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Terence Parsons

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TERENCE PARSONS

UNIVERSITY OF MASSACHUSETTS, AMHERST

INTRODUCTION[1]

In "A Prolegomenon to Meinongian Semantics" ([6]; hereafter "PMS") and in [7] I attempted to develop a theory of *objects* for a Meinongian ontology. That theory presupposed an account of two sorts of properties, called "nuclear" and "extranuclear" properties. This paper is an attempt to provide such an account. The theory developed here is a rich and parochial one, based on the notion of "possible world." In the last section I will show how, relative to this account of properties, Leibniz's ontology of monads (on one construal, anyway) corresponds to a fragment of Meinong's ontology of objects.

Since most of this paper utilizes the controversial notion of a "possible world," the Editor has requested that I include a defense of this line of approach. Is it really useful to base a theory of properties on such a notion?

I don't believe that this question can be answered with any degree of certainty by anyone right now. In my view, "possible worlds" are theoretical entities, and as such they are as useful or useless as the theories within which they appear. At present, theories using possible worlds are both varied and controversial. Some have a long tradition; for example, probability theory, where possible worlds typically appear under the title "possible cases". More recently they have been used in theories dealing with necessity, possibility, essence, belief, knowledge, proposition, intension, freedom, etc. This is a fruitful tradition, and I don't believe that we know at present whether it will last, or whether it is a blind alley which will eventually be seen as an historical aberation. But even in the latter case there is hope for theories based on possible worlds. For even when scientific or philosophical progress leads to the abandonment of an earlier tradition, many of the "results" of that earlier tradition tend to be preserved in some new guise. So in spite of the controversial nature of possible worlds, I think we have learned enough of lasting value from their employment to justify not terminating their tradition yet.

1: NUCLEAR PROPERTIES

When are properties p and q the same property? One common answer to this question is that $p = q$ if and only if it is necessary that p and q apply to the same individuals. This is the convention adopted in this paper. In particular we imagine that there are various ways the world might have been. We objectify these "ways" and form them into a class, W, which we call the class of "possible worlds." In each possible world there will be individuals. Let us use "I_w for the class of individuals of world w (where $w \in W$). Perhaps the same individuals appear in all the worlds or perhaps this never happens; I will make no assumptions at all about the relationship between I_w and $I_{w'}$, where $w \neq w'$ (except that I assume there is at most one world, w, for which I_w is empty).

Now we can say that $p = q$ if and only if for every world w, the individuals that have p in w are exactly the same as the individuals that have q in w. Given this assumption, properties can be correlated one-one with certain functions; we simply correlate property p with that function which maps each world, w, to the class of individuals that have p in w. *Which* such functions are correlated with properties? (This is a certain way of asking which properties there are). I will assume that *all* of them are. In that case, every function which maps each world, w, to a subset of I_w will correspond to a unique property.[2]

I will call the properties under discussion so far "nuclear properties". Since functions from worlds to sets of individuals are correlated one-one with nuclear properties, we could say that such a function *represents* its correlated property. But this is cumbersome; it simplifies exposition to talk as if such a function actually *is* the nuclear property it represents. I will adopt this way of speaking; so I define:

p is a nuclear property $=_{\mathrm{df}}$ p is a function defined on W such that if $w \in W$ then $p(w) \subseteq I_w$.

2: MEINONGIAN OBJECTS

My use of this account of properties is going to be to provide a foundation for a theory of Meinongian objects. Meinong's ontology included objects which far transcend ordinary individuals. For example, some of those objects don't exist; some are even impossible, and many are incomplete (these notions will be discussed more fully below). Thus they cannot be individuals—not all of them, at least. In the theory sketched in PMS and taken over here, Meinongian objects are correlated one-one with non-empty sets of nuclear properties. Again we could say that each such set of nuclear properties *represents* an object, and that two different such sets represent two different objects. This doesn't tell us what Meinongian objects *are*; I'm not sure that is even possible in terms most familiar to us. But it tells us a great deal about the structure of Meinong's theory, which is all that I am attempting.

As above I will not talk about sets of properties "representing" objects, but I will talk as if such sets *are* objects. Again this is only to avoid an ungainly exposition; the careful reader should read in "represents" in the crucial places (see note 5 for an illustration). I will use "O" for the set of objects; thus I define:

O = the set of objects $=_{\text{df}}$ $\{x$: x is a non-empty set of nuclear properties$\}$.

We can now say that an object (as opposed to an individual) *has* a nuclear property in a world just in case that property is one of its members:

Object x *has* p *in* $w =_{\text{df}} p \in x$.[3]

Although objects are not individuals, certain of them mimic individuals in the following sense. First, if $i \in I_w$, then define "the correlate of the individual, i, in world w" as

$$i^{c}_{w} =_{\text{df}} \{p\text{: } i \in p(w)\}.$$

The correlate of i in w is just the set of nuclear properties that i "has" in world w. Notice that this will be an object, for it will be a non-empty set of nuclear properties. Now we identify the "existing" objects as those objects which correspond to individuals in the appropriate way; that is

x *exists in* $w =_{\text{df}}$ for some i, $x = i^{\text{c}}_{w}$.[4]

Thus in each world some objects will exist (the ones that, in that world, correspond to individuals) and others will not.

An object is "complete" if it is determinate for every nuclear property, i.e.

x is *complete* $=_{\text{df}}$ for every p, either $p \in x$ or $\bar{p} \in x$.

where $\bar{p}$ is the "negation" of p; i.e.

$\bar{p} =_{\text{df}}$ that function which maps each world w to $I_w \sim p(w)$.

An object is "possible" if it does not have incompatible nuclear properties; in terms of possible worlds this is:

x is *possible* $=_{\text{df}}$ for some i and w, $x \subseteq i^{\text{c}}_{w}$.

Notice that if an object is possible it does not follow that it could exist (= does exist in some world). But from the fact that it is complete *and* possible it does follow.

Both incomplete (= not complete) and impossible (= not possible) objects play important roles in Meinong's theory of objects, but these roles will not be discussed in any detail here. (For discussion see Meinong [5], Findlay [2], Grossmann [3], Parsons [6], [7]).

Exercises for the reader:

Suppose we define:
x is *contradictory* $=_{\text{df}}$ for some p, $p \in x$ and $\bar{p} \in x$.

Exercise 1 (trivial): Explain why {roundness, squareness} is impossible though not contradictory.

Next, define:

x *entails* $p =_{\text{df}}$ for every i and w, if $i \in q(w)$ for every $q \in x$, then $i \in p(w)$.

x is *logically closed* $=_{\text{df}}$ for every p, if x entails p then $p \in x$.

Exercise 2: Show that if x is complete then x is possible if and only if x is logically closed and not contradictory.

3: EXTRANUCLEAR PROPERTIES

Now the notions defined in the last section ('exists in w', 'is incomplete', . . .) are not nuclear properties.[5] But they are important nonetheless. It is natural, then, to expand our discussion of properties to also include these notions as properties in our theory. Let us call them "extranuclear" properties, and let us suppose that they are correlated one-one with functions which map worlds to sets of *objects*. (Compare this with the analogous assumption about nuclear properties). Again, instead of saying that such functions "represent" extranuclear properties, I will speak as if such functions were those properties. So I define:

> P is an *extranuclear property* $=_{df} P$ is a function which maps each world, w, to a subset of O.

I will use $P, Q, R, \ldots$ to range over extranuclear properties. Attribution of extranuclear properties to objects is naturally defined as:

> x *has* P *in* $w =_{df} x \in P(w)$.

Now the definitions of Section 2 specify the following extranuclear properties:

> existence = that function which maps each world w to $\{x\text{: for some } i \in \mathrm{I}_w, x = i^{\mathrm{c}}_w\}$.
>
> completeness = that function which maps each world w to $\{x\text{: for each } p, p \in x \text{ or } \bar{p} \in x\}$.
>
> possibility = that function which maps each world w to $\{x\text{: for some } w' \text{ and some } i \in \mathrm{I}_{w'}, x \subseteq i^{\mathrm{c}}_{w'}\}$

In PMS I gave the above as examples of extranuclear properties, along with 'is thought about by Russell', 'is worshipped by Jones', 'is conceived of by so-and-so', 'is pictured by such-and-such a painting', etc. (These latter cases are not definable in terms of our semantical primitives). As examples of nuclear properties I gave being blue, being clever, being six feet tall. A question that arose there, and that I want to discuss below, is how one distinguishes nuclear from extranuclear properties in some pretheoretic way. There is a clear distinction between nuclear and extranuclear properties *as constructed above*, but is there some real distinction in properties that is being reflected, or is it an *ad hoc* contribution of the semantical machinery? Is the distinction an old and familiar one in disguise? If not, how can we tell how to classify properties?

I will argue that it is frequently not easy to tell whether a given predicate expresses a nuclear or an extranuclear property, but that is so only in cases in which it doesn't make much difference how you decide. When the decision *is* important, it can be made. This issue will occupy us for the next three sections (but anyone not interested in it may now skip directly to Section 7).

4: EXTRANUCLEAR IMAGES OF NUCLEAR PROPERTIES

For every nuclear property, p, there is a unique extranuclear property, $\mathcal{E}_p$, which I will call the "extranuclear image of p", defined as follows:

For each world, w, $\mathcal{E}_p(w) = \{x: p \in x\}$.

$\mathcal{E}_p$ and p are equivalent in a certain sense, namely:

For each world, w, and each object, x, x has p in w iff x has $\mathcal{E}_p$ in w.

Given our definitions of "have" for nuclear and extranuclear properties this amounts to: $p \in x$ iff $x \in \mathcal{E}_p(w)$. Further, suppose that we have an object-language (as in PMS Section 3) containing both nuclear and extranuclear predicates, which work as follows: a nuclear predicate, P^n, expresses a nuclear property, p, and an extranuclear predicate, P^e, expresses an extranuclear property, P. Suppose also that names name objects. Our account of truth is:

$P^n a$ is true (in world w) iff the object that a names has p in w; and

$P^e a$ is true (in world w) iff the object that a names has P in w.

Then the relationship between a nuclear property, p, and its extranuclear image, $\mathcal{E}_p$, induces an equivalence relation among predicates of the language, as follows:

> If P^n expresses p and if P^e expresses $\mathcal{E}_p$ then no matter what object a names, $P^n a$ is true iff $P^e a$ is true.[6]

One moral is this: Suppose that you have an English predicate, say 'is blue', which *can* be interpreted as expressing a nuclear property. (For more about "can" see below.) But suppose you're not sure whether to write 'is blue' as a nuclear or as an extranuclear predicate. Well it really doesn't matter as long as you don't make any other mistakes. That is, if p is the nuclear version of blueness, then you can pick either a nuclear *or* an extranuclear predicate to represent 'is blue', as long as you limit your semantical choices to p or $\mathcal{E}_p$ respectively. It won't matter in the sense that you'll get the same truth-values for your sentences whichever you pick.[7]

5: NUCLEAR PROJECTIONS OF EXTRANUCLEAR PROPERTIES

Corresponding to every extranuclear property, P, is a unique nuclear property, $|P|$, which I call "the nuclear projection of P". It is defined as follows:

> $|P| =_{df}$ that nuclear property which satisfies the following:
> for each w and each $i \in \mathrm{I}_w$, $i \in |P|(w)$ iff $i^c_w \in P(w)$.

This definition may be restated in several equivalent ways. One nice alternative is this:

> For every world w, and every object, x: if x exists in w then $x \in P(w)$ iff $|P| \in x$.

Roughly, the idea is that $|P|$ is the unique nuclear property which (in all worlds) "coincides" with P with respect to all existing objects.[8] This induces a *partial* equivalence relation on certain nuclear and extranuclear predicates. Namely, if P^e expresses P and P^n expresses $|P|$ then, if a names an existing object, then $P^e a$ is true iff $P^n a$ is true.

An interesting consequence is this: for any nuclear property, p, p = the nuclear projection of the extranuclear image of

p. That is, for every p, $p = |\mathcal{E}_p|$. But we do *not* have a corresponding result for extranuclear properties. That is, we do not have: for every P, P = the extranuclear image of the nuclear projection of P. That is, there is some P such that $P \neq \mathcal{E}_{|P|}$. Extranuclear properties in general outrun the extranuclear images of the nuclear properties. (An easy way to see this is to note that all extranuclear images are constant from world to world, whereas there is no such restriction on extranuclear properties—where "P is constant from world to world" means "for every w, w', $P(w) = P(w')$").

6: NUCLEAR VS. EXTRANUCLEAR; SOME MORALS

One moral is this: If we were to limit ourselves solely to extensional talk about existing objects, then the nuclear-extranuclear distinction would collapse—in the sense that every predicate of either sort could be replaced by one of the other sort without alteration of the truth-value of any sentence (subject to the reservations mentioned in note 7). Just replace a nuclear predicate by an extranuclear one which expresses the extranuclear image of what the former expresses, or replace an extranuclear predicate by a nuclear one that expresses the nuclear projection of what the former expresses. This may explain why the nuclear-extranuclear distinction might be *new* to people—there is no obvious need for it in the "standard" metaphysics which disallows talk of non-existents. The distinction may be foreshadowed in the traditional debate over whether existence is a predicate (now read: "is existence a *nuclear* predicate?") which is prompted by the ontological argument; an argument which, significantly, takes seriously the possibility of objects which don't exist.

A second moral is this: The really interesting distinction is between notions which *can* be represented as nuclear properties (or, equivalently, as extranuclear images of nuclear properties) and those which cannot. Those which cannot must be classified as properties which are *essentially extranuclear* ("e.e.n."), where this is defined as:

P is e.e.n. $=_{\mathrm{df}} P \neq$ the extranuclear image of the nuclear projection of P.

If a property P is e.e.n. then it is not fully equivalent to its nuclear projection. In such a case let us say that its nuclear projection is merely a "watered-down version" of it.[9]

Here's an illustration: Let p_0 = the nuclear property of "being existent" = that function which maps each world, w, to exactly the set I_w of individuals of w. Let P_0 = the extranuclear property of existing, as defined in Section 3. Then p_0 is a watered-down version of P_0. That is, being existent is a watered-down version of existing. Meinong once said this.[10]

Being existent turns out to be a watered-down version of other notions as well; it's a watered-down version of both possibility and completeness. In fact the extranuclear properties characterized in Section 3 form two clusters, based on the sameness of their nuclear projections:

$$|\text{existence}| = |\text{possibility}| = |\text{completeness}| = p_0$$

and:

$$|\text{nonexistence}| = |\text{impossibility}| = |\text{incompleteness}| = q_0$$

where p_0 is as defined above, and q_0 is the nuclear property which maps each world w to the empty set of individuals.

This clustering is a special case, however. Consider the e.e.n. property: being thought about by Russell.[11] The nuclear projection of this e.e.n. property is neither empty in all worlds nor universal in all worlds. In fact, in the actual world it is possessed by all existing objects that Russell thought about, and none of the existing objects that he didn't think about.[12]

Finally, let me return to the question of distinguishing nuclear and extranuclear properties in a pretheoretic manner. Suppose we have a claim before us, written in English, and we want to know whether or not to translate a given predicate as a nuclear or as an extranuclear one. Or suppose that we have a thought (our own), and we want to know how to articulate it—in particular we want to know whether to use a nuclear or extranuclear predicate in a given place. Well, just select an extranuclear predicate, and then *also* select a nuclear one, with the stipulation that the latter expresses the nuclear projection of the former. Now, which do we use? Well, if it doesn't make any difference, then either will do. That will happen if the former is not e.e.n.; whichever you pick, then, you get something that's equivalent to the other.

On the other hand, if it does make a difference (to the truth of things being symbolized) then pick the one that gives the right answer. That sounds circular, but it isn't. For we don't do semantics (and we don't symbolize sentences) in order to *discover* the truth-values of our claims, rather we do it in order to see how they have the truth-values we already know them to have.

7: THE LEIBNIZIAN FRAGMENT OF MEINONG'S ONTOLOGY

According to the theory developed above, whether or not an object has a nuclear property p in world w is independent of w; if x has p in one world, it has it in all worlds. The reason this happens is that we have supposed that if a set of nuclear properties represents a given object as far as one world is concerned, it represents the same object as far as any world is concerned. That is, the representation relation is world-independent.

We didn't have to suppose this. If we want objects to change nuclear properties from world to world then we need only vary the representation relation from world to world. This can be done in many ways, none of which I will explore here. Instead I will pursue further the theory as already developed.

This world-independence of nuclear propertyhood seems faithful to Meinong. According to him, if an object has a nuclear property, then, strictly speaking, it has it necessarily (cf. [2], Chapter VI). We do sometimes say of an object, x, that is blue, that it might not be blue; but *this* statement is to be analysed as something like "y is indeterminate with respect to blueness", where y is *not* the object, x, in question (for *it* is determinate with respect to blueness) but rather an incomplete object that "stands in" for the original object in our thoughts; it's an incomplete object that is "embedded in" the original object, (cf. [2], Chapter VI).

Leibniz apparently held a theory something like this; if x is blue then x is necessarily blue, and appearances to the contrary are to be accounted for by allusion to our "imperfect apprehension" of x. (To get Meinong's theory just analyse "imperfect apprehension" in terms of substitution of an appropriate object in our thoughts). This suggests a possible comparison of Leibniz's theory with Meinong's. Of course Leibniz did not talk about incomplete or impossible objects, but maybe his ontology corresponds to a *fragment* of Meinong's. In fact, subtracting the incomplete and impossible objects from Meinong's ontology is exactly what we need to do to get a theory like Leibniz's.

Let us define a *monad* as an object that is both complete and possible (as proposed in [1], Section 11).[13] A monad now turns out to be an object that exists in some world; i.e. we can show:

(R1) x is a monad iff for some w, x exists in w.[14]

We say that two objects are "compossible" if they can coexist, i.e.

x *is compossible with* y $=_{\mathrm{df}}$ for some w, x exists in w & y also exists in w.

Now we get these results: First, an analogue of the principle that "monads mirror their worlds":

(R2) If x is a monad, then x exists in exactly one world.

This is a very powerful result. We get it in part because of the strength of our initial assumptions in Section 1 about the existence conditions for properties (cf. note 2). Call the world in which x exists "w_x". Then this is easy:

(R3) If x and y are monads, then x is compossible with y if and only if $w_x = w_y$.

Further, we can show:

(R4) Compossibility is an equivalence relation on the set of monads.

Benson Mates (in [4]) posits this as a basic principle of Leibniz's system, and he characterizes the "possible worlds" of Leibniz as the set of equivalence classes of monads with respect to compossibility. Our (R4) *alone* is not sufficient for this purpose, for there is no *prima facie* reason why our equivalence classes should behave like possible worlds.[15] Suppose such a class has three members, x, y, z. We know that x and y can coexist, that y and z can coexist, and that x and z can coexist. But there's nothing in the mere "equivalence" of the equivalence relation that guarantees that x, y, and z can all coexist *together*. Perhaps the set of x, y, z constitute an *im*possible world, even though the members are all pairwise compossible.

Fortunately, in the present theory compossibility accretes in the correct way. We have:

(R5) There is a one-one correlation between the equivalence classes of monads (with respect to compossibility) and the possible worlds. And the one-one correlation is the "right" one; namely, it correlates an equivalence class of monads with a world iff all members of that class exist in that world.

It would be inappropriate to end this brief discussion of Leibniz without mentioning the principle of the identity of indiscernibles. In both of the theories discussed in this paper (Meinong's and Leibniz's) the following principle holds:

(I1) If objects x and y have all the same properties, then $x = y$.[16]

But, more interestingly, so does the following:

(12) If x and y have all the same *nuclear* properties, then $x = y$.

This strong version of the identity of indiscernibles may explain the tendency of Meinongians to say things like "a nuclear property constitutes part of the identity (or part of the nature) of an object that has it" (as in [2] Chapter VI and [6] Section III).

In closing I should reemphasize that I have only shown Leibniz's theory to be a fragment of Meinong's with respect to a specific construction of both theories—one which utilizes a very powerful theory of properties.

References

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NOTES

[1]I am indebted to K. Lambert and R. Sleigh for comments and suggestions in addition to those acknowledged below. Research on this paper was partially supported by NFS grant GS 39752.

[2]The assumption that every such function represents a property constitutes a very strong existence condition for properties. Indeed, it is a maximal assumption of property existence, in that it yields a class, G, of properties such that any *purported* property must (by virtue of the identity condition we have selected) be identical with some member of G. The assumption also yields "essences"—i.e. for any individual, i, there will be at least one member of G which i has in every world in which i appears. Much weaker assumptions would suffice for a viable Meinongian ontology, though they would jeopardize the Leibnizian results (R2)-(R5) of Section 7.

[3]Notice that according to this definition if an object has a nuclear property in one world it has that property in all worlds. This conforms with the ideas of Meinong and of Leibniz—cf. the discussion at the beginning of Section 7 and also [1]. Note that this definition together with earlier conventions will make impossible the identification of *existing* objects (defined below) with individuals, and so it will rule out the interpretation of Meinong's theory most favored in PMS Section IV. The present paper must be viewed as pursuing another interpretation; though *variations* of this interpretation may approximate the favored one of PMS (cf. the beginning of Section 7 below).

[4]If I had stuck with speaking of sets of nuclear properties "representing" objects, this would read:

x exists in $w =_{df}$ for some i, i^c_w = the set which represents x.

[5]For example, 'incomplete' cannot be a nuclear property. For, suppose it were; call it r_0. Then if we have a complete object, x, we can form the union of x with $\{r_0\}$, which will be a (possibly new) object, y. But then y would be both complete (because x was), and incomplete (because it contains r_0).

(This argument depends on equating "having φ-ness" with "being φ". One might explore the possibility of giving up this equation. The theory I am discussing, however, accepts it).

[6]The equivalence is actually more general than this. It is that 'P^n' and 'P^e' are interchangeable within all "extensional contexts" and even within modal contexts—although "extensional" must be rather carefully defined here, and there is a complication which must be taken into account; this is discussed in note 7.

[7]Actually all that has been shown is that with proper semantical choices the *truth*-sets for P^n and P^e will coincide. But in the theory of PMS we also have to consider their *falsity*-sets. This requires a slight complication in the notion of an extranuclear property. We have assumed so far that bivalence holds in each world for every extranulcear property (unlike nulcear properties, which an object can be indeterminate with respect to). Along with Meinong (cf. footnote 16 of PMS) we want to allow truth-value gaps for some extra-nulcear properties. Semantically, let us redefine an extranuclear property as a function from worlds to *pairs* of sets of objects. The first member of the pair is the set of objects that the property is true of in that world, and the second member is the set of objects that it is false of there (the two members should be disjoint).

Now we define $\mathcal{E}_p^* =$ the *full* extranuclear image of $p =$ that function which maps each world w to $\langle \{x: p \in x\}, \{x: p \notin x \ \& \ \bar{p} \in x\} \rangle$. Then the equivalence discussed above holds in full generality. In what follows I will ignore the complication just discussed; I will assume for simplicity that extranuclear properties just map worlds to sets of objects.

[8]Typically no such coincidence is possible with respect to *all* objects.

[9]The phrase "watered-down" is from [2], Chapter IV. This present paper resulted from an attempt to understand this notion. E.e.n. properties may correspond to Routley's "non-assumptible" properties in [8].

[10]Meinong attributed the difference between existing and merely being existent to something called the "modal moment" (cf. [2], Chapter IV.) My account interprets "the modal moment" as "essential extranuclearity". (This is really only a hint at an interpretation; any coherent interpretation of Meinong's views concerning the modal moment will be awkward at best).

[11]This is e.e.n. for the following reason. It's possible for Russell to think about the object whose sole nuclear properties are roundness and squareness—i.e. about {roundness, squareness}. Now suppose that "thought about by Russell" did express a nuclear property. Then {roundness, squareness} would have the nuclear property, thought-about-by-Russell-ness (cf. note 5), and then by the principle noted in Section 2 we would get: thought-about-by-Russell-ness $\in$ {roundness, squareness}, which is false.

[12]This nuclear property would be useful in the following case: Meinong could have as the object of his thought "the round square", i.e. {roundness, squareness}. That object may or may not possess the extranuclear property of being thought about by Russell (Russell's writings give evidence that it *does* have this property). But Meinong could *also* have had as an object of his thought "the round square thought about by Russell". This new object would be {roundness, squareness, φ-ness}, where φ-ness is the nuclear projection of being thought about by Russell. (History doesn't tell us whether or not Russell ever thought about *this* object.)

[13]A definition equivalent to that in the text (according to exercise 2 from Section 2) would be:

x is a monad $=_{\mathrm{df}}$ x is complete, logically closed, and not contradictory.

This was pointed out to me by R. Sleigh. Apparently this definition is much closer to the way Leibniz put it than is the definition in the text.

One might suppose that what I have defined is much closer to the notion of "individual concept of a monad" than to "monad". This is an issue in an area of Leibniz scholarship of which I am ignorant.

I would like to point out that monads do *not* correspond nicely to "Carnapian individual concepts," where these latter are taken to correspond to world-lines, or to functions which map each world to a unique individual of that world. Let me *call* such a function an "individual concept". Then the set of monads does not even have the same cardinality as the set of individual concepts.

Individual concepts can be correlated with a certain class of incomplete objects. Call a nuclear property p *unitary* if $p(w)$ is a unit set for every w, and call an object *singular* if it is a unit set of a unitary property. Then singular objects can be correlated one-one with individual concepts. The correlation is that an individual concept, α, is correlated with a singular object, $\{p\}$, if and only if for each w, $p(w) = \{\alpha(w)\}$.

[14]"(R1)" is "Result 1". Proofs of the results of Section 7 are all relatively straightforward. Copies of the proofs are available by writing T. Parsons, Department of Philosophy, University of Massachusetts, Amherst, Mass., 01002.

[15]This was pointed out to me in this connection by R. Sleigh.

[16]I have only defined "having a property" relative to a world, so (I1) should be relativized to worlds. Actually, there are two ways to do this:

(I1′) For each world w, if x and y have all the same properties in w, then $x = y$.

(I1″) If x and y have all the same properties in all worlds, then $x = y$.

I intend the former reading, but both are true. Similar remarks apply to (I2).