz is familiar with his statement that the series of future perceptions that follows from his present nature "would not fail, and would happen to me just the same, if everything that is outside of me were destroyed, provided that there remained only God and I" (DM 14; cf. G I, 382, IV, 484/L 457). This strongly suggests that Leibniz thought that without creating any other substance, God could create a substance with qualitatively the same primitive force and series of perceptions as Leibniz actually has. But this is not the strongest evidence, for Leibniz might conceivably be using a counterfactual conditional with an impossible antecedent, as a rhetorical device to express the mutual causal independence of created substances.

More significant is the fact that in explaining the pre-established harmony Leibniz repeatedly says that only the action of God can cause created substances to correspond to each other's perceptions. "There is nothing but God . . . to be the cause of this correspondence of their phenomena, and to make what is particular to one to be public to all" (DM 14). The "ideal influence of one Monad on another . . . cannot have its effect except by the intervention of God . . . For since one created Monad cannot have a physical influence on the interior of another, it is only by this means that one can have any dependence on another" (Mon 51). Leibniz presents the difficulty of achieving this correspondence as a proof of the infinite knowledge and power of God.

For since each of these Souls expresses in its way what goes on outside, and cannot have this from any influence of other particular Beings, or rather must draw this expression from the resources of its own nature, each one must necessarily have received this nature (or this internal reason of the expression of what is outside) from a universal cause on which these Beings all depend and which makes one agree and correspond perfectly with another; which is not possible without an infinite knowledge and power, and by a great artifice, especially with respect to the spontaneous agreement of the machine with the actions of the reasonable soul, [so that Bayle] doubted, as it were, whether it did not surpass all possible wisdom, saying that the wisdom of God did not seem to him too great for such an effect, and recognized at least that the feeble conceptions that we can have of the divine perfection had never been put in such high relief (NE IV, x, 10; cf. G IV, 578, VII, 411/L–C 83f).

But the harmony or correspondence of the perceptions of created substances with each other could hardly be such a powerful proof of God's infinite

wisdom and power if no creator could have created a world that lacked such correspondence. The use of the pre-established harmony to prove the greatness of the creator seems therefore to presuppose that, among the possible worlds that God could have actualized, were some in which created substances fail to correspond with each other's perceptions.

Particularly interesting is a statement that Leibniz made in 1698, that "God was able to give each substance its phenomena independent of those of others, but in that way he would have made, so to speak, as many worlds without connection as there are substances" (G IV, 519). The first thing that is noteworthy here is that Leibniz says explicitly that God could have created substances that would not have corresponded with each other's perceptions. And I believe that this was his consciously held opinion, at least from 1686 to the end of his life. The evidence to the contrary is outweighed by the statements, scattered throughout his mature writings, describing the pre-established harmony as explainable only by the action of God.

The other thing that is noteworthy in this text is the suggestion that a collection of substances that did not correspond with each other's perceptions would not be sufficiently connected to constitute a single "world". Perhaps Leibniz did not think that every state of affairs or set of creatures that God could have actualized should be counted as a "possible world" (or part of a possible world); perhaps only complete sets of perfectly harmonious created substances are to count as possible worlds. Certainly Leibniz was so convinced of the supreme worth of harmony that he would not have expected God seriously to consider actualizing any state of affairs that did not satisfy this constraint. And I do not know of any passage in which Leibniz himself speaks of "possible worlds" that do not satisfy it. If Leibniz assumed that the notion of a "possible world" is subject to this requirement of harmony, he would have a clear reason to hold that substances with different relational properties in different possible worlds must have had different internal properties (different perceptions) from the very beginning; and this would help to explain and support his denial of trans-world identity. But it would also move him still farther from the conception of possible worlds in terms of which the question of trans-world identity has been raised in our time.

III.d. *Conclusion*

In pursuit of a rationale for Leibniz's denial of trans-world identity, I have sketched many ways in which Leibniz might have thought that all the states

and relations of every possible created substance are contained in the primitive force and the perceptions of substance at all times just as rigorously as they are contained in the complete individual concept of the substance. I do not claim to have presented a complete explanation of the rigor that would be involved. The sketch works out well for Leibniz's views about causality within the monad, and I think it is consistent with his treatment of miracles. But it runs into problems in his treatment of inter-monadic relations, with respect to which I cannot now see how to reconcile all of his intentions.

Even on his own terms, I think Leibniz is left without a completely satisfying justification for his denial of trans-world identity. He seems to have thought that it was solidly grounded in his conceptual containment theory of truth. But I have argued that it does not follow from that theory even if the theory is correct.[19]

NOTES

[1] See the Bibliography of this volume for the abbreviations by which works of Leibniz are cited. Entries separated by a slash refer to the original and a published English translation of the same passage; but I take responsibility for the translation of all quotations, except as noted. All works are cited by page number, except as noted in the Bibliography.

[2] Notably from Mates (1972), Mondadori (1975) and (1977), and Wilson (1979). Here, as elsewhere in both text and notes, authors other than Leibniz are cited by surname, an index number (if needed to distinguish two or more publications of the same author), and page numbers (where relevant, with exceptions noted in the Bibliography). Consult the Bibliography of this volume for other details.

[3] I have discussed this reply at some length in Adams (1979).

[4] See Kauppi (1960, pp. 254–256) for a comparison of Leibnizian and modern conceptions of classes.

[5] The interpreter to whom I owe the most on this subject is Kauppi. The whole of her excellent book is a study on the intensional and extensional approaches in Leibniz's logic. She seems to me correct in her reply (pp. 210, 251f.) to the charge of Couturat (1901, pp. 19–32) that Leibniz ought to have preferred the extensional interpretation.

[6] G VII, 244/P 141 seems to present an exception, as noticed by Kauppi (1960, p. 43).

[7] Cf. Arnauld and Nicole (1965, II. 3), where it is held that singular propositions are more like universal than particular propositions in their logical properties.

[8] For Leibniz's treatment of universal negatives in terms of the predicate being excluded by the subject, see G VII, 208/P 112.

[9] The connection of this solution with the doctrine that individual concepts are complete is noted by Kauppi (1960, p. 213).

[10] Some scholars have thought that Leibniz meant existential propositions to be an exception to the theory; but I believe that is an untenable interpretation, as I have argued in Adams (1977, 30f).

¹¹ This solution does require a revision of Arnauld's definition (or partial definition) of 'individual concept' (G II, 30f/L—A 30, quoted above). For in this solution the predicate of perpetual celibacy (i.e. *actual* perpetual celibacy) is supposed to be contained in Arnauld's individual concept although there are possible worlds in which Arnauld would not be perpetually celibate and would still be himself. What remains true in this solution is that nothing is contained in Arnauld's individual concept, *independently of the question which world would be chosen by God as the best possible*, except predicates such that Arnauld would not be himself if they were not true of him.

¹² The old sense of '*a priori*' and '*a posteriori*' is still found in the *Port Royal Logic*, which speaks of matters in which our mind may be "capable of finding and comprehending the truth, either in proving the effects by the causes, which is called demonstrating *a priori*, or inversely in demonstrating the causes by the effects, which is called proving *a posteriori*" (Arnauld and Nicole, 1965, IV, 1). The conception is clear, although the authors go on immediately to remark that "it is necessary to extend these terms a little in order to reduce all sorts of demonstrations to them". There are many indications in Leibniz's writings that he understood '*a priori*' in the older sense that I have indicated. He says, "Proof *a priori* or Apodeixis is explanation of the truth" (C 408). He equates knowledge *a priori* with knowledge through causes (C 272). Reason "would make known the reality [of a definition] *a priori* in presenting the cause or possible generation of the thing defined" (NE III, iii, 15). Most telling, perhaps is the fact that Leibniz treated indirect proof (*reductio ad absurdum*) as a case of proof *a posteriori* – presumably because it does not explain *why* the proposition proved is true (C 154, which may have been written in 1677). Nonetheless, there are passages in Leibniz which could easily be read in the newer sense in which '*a priori*' means simply 'non-empirical'. He regularly connects the *a posteriori* with experience, and can contrast "truths *a posteriori*, or of fact" with "truths *a priori*, or of Reason" (NE IV, ix, 2). I suspect, indeed, that Leibniz played a crucial role in the transformation of the meaning of '*a priori*'. I believe that 'proof *a priori*' always *meant* for him 'proof that explains the reason for the fact that is proved.' But it follows from his epistemology and his conceptual containment theory of truth that *a priori* knowledge in this sense coincides with knowledge that is independent of experience and with knowledge by analysis of concepts. It was therefore easy for him to use the term '*a priori*' when the idea that was foremost in his mind was not that of knowledge by causes but one of these other ideas that were, for him, coextensive with it. By the same token, it was easy for a Leibnizian like Alexander Gottlieb Baumgarten to *define* the *a priori* as the non-empirical (Risse, II, 649). Christian August Crusius, on the other hand, who was more resistant to Leibnizian views about sufficient reason, was still using '*a priori*' and '*a posteriori*' in the old sense in the middle of the eighteenth century: "A demonstration *a posteriori* is one from which is known only that a thing is – for example by experience, or by reduction to absurdity, or by comparison with some other thing. A demonstration *a priori* is one from which is known why a thing is – for example where we deduce the attributes of things from definitions, or draw out the effect from the causes and determining reasons" (Risse, 1970, II, 690; a similar conception is found in Crusius, 1753, Section 35).

¹³ These words are part of a passage that Gerhardt prints in brackets, meaning (I presume) that there is some indication in the copy retained by Leibniz at Hanover that they may have been omitted from the copy sent to de Volder. But there are enough similar texts to remove any doubt that Leibniz did, indeed, hold the view expressed here. For other passages, and a good discussion, see Loeb (1981, pp. 317–319).