

## QUINE'S CRITERIA OF ONTOLOGICAL COMMITMENT

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In addition to his numerous contributions to logic, W. V. Quine has written extensively on the subject of ontology, beginning with his article "Ontological Remarks on the Propositional Calculus" (1934). One of the topics in ontology which has been of interest to Quine is the problem of clarifying and resolving ontological controversies. As an attempt to solve, at least in part, this two-fold problem, Quine has presented what he has called "a criterion of ontological commitment." (1) He has made the explicit claims that such a criterion is applicable in trying to clarify and resolve certain kinds of ontological controversies, (2) and that it is explicit and well suited for such purposes. (3) In addition, it would seem that he has made the implicit claim that the formulations of this criterion which he has proposed all come to the same theme.

It is evident that if we are unable to clarify an ontological controversy, in the sense of making explicit what the issue is, then we will not be able to resolve the dispute. It is not evident, however, that we can bring about any kind of significant clarification by using Quine's criterion, since such a controversy might be said to have little, if anything, to do with the issue of bound variables and their values (with which Quine's criterion is concerned). Secondly, even if we grant an ontological dispute has something to do with the issue of bound variables and their values, it is not clear that we either can or need apply Quine's criterion in such a controversy. For, the statements of the disputants might be in a language which has no need or notion of bound variables and their values; or the disputants might be unwilling or unable to translate their statements into a form in which Quine's criterion might be applicable; or it might be unnecessary to apply Quine's criterion in order to clarify and even resolve the controversy. In any case, as a third criticism, one might argue that it would be difficult to apply Quine's criterion, since

the criterion is far from being the explicit standard that Quine believes it to be. Finally, it might be pointed out that in the course of his writings Quine has offered a number of formulations of a criterion of ontological commitment, and one might argue that not all of these formulations come to the same theme. I shall be concerned in this study with an examination of each of these four general criticisms, beginning with the fourth one.

In his writings, beginning in 1939 with "Designation and Existence," Quine has presented a number of versions of a criterion of ontological commitment. In addition to the obvious variations in the linguistic formulation of such a criterion, it appears that there are conceptual differences as well. One may grant that some of these versions appear to be merely stylistic variations on the same theme. It would be difficult, however, to say the same for the remaining accounts. In order to see more clearly that there may be conceptual differences among Quine's formulations, let us divide the versions into two groups: Group A and Group B. Within Group A we find the following formulations:

- (1) The universe of entities is the range of values of variables. (4)
- (2) To be is to be the value of a variable. (5)
- (3) To be is to be a value of a variable. (6)
- (4) ... to be is to be in the range of reference of a pronoun. (7)

Within Group B we find (among others which we shall consider later in this study) the following versions:

- (5) Ultimately the objects referred to in a theory are to be accounted not as the things named by the singular terms, but as the values of the variables of quantification. (8)
- (6) The ontology to which one's use of language commits him comprises simply the objects that he treats as falling with the subject-matter of his quantifiers — within the range of values of his variables. (9)

- (7) The bound variables of a theory range over all the entities of which the theory treats. <sup>(10)</sup>
- (8) For to say that a given existential quantification presupposes objects of a given kind is to say simply that the open sentence which follows the quantifier is true of some objects of that kind and none not of that kind. <sup>(11)</sup>
- (9) In general, *entities of a given sort are assumed by a theory if and only if some of them must be counted among the values of the variables in order that the statements affirmed in the theory be true.* <sup>(12)</sup>

When we compare the formulations in Group A with the ones in Group B, the former group appears to contain a theme which is not present in any of the versions of the latter group and which is even rejected by Quine. In Group A Quine seems to be setting forth a position which centers around the idea of attempting to draw ontological conclusions from linguistic observations. If we interpret the formulations in Group A literally, then it would seem that Quine is saying that in order to find out whether or not something is, all we need to do is simply to inspect the variables (or pronouns) which we or someone else may be using. In other words, in Group A Quine seems to be saying that if something *is*, then it is the value of a variable (or in the range of reference of a pronoun); and if it is not the value of a variable (or in the range of reference of a pronoun), then it *is not*.

If Quine's criterion amounted to the preceding theme, then we could use it as a means for determining, not to what entities we or others are *committed*, but rather as a way of ascertaining what entities *there are*. Moreover, if Quine were suggesting that we engage in this kind of "armchair ontology," then rather odd results would be possible with such a program. For example, we could create an entity (other than the variable itself) simply by writing down a variable, or we could destroy an entity (other than the variable) by erasing our variable. <sup>(13)</sup>

Although some of Quine's critics have rejected his versions of a criterion of ontological commitment, they seem to have missed the literally odd character of formulations such as those

in Group A. R. Routley, for example, contends that Quine's formulations (2) and (9) stand in need of revision, and he offers three versions which he believes are correct. In Routley's numbering in his criteria are:

- (iii) ... to exist is to be the value of a variable bound by ' $\exists$ '.
- (iv)  $a$  exists if and only if  $a$  is the value of a variable bound by ' $\exists$ '.
- (v) ... to be possible (in one sense) is to be the value of a variable bound by ' $\Sigma$ ' (under the intended interpretation of ' $\Sigma$ '). (<sup>14</sup>)

Clearly, Routley's reformulations (iii)-(v) are just as literally odd as is Quine's formulation (2). Another example of a critic who seems to have missed the strange character of formulations such as those in Group A is Gustav Bergmann in "Particularity and the New Nominalism". Bergmann formulates what he believes are two conceptions of ontology,  $O_1$  and  $O_2$ . According to Bergmann,  $O_1$  culminates in *Principia Mathematica* and may be stated as follows:

- ( $O_1$ ) What there is or exists, in the sense in which ontology speaks of existence, is shown by the undefined descriptive constants of the ideal language. (<sup>15</sup>)

$O_2$ , Bergmann states, has its beginning in Quine's essay "On What There Is" and may be formulated as follows:

- ( $O_2$ ) To exist, in the sense in which ontology speaks of existence, is to be the referent of what is in the range of a variable of the ideal language. (<sup>16</sup>)

Bergmann does not point out the odd character of both conceptions of ontology. He does remark, however, that they have their "dangers" in that "one may be tempted to forget that philosophical discourse is not just about the ideal language but rather, by means of it, about the world". (<sup>17</sup>)

There may have been philosophers who have used their observations of language as evidence, at least in part, for justifying some of their ontological conclusions. If we were to confine our attention to Quine's formulations in Group A, it would seem appropriate to include Quine among such philosophers. However, if we broaden our examination to include the versions in Group B and, especially, Quine's comments on them, we see that it would be a mistake to suppose that Quine is urging us to follow such a course in our attempts to resolve ontological controversies. In the first place, Quine has tried to make it clear that for him ontological questions are not the same as semantic ones:

We must not jump to the conclusion that what there is depends on words. Translatability of a question into semantical terms is no indication that the question is linguistic. <sup>(18)</sup>

Secondly, Quine maintains that ontological questions extend beyond semantic ones. Although he asserts that "shift of language ordinarily involves a shift of ontology," Quine adds that

there is one important sense, however, in which the ontological question transcends linguistic convention: How economical an ontology *can* we achieve and still have a language adequate to all purposes of science? In this form the question of the ontological presuppositions of science survives. <sup>(19)</sup>

Finally, as Quine admits, translatability of an ontological question into a semantic one may only enable us to delay rather than avoid the unwelcome collapse of such disputes. When he states that "it is no wonder, then, that ontological controversy should tend into controversy over language," <sup>(20)</sup> Quine is describing a course of action which has become useful in delaying the collapse of disputes in ontology into what he has called "question-begging." Quine thinks that where

there is communication between the disputants in an ontological controversy, there is also the possibility of resolution. Thus, when Quine suggests that we make a "semantic ascent" in ontological disputes, he is in effect reminding us that if we can not find a basis for some kind of agreement about language, then significant communication (that is, something above the level of mere ostensions) becomes quite unlikely and resolution virtually impossible.

In commenting on (9), Quine remarks:

I am not suggesting a dependence of being upon language. What is under consideration is not the ontological state of affairs, but the ontological commitments of a discourse. What there is does not in general depend on one's use of language, but what one says there is does. <sup>(21)</sup>

Nevertheless, if we were to confine our investigation to the versions in Group A, it would appear that Quine is attempting to say something about "the ontological state of affairs" instead of "the ontological commitments of a discourse." Since the formulations (5)-(9), together with others which we shall place in Group B, seem to be more explicit (or at least less misleading) expressions of Quine's announced goal, namely, of setting forth a criterion for uncovering the ontological commitments of a discourse, we may restrict our study to the versions in Group B. Yet, even when we confine our examination to this group, there still is the problem of dealing with the remaining three general criticisms raised at the beginning of this study. Let us take up these three criticisms, then, beginning with the third one.

When we consider (5)-(9), together with the following ones, it is evident that there is a certain lack of uniformity of meaning within the group. At times Quine speaks of a "theory" being committed to a particular kind of ontology, as in (5), (7), (9), and

- (10) ... a theory is committed to those and only those entities to which the bound variables of the theory must be

capable of referring in order that the affirmations made in the theory be true, <sup>(22)</sup>

whereas he talks about an "interpreted theory" in

- (11) The ontology to which an (interpreted) theory is committed comprises all and only the objects over which the bound variables of the theory have to be construed as ranging in order that the statements affirmed in the theory be true. <sup>(23)</sup>

Sometimes Quine is referring to a particular type of statement, as in (8); sometimes he is speaking about "statements," as in

- (12) The entities presupposed by statements which use combinators turn out, under such reasoning, to be just the entities that must be reckoned as arguments or values of functions in order that the statements in question be true; <sup>(24)</sup>

and at other times he merely mentions "discourse," as in

- (13) ...to settle the question of the ontological commitments of a given discourse we must look not to the alleged singular terms but to the demands which are put upon the range of values of the variables of quantification; i.e., to the demands which are put upon the universe which one appeals to in construing the quantifiers, <sup>(25)</sup>

or he mentions a "doctrine," as in

- (14) My own position, first and last, is that the ontological presuppositions of a doctrine comprise all and only those objects which must, in order that the doctrine be true, be in the universe with respect to which the quantifiers are construed. <sup>(26)</sup>

In addition to talking about linguistic entities, such as theories,

statements, discourse, and doctrines, Quine speaks at times about people ("him," "we") having ontological commitments, as in (6) and

- (15) But this is, essentially, the *only* way we can involve ourselves in ontological commitments: by our use of bound variables. <sup>(27)</sup>

Finally, there are occasions on which Quine mentions neither what nor who may be said to have these ontological commitments, as in

- (16) To be assumed as an entity is, purely and simply, to be reckoned as the value of a variable. <sup>(28)</sup>

So far, then, it would appear that the formulations in Group B do not come to the same theme. We would not say, for example, that for a theory to be committed to a particular kind of ontology is the same as or a statement to be so committed. <sup>(29)</sup> Again, neither we nor Quine would attempt to identify the ontological commitments of a discourse with those of a person. <sup>(30)</sup> Moreover, since Quine has not provided us with a precise account of what he means by the term 'theory', it is difficult to see clearly how we are supposed to apply his criterion to theories. <sup>(31)</sup> Even if he had offered such an account, the information would seem to be of little help in trying to find some common meaning among all of the versions in Group B.

If we turn to a single formulation in Group B, which one shall we choose? Shall we choose one which seems to fall within what Quine has called "the theory of reference" or one in "the theory of meaning"? If we agree with Quine that "the theory of meaning is in a worse state than the theory of reference," <sup>(32)</sup> then we would do well to choose a formulation from the latter theory. As Cartwright points out,

Given Quine's standards of clarity, a criterion of ontological commitment will be clear only if whatever semantical terms enter into its formulation are drawn exclusively from the



theory of reference. To the extent that terms taken from the theory of meaning are used in formulating an ontological criterion, the criterion will, from Quine's point of view, have to be counted obscure. <sup>(33)</sup>

At first glance, the question of from which theory we shall choose a formulation seems to be pointless, since all of the versions, except (12), pertain to discourse formulated in terms of quantification theory; and as Quine says, "As applied to discourse in an explicitly quantificational form of language, the notion of ontological commitment belongs to the theory of reference". <sup>(34)</sup> However, the question does appear to have some significance when we look more closely at Group B. Although all of the versions, except (12), seem to pertain to quantificational discourse, (9)-(15) and

- (17) The test is whether the variables of quantification have to include those entities in their range in order to make the theory true <sup>(35)</sup>

contain expressions such as "must be," "can," "have to be," "have to," and "must"; and in these cases, as Chihara has pointed out, "the criterion certainly seems to make use of modal terms taken from the theory of meaning." <sup>(36)</sup> As for the remaining formulations in Group B, Cartwright has argued that "any adequate formulation of such a criterion will be intensional, in the sense that it will make essential use of some term taken from the theory of meaning." <sup>(37)</sup> Moreover, even if one could formulate a version solely in terms of the theory of reference, Scheffler and Chomsky have argued that

extensional alternatives are trivial if adequate, while the philosophical purposes motivating the original ontological criterion are equally served by arguments making no reference to ontological commitment at all. <sup>(38)</sup>

Although Scheffler and Chomsky agree with Cartwright that "any adequate, non-trivial criterion is likely to be intensional," they add that

we do not see any philosophical point in developing such a criterion, and we feel, further, that any such criterion will be obscure, for reasons similar to those advanced by Quine. <sup>(39)</sup>

Even if we suppose, contrary to the arguments of Chihara, <sup>(40)</sup> Cartwright, Scheffler, and Chomsky, that Quine has offered us a clear and explicit standard, we are still faced with the second and the first general criticisms raised at the beginning of this study.

According to this second criticism, there could be cases of ontological controversies in which we neither can nor need apply Quine's criterion. In the first place, if the statements of the disputants are in a language which has no need for bound variables, then we can not apply any of the formulations in Group B. As we have already seen, all of the versions, except (12), pertain to discourse formulated in terms of variables of quantification theory. Although (12) might be applied to combinatory discourse, it is not evident that this is the only form of language having no need of bound variables. Secondly, if the disputants' statements are in a language form which has no notion of bound variables or of their values, then, as Quine admits, "we cannot make even the roughest and remotest sense of ontological commitment" <sup>(41)</sup> for such statements. Thirdly, if either disputant is unwilling to translate his statements into a quantificational form of language, then, along with Quine, we would agree that the argument terminates without resolution. Fourthly, if a disputant is unable, in his own philosophical estimation (owing perhaps to his commitment to something called "ordinary language"), to translate his statements into the notation of quantification theory, then in this case, too, the controversy ends without resolution. For Quine maintains that

we cannot paraphrase our opponent's sentences into canonical [that is, quantificational] notation for him and convict him of the consequences, for there is no synonymy; rather we must ask him what canonical sentences he is prepared

to offer consonantly with his own inadequately expressed purposes. <sup>(43)</sup>

Finally, it could be the case that it is unnecessary to apply Quine's criterion in order to bring about a clarification and even a resolution of the controversy. If the dispute were based upon a confusion of the meaning of certain expressions, such as 'exists' as Alan R. Anderson has urged about the medieval realist-nominalist issue, <sup>(43)</sup> then it would appear that one could resolve (or dissolve) the controversy simply by uncovering the confusion. Moreover, Quine offers two types of instances in which one might be able to resolve the given controversies without resorting to a criterion of ontological commitment. One case might be said to involve an individual who charges his opponent with admitting into his ontology a gingerbread man who runs and talks, a giant and a beanstalk, a pumpkin coach, and the like. If we accept Quine's distinction between the ontological commitments of a man and of his discourse, then it appears that we can resolve this kind of controversy without using Quine's criterion. The other case which Quine mentions concerns a man who "shows how some particular use which he makes of quantification, involving a *prima facie* commitment to certain objects, can be expanded into an idiom innocent of such commitments." <sup>(44)</sup> If such a translation (or "expansion") can be provided, then here, too, we would seem to have no need of Quine's criterion. <sup>(45)</sup> On the basis of this second general criticism, then, it would appear that there are certain kinds of ontological controversies in which we either can not or else need not apply Quine's criterion in order to bring about a clarification or resolution of the dispute.

Quine's criterion, according to the first general criticism, might be said to be irrelevant to the question of resolving ontological controversies. P. T. Geach, for example, contends that

certain concepts, like *existence* and *truth* and *thing* and *property*, are used, and cannot but be used, in all rational

discourse whatsoever; and ontology is an attempt to scrutinize our use of them. To be right or wrong in ontology means being clear or muddled about such fundamentals. <sup>(46)</sup>

If we accept the view that to do ontology amounts to analyzing certain kinds of concepts, then Quine's criterion would seem to have no bearing on either clarifying or resolving an ontological dispute. In order to clarify such a dispute, we would attempt to present an accurate account of the use of the concepts in question; and we might be able to resolve the controversy by showing that our opponent is "muddled," whereas we are "clear," about the use of the given concepts. Carnap is another critic who seemed to hold that Quine's criterion has little, if any, bearing on clarifying and resolving ontological disputes. For Carnap, if an ontological question is to be significant, it must be treated as a practical, and not a theoretical, question. For example, in asking whether or not there are classes, Carnap believes that we are asking the practical question of whether we should accept a particular linguistic framework. However, Carnap adds that

the acceptance of a linguistic framework must not be regarded as implying a metaphysical doctrine concerning the reality of the entities in question. It seems to me due to a neglect of this important distinction that some contemporary nominalists label the admission of variables of abstracts types as "Platonism." <sup>(47)</sup>

The question of acceptance, Carnap believes, is a pragmatic one which is to be decided in terms of the degree to which the particular linguistic framework proves to be an efficient instrument for carrying out the intended aims of the language. Consequently, if we accept the view that ontological controversies are disputes about whether or not to choose certain kinds of linguistic frameworks, and if we agree with Carnap that the acceptance of such frameworks "will finally be decided by their efficiency as instruments," <sup>(48)</sup> then we might say that Quine's criterion is irrelevant to the question of resolving ontological disputes.

Of course, we need not adopt either Geach's or Carnap's conception of ontology. To insist that we accept their view or some such variant would amount to begging the question. As for the remaining three general criticisms raised in this study, the second and the fourth are of minor philosophical interest, whereas the third is of major importance. In view of the fourth criticism, we may grant that there are conceptual differences between the formulations in Group A and Group B. The versions in Group B, however, would seem to express more accurately Quine's notion of a criterion of ontological commitment. Again, in light of the second criticism, we may concede that Quine's criterion can not or need not be applicable in every kind of ontological controversy. But then, Quine has nowhere made such a sweeping claim for his criterion. Finally, if Quine, according to the third criticism, has not provided us with a clear and explicit standard, then research should be directed toward either a revision of or alternative to his criterion. It has been the purpose of this study to bring together some of the principal criticisms of Quine's criterion, to sort out the major and the minor ones, and to suggest a direction for further investigation.

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#### NOTES

(1) The notion of ontological commitment forms one of the two main themes of QUINE's *From a Logical Point of View*, 2d ed. (New York, 1961; Harper Torchbook edition). In that same book Quine discusses rather fully the notion of a criterion of ontological commitment in *Essays I*, "On What There Is," and VI, "Logic and the Reification of Universals."

(2) *From a Logical Point of View*, pp. 13-14.

(3) *Ibid.*, pp. 13, 19, and 105.

(4) "Designation and Existence," *The Journal of Philosophy* XXXVI (1939), 708.

(5) *Ibid.*

(6) "A Logistical Approach to the Ontological Problem," in *The Ways of Paradox and Other Essays* (New York, 1966), p. 66.

(7) *From a Logical Point of View*, p. 13.

(8) *Ibid.*, pp. 144-145.

(9) "Notes on Existence and Necessity," *The Journal of Philosophy*, XL (1943), 118.

(10) "On Universals," *Journal of Symbolic Logic*, 12 (1947), 75.

(11) *From a Logical Point of View*, p. 131.

(12) *Ibid.*, p. 103.

(13) For a criticism similar to the one raised in the present study, see Morton WHITE, *Toward Reunion in Philosophy* (Cambridge, Mass., 1956), p. 86, and Max BLACK, "Comments on Preceding Paper of W. V. Quine," *Proceedings of the American Academy of Arts and Sciences*, 80 (1954), 98-99. Black's comments, specifically on formulation (2), refer to Quine's "Semantics and Abstract Objects," 90-96, of the same *Proceedings*.

(14) "Some Things Do Not Exist," *Notre Dame Journal of Formal Logic*, 7 (1966), 275.

(15) "Particularity and the New Nominalism," in Bergmann's *Meaning and Existence* (Madison, 1960), p. 92.

(16) *Ibid.*, p. 93.

(17) *Ibid.*

(18) *From a Logical Point of View*, p. 16; cf. also pp. 15, 16, and 103.

(19) "A Logistical Approach to the Ontological Problem," p. 68.

(20) *From a Logical Point of View*, p. 16; cf. *Word and Object* (Cambridge, Mass., 1960), pp. 270-273.

(21) *From a Logical Point of View*, p. 103; cf. QUINE, "Symposium: On What There Is," *Proceedings of the Aristotelian Society, Supplementary Volume*, 25 (1951), 159; QUINE, "Ontology and Ideology," *Philosophical Studies*, 2 (1951), 12; and *Word and Object*, p. vii (James Grier Miller's remark "Ontology recapitulates philology") and p. 243, n. 5.

(22) *From a Logical Point of View*, pp. 13-14; cf. QUINE, "The Philosophical Bearing of Modern Logic," in *Philosophy in the Mid-century, A Survey*, Vol. I, 2d ed., ed. Raymond KLIBANSKY (Firenze, 1961), p. 3.

(23) "Ontology and Ideology," 11.

(24) *From a Logical Point of View*, p. 104.

(25) "Symposium: On What There Is," 152-153.

(26) *Ibid.*, 153; cf. also p. 159 for two more formulations, one of which pertains to languages supposing type differences.

(27) *From a Logical Point of View*, p. 12; cf. also p. 13 and p. 76; "On Carnap's Views on Ontology," in *The Ways of Paradox*, p. 128; "Semantics and Abstract Objects," 93; and *Word and Object*, p. 242.

(28) *From a Logical Point of View*, p. 13; cf. also *Methods of Logic*, 2d ed. (New York, 1959), p. 228, and "On Carnap's Views on Ontology," p. 130.

(29) For a discussion of the difficulties connected with the differences between the ontological commitments of a theory and of a single sentence, see Charles S. CHIHARA, "Our Ontological Commitment to Universals," *Nous*, II (1968), 33-36.

(30) *From a Logical Point of View*, p. 103.

(31) For a discussion of some of the difficulties involved in trying to apply Quine's criterion to theories, see CHIHARA, "Our Ontological Commitment to Universals," 36-38.

(32) *From a Logical Point of View*, p. 130.

(33) "Ontology and the Theory of Meaning," *Philosophy of Science*, XXI (1954), 318.

(34) *From a Logical Point of View*, pp. 130-131. We need not exclude (12) from consideration, since Quine, p. 104, believes it to be "an equivalent criterion [to (9)] of ontological commitment for combinatory discourse."

(35) "On Carnap's Views on Ontology," p. 129.

(36) "Our Ontological Commitment to Universals," 32.

(37) "Ontology and the Theory of Meaning," 324.

(38) "What Is Said To Be," *Proceedings of the Aristotelian Society*, 54 (1958-1959), 71, n. 2.

(39) *Ibid.*

(40) CHIHARA, "Our Ontological Commitment to Universals," 33-42, has offered additional arguments to show that Quine's criterion is neither clear nor explicit.

(41) *From a Logical Point of View*, p. 107. Quine adds, on p. 107 of this work, that when we seek the ontological commitments of the statements in this language form, which he calls "L," we are simply projecting "a provincial trait of the conceptual scheme of our culture circle beyond its range of significance. Entity, objectuality, is foreign to the L-speaker's conceptual scheme." P. T. GEACH, in "Symposium: On What There Is," *Proceedings of the Aristotelian Society, Supplementary Volume*, 25 (1951), 136, appears to deny the possibility of there being a language such as "L," since he contends that "certain concepts, like *existence* and *truth* and *thing* and *property*, are used, and cannot but be used, in all rational discourse whatsoever..." For a reply to Geach, see A. J. AYER, "On What There Is," in *Philosophical Essays* (London, 1954), pp. 228-229 (reprinted from pp. 137-148 of the symposium with Quine and Geach).

(42) *Word and Object*, pp. 242-243.

(43) "Church on Ontological Commitment," *The Journal of Philosophy*, LVI (1959), 451-452. For Quine's comments on this medieval dispute, see *From a Logical Point of View*, pp. 14-15.

(44) *From a Logical Point of View*, p. 103.

(45) William P. ALSTON, "Ontological Commitments," in *Philosophy of Mathematics*, ed. P. Benacerraf and H. Putnam (Englewood Cliffs, 1964), pp. 249-257, has argued that any adequate translation of a sentence S will have the same ontological commitments as does S. For a reply to Alston, see Chihara, "Our Ontological Commitment to Universals," 27.

(46) "Symposium: On What There Is," 136.

(47) Rudolf CARNAP, "Empiricism, Semantics, and Ontology," in *Meaning and Necessity*, 2d ed. (Chicago, 1956), pp. 214-215. In *Methods of Logic*, p. 208, Quine acknowledges that for Carnap "quantification over abstract objects is a linguistic convention devoid of ontological commitment..."

(48) "Empiricism, Semantics, and Ontology," p. 221.