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# IDENTITY

R. B. REDMON

1 It has become an axiom or accepted as an obvious truth that any description of an ontology must include some "principle of individuation" or method of determining when we have one entity and when we have two. The trouble with an "event ontology" has often been put in those terms—when do we have one and when two events? Is World War II and a particular bomb exploding in it one or two events? If the movements of atomic particles are the primary or "atomic" events, at what point along the space-time continuum do we have a second event?

Another example of the puzzles which arise from trying to decide when you have one or two entities is in the case of "intensional entities." P. T. Geach, in a paper "Intensional Identity,"[1] writes:

> We have intensional identity when a number of people, or one person on different occasions, have attitudes with a common focus, whether or not there actually is something at that focus.
>
> Suppose a reporter is describing an outbreak of witch mania, let us say in Gotham village.
>
> (1) Hob thinks a witch blighted Bob's mare, and Nob wonders whether she (the same witch) killed Cob's sow.
>
> Quine has distinguished *opaque* and *transparent* ways of construing indirect-speech clauses, but neither sort of construction will give an appropriate sense to (1). For if the indirect-speech clauses in (1) are constructed opaquely, then each clause must stand on its own syntactically . . . But on the face of it we have in (1) a pronoun, 'she' or 'the same', bound to an antecedent, 'a witch', that lies outside the clause containing the pronoun; so unless this *prima facie* can be discounted . . . the clauses in (1) cannot be construed opaquely.
>
> On the other hand, there is no obvious way of construing the indirect speech in (1) transparently. We might try:

1. *The Journal of Philosophy,* vol. LXIV (1967). The numbering of statements in this, and other quotes, have been changed.

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> (2) As regards some witch, Hob thinks she has blighted Bob's mare, and Nob wonders whether she killed Cob's sow.
>
> But (2) would express (what the speaker took to be) the *real*, not the intensional, identity of a witch; and [the speaker does not believe there are witches] . . . . (pp. 627-8)

After several tries at finding a reading for (1) Geach despairs of finding a reading that removes the troublesome mixture of opaque and transparent contexts in (1). In particular, he rejects the suggestion that both Hob and Nob must be able to produce identical descriptions of the witch if they are talking of the "same one."

As an answer to Geach's perplexity in finding a solution for the problem of, or finding criteria for, intensional identity, D. C. Dennett says in "Geach on Intensional Identity"[2]:

> So long as we hold out the hope or conviction that the object or person or witch under discussion exists, questions of identity are substantive and serious, but as soon as we become skeptics like our reporter, and disavow transparent renderings of our discussion, questions of identity and diversity become idle if not outright meaningless. Suppose Tom says he doubts the existence of a solid gold round square; I cannot reply coherently that I doubt the existence of *another* solid gold round square—not Tom's at all. Or if Tom says he is imagining a polka-dotted elephant, I cannot wonder whether, when I duplicate his feat, I am imagining numerically the same polka-dotted elephant.
>
> Whenever we wish to disavow belief in the actual existence of any intensional objects, "same" can at best mean "exactly similar in characteristics."
>
> I believe these examples [including this one: when do two people believe in the same god?] show that far from its being the case, as Geach contends, that *no* descriptions need be shared for us to speak of intensional identity, on the contrary, unless *all* descriptions are shared, the notion of the identity of intentionally inexistent objects dissolves into nonsense. (pp. 337-8)

A third example of the problems that arise when applying this axiom centers around the range of the variables of modal logics with quantifiers—in particular when we allow the quantifiers to bind variables inside of modal operators. (This is similar to the problem of intensional identity with the word 'she' in statement (1).) An example which Quine uses[3] to display the problem is this one (where '**N**' means 'necessarily'):

$$(3)\ (\exists x)\ \mathbf{N}\cdot(x \text{ is greater than } 7).$$

What is this $x$? asks Quine. Nine, that is, the number of planets? The answer to that is yes and no. Necessarily nine is greater than seven, but it

2. *The Journal of Philosophy*, vol. LXV (1968).

3. In "Notes on existence and necessity," *The Journal of Philosophy*, vol. XL (1943), pp. 113-127.

is only contingent that there are more than seven planets. Thus if we hold nine and the number of planets to be "the same" we arrive at a contradiction. Since the ontology is specified, in part, by the "identity conditions" given, we arrive at an oddity, to say the least, when we try to specify the "range of variables." In this range nine and the number of planets are not "the same." Thus, we might conclude that events, intensional entities and whatever entities are in the range of variables of such logics as the above, suffer because of unclear identity conditions.

There is another possible conclusion, however. It is that the notion of "a principle of individuation" or that the word "same" when used in an expression of the sort '*a* is the same *Y* as *b*', where '*Y*' is a generic term for the whole of the ontology (a "*summa genera*"), derives its meaning from the "semantical method" adopted. In addition to urging that the above possibility is the true one, it will be argued that the adoption of a "semantical method," the adoption of the ontology ('adoption' rather than 'uncovering') and the definition of the 'same' (the spelling out of the equivalence relations) are the same activity. Our first step in explaining and defending this claim will be the explication of the concept of "semantical method."

The notion of "semantical method" that will be used here is described in Rudolf Carnap's *Meaning and Necessity* (University of Chicago Press, Chicago, 1956). Although one may be familiar with Carnap's work, the emphasis given here should be useful in understanding what my suggestion in section 1 and later sections amounts to.

2 In *Meaning and Necessity* (which will be called 'M & N') Carnap gives us a "semantical method." To fully characterize this "method" and the method to which it is in contrast would call for a duplication of M & N. (Carnap was not known for excess verbiage.) However, it is possible to give the general intent of M & N; it is to put forth the analysis of and the theory of, the notions of analyticity, synonymy, extensional and intensional contexts, property, class, and the other tools of formal semanticists such as Frege and Russell.

The crux of Carnap's method is this: every designator (sentence, predicate, or constant) has both an intension and an extension. The extension of a predicate would be the class of things to which it applies. The intension would be the property it expresses, or to which it applies. 'Blue' would have the class of blue objects as its extension, while its intension would be the property Blue or Blueness. In the case of sentences, the extension is the truth value, the intension is the proposition expressed. Constants: individuals, individual concepts. However, Carnap points out emphatically that the primary uses of such terms as 'extension' are in the phrases 'have the same extension' and 'have the same intension' (M & N, p. 23). Two one place predicates '*P*' and '*Q*' have the same extension if the sentence '$(x)(Px \equiv Qx)$' is true, and '*P*' and '*Q*' are thus spoken of as equivalent. '*P*' and '*Q*' have the same intension if '$(x)(Px \equiv Qx)$' is not only true but is L-true (M & N, pp. 13, 23). A sentence is L-true if it "holds in

every state-description (in language $\mathcal{S}_1$)'' (M&N, p. 10). 'Every state-description' means something like 'every possible world' or 'every possible state of affairs'. It is relative to a given language because a state-description is a list of sentences which contain every atomic sentence or its negation, but not both (M&N, p. 9). One can supposedly find if a sentence holds in every state-description by looking at the rules of the language. If '$(x)(Px \equiv Qx)$' is L-true then '$P$' and '$Q$' are spoken of as L-equivalent.

Carnap feels that his semantical theory, incorporating the concepts of ''extension'' and ''intension,'' though resembling Frege's use of 'reference' and 'sense'[4] has a notable advantage in that designators are not taken to *name* anything. The designation relation is not one of naming. Frege decided that in oblique or indirect contexts (such as in statements of belief or necessity) a designator (to use Carnap's term) would have to name something other than its normal referent to avoid a paradox. For example: in the sentence 'John believes that his brother did not rob the First National Bank' the definite description 'his brother' (he only has one brother) occurs in an indirect or oblique context. (Or, as Quine would say, the phrase is referentially opaque.) If I replace 'his brother' by another designator for the same individual, say, 'the Kissing Bandit' the new sentence, let us suppose, will be true, for it happens that everyone knows that the Kissing Bandit did rob the bank from his behavior toward the tellers. John just does not know that they are one and the same. Since substitution of names for the same thing does not guarantee the same truth value, Frege concluded that in such contexts the phrase 'his brother' must refer to something other than what it normally refers to, i.e., John's brother. Frege decided that what was normally the phrase's sense should be taken as its referent in such cases. The crucial point here is that Frege was forced to assign a new referent to the phrase. He could not simply place a limitation on substitution such as not allowing substitution in oblique contexts. To do so would have been to deprive names (or definite descriptions) of their essential attribute of being a *name*. If substitution possibly changes truth value, then the phrase in oblique contexts must be a *new name*. This ''principle of interchangeability'' is one of the basic principles of ''the method of the name relation'' as Carnap calls it (M&N, p. 98).

Carnap in M&N is proposing a *different method.* Although his extensions and intensions correspond to Frege's sense and reference in nonoblique or direct contexts, in oblique or 'intensional' contexts (Carnap's term) the situation is different. (It should be pointed out that belief contexts are not intensional contexts for Carnap. He limits such contexts to those involving the modal operators of logical possibility and necessity.) Carnap

4. Gottlob Frege, ''On sense and reference,'' *Translations from the Philosophical Writings of Gottlob Frege*, translated by P. Geach and M. Black, Blackwell, Oxford (1960), pp. 56-78.

simply does not allow interchanging two expressions in intensional contexts unless they have the same intension, i.e., are L-equivalent. One reviewer of M&N[5] concluded simply that Carnap's restriction is the same as Frege's change of referent. But the point is that if this principle of interchangeability is modified, the expressions in the language are not considered as *names*, i.e., they do not *refer*. Carnap's designators keep the same extensions and intensions no matter what the context is. Frege's do not because they must conform to the "principles of the name-relation."

The advantage of Carnap's "method," besides the one just mentioned, i.e., not changing intensions and extensions, is not crucial to the discussion here. The main point for this discussion is to make sense of Carnap's "Method of Extension and Intension." Every designator—sentence, predicate, and constant (name or definite description)—has an extension and an intension. We can determine if two designators have the same intension (where, again, the phrase 'have the same intension' is the defined one, not 'intension' alone) by looking at the semantical rules, i.e., the rules which specify the meanings of the terms in a language. Thus 'human' ('H' in language $\mathcal{S}_2$) is L-equivalent, or has the same intension, and thus extension, as 'rational animal' ('RA' in $\mathcal{S}_2$). We can discover this fact from the semantical rules. 'Human' and 'featherless biped' ('FB' in $\mathcal{S}_2$) have only the same extension, but not the same intension. We discover that they have the same extension by looking at the world. It is a synthetic or empirical fact. We can state these conclusions in our language $\mathcal{S}_2$ as follows:

(4) H ≡ FB ('H' and 'FB' have the same extension. Note that the sentence which precedes the present one is in the meta-language $\mathcal{M}$. 'H ≡ FB' is the object language $\mathcal{S}_2$.)
(5) H ≡ RA ('H' and 'RA' have the same intension.)
(6) -(H ≡ FB) ('H' and 'FB' do not have the same intension.)

Note that in (5) and (6) a certain notion of necessity is being displayed. In fact, '**N**(H ≡ RA)', is definable as '(H ≡ RA)', which is definable (or "explicable," since the terms are in different languages, $\mathcal{S}_2$ and $\mathcal{M}$) as "H ≡ RA' is L-true', hence it holds in every state-description (M&N, p. 174).

Notice that in $\mathcal{M}$ identity conditions are given for extensions and intensions, indeed the phrase which introduces these concepts is 'have the same intension (extension)'. Carnap proposes another metalanguage $\mathcal{M}'$ in which talk of extensions and intensions disappear (M&N, pp. 153-168). There are now not two entities associated with each designator but just one (in an odd sense of 'one', the oddity of which will become apparent)—what Carnap calls a 'neutral entity'. (4) above was taken to be L-equivalent to several sentences in $\mathcal{M}$:

(A) 'H' is equivalent to 'FB'.

5. C. Lewy, *Mind*, vol. LVIII (1949), p. 230.

(B) 'H' and 'FB' have the same extension.
(C) The class Human is the same as the class Featherless Biped.

Earlier Carnap had shown (M&N, pp. 100-117) that in a language an expression purporting to refer to a class and a different one for a property associated with the same predicate were superflous, since they both have the same extension and intension. For example, the term 'property Blueness' and the term 'class of blue things' have the same intension, and thus, the same extension. In $\mathcal{M}'$ the terms 'class' and 'property' disappear from the metalanguage along with 'extension' and 'intension'. Thus (4) becomes in $\mathcal{M}'$ 'Human is equivalent to Featherless Biped'. (It should be mentioned that only (C) above, and not (A) and (B) can be taken as translations, since terms are mentioned in them and used in the sentences of $\mathcal{S}_2$.) Thus the new entities Human and Featherless Biped are introduced in $\mathcal{M}'$.

To touch on a problem which is brought up later, it might appear that a sentence in $\mathcal{S}_2$ like 'H ≡ RA' expresses some sort of identity of intensions or properties. The notion of neutral entities that are "equivalent" (in a non-linguistic way, i.e., 'equivalent' is a word in the object language, or rather, a translation of '=' which is in the object language) may seem strange. Indeed it might appear that individuals, which are the extensions of constants, disappear entirely under such analysis, along with intensions.

To see what is meant by this objection let us take another example. Let 's' stand for 'Scott' and 'w' stand for 'the author of *Waverly*'. 's ≡ w', or 's = w' in more common languages, would be a true statement in $\mathcal{S}_2$. 's' and 'w' have the same extension (speaking in metalanguage $\mathcal{M}$ not $\mathcal{M}'$). '-(s ≡ w)' is also true. One cannot discover the fact that Scott is the author of *Waverly* by looking at the semantical rules alone, let us suppose. A little history is involved. In metalanguage $\mathcal{M}$, 's' can be said to have the individual Scott as its extension, and the individual concept Scott (granted one may feel a little uncomfortable about individual concepts) as its intension. What happens in $\mathcal{M}'$? The *individual* Scott "disappears" surely enough, but Scott does not. Letting 'Scott' stand for the new entity, or L designate it, to be correct—i.e., designate it according to the semantical rules—one could say in $\mathcal{M}'$ that since 's ≡ w' is true in $\mathcal{S}_2$, 's' designated The Author of Waverly, or that Scott is equivalent to The Author of Waverly. Notice what has happened here. The truth conditions of 's ≡ w' have not changed. We have dispensed with individuals and individual concepts from the *metalanguage. They never were in the object language.* To say that individuals have disappeared is true if one means by that that $\mathcal{M}'$ is a different metalanguage from $\mathcal{M}$. Notice also the shift from identity to equivalence and L-equivalence. "'H' and 'RA' *have the same* intension' or 'The property Human *is the same as* the property Rational Animal' (both sentences in $\mathcal{M}$) become in $\mathcal{M}'$ 'Human is L-equivalent to Rational Animal'. *To speak of identity conditions for abstract entities belongs to $\mathcal{M}$, not $\mathcal{M}'$.* This last observation is of fundamental ontological significance. To discuss the relative merits or adequacy of $\mathcal{M}$ and $\mathcal{M}'$ is to be as far removed from ontological categories as is possible. But we are ahead of ourselves.

The results I wish to draw from this discussion are these: The notion "neutral entities" (where the plural or singular form is actually out of place here) is important because it gives us the possibility of new ontological categories. The notions of identity and difference are seen to be tied to some categories and not to others, i.e., to be relevant to some metalanguages and not to others.

*Quine's reaction* Carnap in M & N finds no oddity in a sentence such as

(7) $(\exists x)(x = s \cdot \text{-}\mathbf{N}(x = s))$

where the variable '$x$' is inside the scope of the necessity operator '**N**' and is bound by a quantifier ('$(\exists x)$') outside of it (M & N, p. 191). In this sentence 's' has as its extension the individual Walter Scott (speaking in $\mathcal{M}$). This sentence (7), by the way, is derivable from 'w = s · -**N**(w = s)', i.e., 'Scott is the author of *Waverly*, but not necessarily so'. In $\mathcal{M}$ this would be 'The individual Scott is the same as the individual, author of *Waverly*, but the individual concept Scott is not the same as the individual concept Author of *Waverly*', and this is L-equivalent to "'w' and 's' have the same extension, but not the same intension'.

According to Quine, the problem with such contexts is that they can be both true and false at the same time as we have seen in the example '$(\exists x)$ **N** ($x$ is greater than 7)'. Likewise, in example (7) the question would arise "What is this thing such that it is not necessarily the same as Scott? (in $\mathcal{M}$ again). The author of *Waverly*, that is, Scott?" Again the answer is yes and no. One natural (and tried) way out of this paradox is to say that the range of the variables consists of *concepts* (or some other intensional entity) instead of individuals. However, Carnap felt that in an *object* language it is an unnecessary duplication to have variables ranging over individual concepts as opposed to individuals for the same reason that it is unnecessary to have names for both properties and classes. (M & N, p. 195). The reason being that in metalanguage $\mathcal{M}$ we can speak of both designators, say one for the Scott-concept and the other for the individual Scott as having the same extension and the same intension. In terms of $\mathcal{M}$ we might translate (7) as follows: 'There is an individual concept $x$ which is equivalent to, but not the same as, Scott' (M & N, p. 192). In this translation no possibility of the paradox mentioned above arises. In terms of extensions rather than intensions (such as individual concepts) the translation would be as follows: 'There is an individual $x$ which is the same, but not necessarily the same, as the individual Walter Scott' (M & N, p. 192). The paradox simply does not arise here because we do not allow substitution of designators which are not L-equivalent such as 'Scott' and 'the author of *Waverly*'. We can make this restriction because we are not using the "method of the name-relation."

In $\mathcal{M}'$ however the distinction between extensions and intensions vanishes. The translation of (7) becomes 'There is an $x$ such that $x$ is equivalent but not L-equivalent to Walter Scott'. Notice that mention of sameness and difference are replaced by using 'equivalence' and 'L-equivalence', and that these terms are used between designators of

nonlinguistic entities, not terms for expressions. Also notice that we are not simply replacing the words 'same' by 'equivalent' (or L-equivalent'). The values of '$x$' have changed. These are now "neutral entities." In this translation in $\mathcal{M}'$ the appearance of paradox again disappears as it did in the translation of $\mathcal{M}$ involving intensions (individual concepts in this case).

*Summary* My primary aim in section 2 has been an explication of the notion of "semantical method." In the process of pointing out the relevant aspects of the concept the suggestion has been made that such notions as "value of a variable," "individuals," and the interpretation of identity are the results of the choice of a particular semantical method. To say, for example, that "individuals have disappeared" when quantifiers are allowed outside of model operators in a sentence, is only to admit that by one method, "the method of the name-relation," we must assign a different class of entities to variables in such sentences.

3 The position of this paper is this: The concept of identity draws its meaning from the metalanguage and the semantical method used. When expressed in an object language, the terms '=' and 'is identical to' are ambiguous. Their ambiguity arises from two sources: (a) within a common metalanguage, such as one using "the method of the name-relation", the system of names are not given complete semantical rules, and (b) more importantly, the semantical method itself is not stipulated. If it were, we would see that the entities dictated by the "identity conditions," and thus those entities which make up the ontology of a language, are indeed postulated by the semantical method involved.

*Frege's puzzle* In "On sense and reference" (see footnote 4) Frege presents us with the now famous problem:

> Equality gives rise to challenging questions which are not altogether easy to answer. Is it a relation? A relation between objects, or between names or signs of objects? . . . Now if we were to regard equality as a relation between that which the names '$a$' and '$b$' designate, it would seem that $a = b$ could not differ from $a = a$ (i.e. provided $a = b$ is true). A relation would thereby be expressed of a thing to itself, and indeed one in which each thing stands to itself, but to no other thing. . . . [If we consider it as a relation between names,] the sentence $a = b$ would no longer refer to the subject matter, but only to its mode of designation; we would express no proper knowledge by its means. But in many cases this is just what we want to do. (pp. 56-7)

Frege's solution to this problem is the doctrine of "sense." Each name (designator, definite description, etc.) has a sense as well as a referent. If '$a = b$' tells us something, conveys "proper knowledge," it is because the senses of '$a$' and '$b$' differ. We learn that the senses apply to one object, e.g., the senses of 'the Morning star' and 'the Evening star' apply to the same object. This analysis of identity statements such as 'the Evening Star is the same as the Morning Star' rests, of course, on the two expressions 'the Evening Star' and 'the Morning Star' having a sense.

This example, by the way, is interesting in that the two expressions mentioned seem to be proper names. Frege did not balk at the notion of proper names having senses. A name such as 'Aristotle' has a sense which may vary somewhat with different people. In an example such as (8) 'Tully is the same as Cicero' the question of the sense of the names is more acute. If one denies that a proper name has a Fregean *sense*, i.e., if one says that it is different from a description, then there must be some way of analyzing (8) so as to account for the information given. J. R. Searle says that a sentence such as (8) is informative because the conventions giving descriptive force, in some loose way, differ in the case of 'Tully' from those of 'Cicero'.[6] Searle, unlike Frege, has not drawn the distinction between purely metalinguistic and factual statements of identity. The purely metalinguistic use of identity is simply one in which we inform someone that an individual with one proper name has another. (However, Searle intends to leave open the possibility that two people can have different ideas or information concerning an object, and yet still be using the same *word*, i.e., a symbol playing the same role. These loose conventions would avoid making any sentence of the form '*a* is *P*', where '*a*' is a proper name, and '*P*' is a predicate, analytic.)

In "On sense and reference" Frege rejects the view that the sameness of referent is all that is meant in identity statements, i.e., that they are purely metalinguistic. What more is added is what he means by "proper knowledge," non-semantical or non-metalinguistic information.

On the surface there seems to be an ambiguity in proper-name identity statements resulting from these two considerations: (1) Is the statement essentially metalinguistic? and (2) If not, what information is being conveyed, what "sense" is attached to the names? As Frege remarks, in an ideal language, the ambiguties of (2) would not arise. A different sense would be attached to each name (p. 58). This ambiguity can be viewed as one arising from not clearly stipulating the semantical rules, i.e., not giving the criteria for saying when two expressions have the same referent or sense. Frege, working within "the method of the name relation," says just this. However, there is a more basic reason for an ambiguity in natural language. That, as we shall see, is because the semantical method itself is not stipulated.

*The Criterion of Interchangeability* The "antinomy of the name-relation," as Carnap calls it, is the problem of interchanging names or definite descriptions in non-extensional contexts such as in belief sentences or sentences involving necessity. At least part of the use of identity sentences (sentences of the form "$a = b$" or '$a$ is the same as $b$'), if viewed metalinguistically, is to imply interchangeability of names or descriptions. We have seen how Frege escapes the antinomy by, in effect, changing the referents of the expressions involved, i.e., giving us new names. However,

6. "Proper names," *Mind*, vol. LXVII (1958), pp. 166-173.

it might appear possible, instead of changing referents, to restrict interchangeability in certain ways, that is, to give different criteria of identity.

Ruth Marcus has given us just such a possibility.[7] The thesis of extensionality has been that every meaningful sentence can be reduced to one in which names or descriptions for the same thing can be interchanged *salva veritatae*. Mrs. Marcus contends that 'extensional' is ambiguous because 'for the same thing', used above, or more pointedly, because '=', or 'is the same as', as used in an object language, is ambiguous. It can mean either 'identity', 'indiscernability', 'tautologically equivalent', or 'materially equivalent'. This ambiguity is shown in the restriction on interchangeability. In 'The number of planets equals nine', 'equals' is ambiguous. Since the two expressions 'the number of planets' and 'nine' are not interchangeable in such contexts as 'necessarily nine is greater than seven', 'equals' must mean only material equivalence. In

(9) The evening star equals the morning star

if the two expressions on each side of 'equals' are considered as only *names*, then the relation is strict identity. (9) is then necessarily true, because 'the evening star' and 'the morning star' are *synonymous*. This can be seen to be so if we consider the expressions as devoid of any descriptive content and only as names for the same thing. Carnap's notion of 'semantical rule' is helpful here. The two expressions are known to be equivalent by the semantical rules alone, i.e., they are L-equivalent (M & N, p. 10). This notion of synonomy (or perhaps a stronger notion, in relation to context) is the kind we use when we say 'Mr. Jones believes that Bill did it' when we know that Mr. Jones only knows Bill by the name 'Mr. Smith'. The two expressions, 'Bill' and 'Mr. Smith', being names for the same person and being used *this* way, are interchangeable in *all* contexts, even in statements of belief. In fact, one way of isolating a "pure" name, one that is not shorthand for a description, may be by means of this test of interchangeability in all contexts.

If, however, 'the evening star' and 'the morning star' are taken as *descriptions* then (9) does not seem to permit interchanging the two expressions in all contexts. We have, then, Frege's problem of indirect occurrences and his solution in "On sense and reference."

Quine's reaction[8] to an earlier paper by Marcus[9] points out the effects on the "ontology" of a language[10] of accepting such different equivalence

7. "Extensionality," *Mind*, vol. LXIX (1960), pp. 55-62.

8. "The problem of interpreting modal logic," *The Journal of Symbolic Logic*, vol. XII (1947), pp. 43-48.

9. Ruth Barcan (Marcus), "A functional calculus of first order based on strict implication," *The Journal of Symbolic Logic*, vol. XI (1946), pp. 1-16.

10. Speaking in an incorrect manner, of course. If the present thesis is correct, ontology is discovered primarily in the metalanguage.

relations between "objects." Quine's main concern here, as in the paper "Notes on existence," and the letter to Carnap in M&N, is to demonstrate that individuals "disappear," in some sense, when we allow quantification into modal contexts. As he notes in "The problem of interpreting modal logic":

> Thus it is that the contemplated version of quantified modal logic is committed to an ontology which repudiates material objects (such as the Evening Star properly so-called) and leaves only multiplicities of distinct objects (perhaps the Evening-Star-concept, the Morning-Star-concept, etc.) in their place. For, the ontology of a logic is nothing other than the range of admissible values of the variables of quantification. (p. 47)

The relation between this statement and Marcus' later paper is this, if we allow different concepts of "identity" or "equivalence" between *objects* (not names of objects), then we would seem to have different kinds of individuals for the values of our variables depending upon which concept we were using. Let us look at an example (capitalizing to show use as a proper name):

(10) The Morning Star (M.S.) equals the Evening Star (E.S.) (using 'equals' in the same way as before).

Since these two expressions on each side of 'equals' are proper names, 'equals' is what Marcus would call 'identity'. We can substitute these terms in any context and not change truth-values. Thus, since '**N**(MS = MS)' is true, so is '**N**(MS = ES)'. Letting lower case letters show that descriptions are involved, let us look at:

(11) The morning star (ms) equals the evening star (es).

In this example ms and es are only materially equivalent. Thus, when we substitute in '**N**(ms = es)' we cannot be assured of having another truth. In fact, '**N**(ms = es)' can be seen to be false. Notice that we are assuming that '=' in both cases has some constant meaning, but the point would remain even if '=' meant identity in one case, and material equivalency in another. Following an example by Quine, let us use Carnap's '$\equiv$' for the strict identity of Marcus, and '$\equiv$' for material equivalency. Then we have:

(12) $ms \equiv es \cdot ms \not\equiv ms$

By existential generalization (EG) we have:

(13) $(\exists x)(x \equiv es \cdot x \not\equiv ms)$

From our previous discussion we know:

(14) $es \equiv es \cdot - (es \not\equiv ms)$

By EG again:

(15) $(\exists x)(x \equiv es \cdot - (x \not\equiv ms))$

Quine says:

> Since the matrix quantified in (13) and the matrix quantified in (15) are mutual contraries, the $x$ whose existence is affirmed in (13) and the $x$ whose existence is affirmed in (15) are two objects; so there must be at least two objects $x$ such that ($x \equiv$ es). If we were to introduce the term 'Venus' we could infer a third object in similar fashion. (p. 47)

After this statement follows the previous quote from Quine.

Thus we see that the notion of different equivalence relations between objects and the problem of quantifying into modal contexts are one and the same, that is, the problem of interchanging names in nonextensional contexts. From the point of view of Quine, *and his semantical outlook*, we generate new and unusual objects by having different equivalence relations between objects.

The point to be taken here is indeed that "identity conditions," or, since this phrase is ambiguous in the way shown by Marcus and Carnap, equivalence relations, *determine* the entities there are. But the reason, of course that they do, is that the semantical method involved gives the meaning to such relations. Marcus is dispensing with the referent concept, i.e., "the method of the name-relation," by proposing a different kind of "identity." Quine, by holding to one notion of identity as the "real" one—that notion being interchangeability in *all* contexts—has indeed been able to generate new and "unusual" entities.

The present outlook is not in agreement with Quine, of course. When he stated that existential generalization showed that there are *two* objects involved, did he mean

(16) $(\exists x)(\exists y)(\text{-}(x \equiv y) \cdot (x \equiv \text{ms}) \cdot (y \equiv \text{ms}))$?

Or

(17) $(\exists x)(\exists y)(\text{-}(x \equiv y) \cdot (x \equiv \text{ms}) \cdot (y \equiv \text{ms}))$?

The first is factually true and the second is necessarily false. If we replace identity by some other equivalence relation, i.e., use a different semantical method such as "the method of extension and intension" or its outgrowth in the neutral metalanguage $\mathcal{M}'$, then we cannot ask if there are "two" objects of a certain sort unless we mean *one* of the above.

In using (16) and (17) above we see that if Quine's contention concerning the number of objects is put into the object language which is being considered, then no paradox arises. We know the truth conditions for (16) and (17) and indeed in this case, know the truth values as well. Quine's analysis would give us the same paradoxical results when applied to (16) and (17) as when applied originally to (12), of course. But, the paradox arises from *how* (16) and (17) and the original case of (12) are analyzed, *not* from any deriviation from (12). The semantical method gives us paradox, not just the statements themselves. Again the view that there is just one way of analyzing language, i.e., just one semantical method, comes to the fore. By this stage we must accept the possibility of others.

(One other point here: The fact that we use '$\equiv$' and '$\overset{=}{\equiv}$' as replacements for '=' does not mean that identity or equivalence have their meaning

independently of the metalanguage. Again 'a ≡ b' means '**N**(a ≣ b)' which means '**N**(a = b)'.)

"The antinomy of the name-relation" as Carnap calls it, points out clearly that identity is ambiguous, and moreover, that this ambiguity results from a lack of awareness that identity draws its meaning from the semantical method assumed. Our acceptance of a criterion of identity or other equivalence relation between entities is in effect the acceptance of a particular semantical method. The belief that identity conditions determine "what there is" is, in effect, the belief that semantical method and metalanguage determine, "what there is."

**4** No attempt will be made to spell out in detail the equivalence relations among each type of entity mentioned in section **1**. The thesis of this paper has been that this "spelling out" amounts to a *definition* of each such class. The third group, the "range of variables" of a modal logic with quantifiers, could, for example, be delineated using metalanguage $\mathcal{M}'$ and the equivalence relations designated '≡' and '≣' given in it. With intensional entities a language similar to $\mathcal{M}'$ might be useful. '*a* is the same intensional entity (e.g., our witch) as *b*' would mean something like '*a* ≣ *b*', although this might be too strong, for it says that the semantical rules which govern '*a*' and '*b*' determine that '*a* = *b*' is true. And our believers in witches might not be able to spell out such rules. Whatever rules we *do* give for a symbol for '__ is the same intensional entity as . . .' *will determine what an intensional entity is*, without saying when we have "one" or "two" such entities.

The case of events is more complicated. Some non-symmetrical relation is needed between say, the bomb and World War II so that it is true that the bomb has this relation to World War II, but not vice-versa. We might translate it 'is a part of' or 'is in'. In any case, the question "Are these *two* entities or *one*?" need not be answered for us to know what an "event" is. The equivalence, and the "in," relations tell us what an event is.

*Conclusion:* The adotpion of a particular semantical method, which includes the adoption of certain equivalence relations, is the adoption of an ontology. The semantical method which allows us to ask whether we have "one" or "two" entities ("the method of the name-relation") is only one such method, and possibly not the best one.

*Monmouth College*
*Monmouth, Illinois*