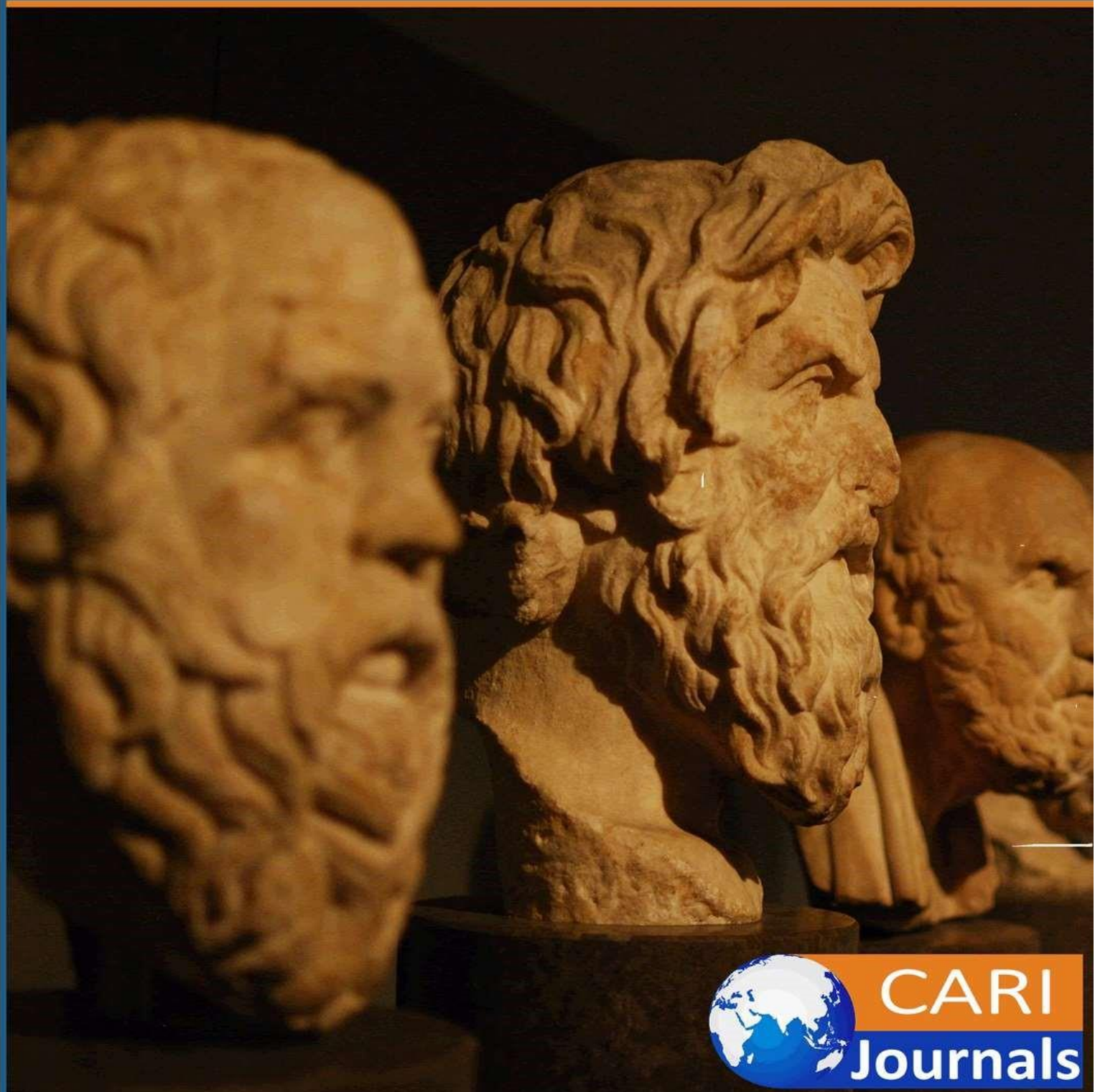


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**A Ratiocinative Study and Assessment of W. V. O. Quine's
“Criterion of Ontological Commitment”**



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A Ratiocinative Study and Assessment of W. V. O. Quine’s “Criterion of Ontological Commitment”

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Abstract

Purpose: This work has three main objectives: Firstly, it offers an elucidation of the notion of ontological commitment. Secondly, it assesses the adequacy of the criterion of ontological commitment for different languages. Thirdly, it offers some speculative and evaluative remarks regarding the significance of Quine’s criterion of ontological commitment. Many ontologists, within the analytic tradition, often appeal to Quine’s criterion of ontological commitment, when debating whether an assertion or theory implies the existence of a certain entity. Regarding his goal in formulating this criterion, he says that the criterion does *not* aim to help us discover what it is that there is, but only what a theory says there is: “I look to variables and quantification for evidence as to what a theory says that there is, not for evidence as to what there is” (Quine, 1960: 225). Its most popular formulation, using textual evidence from Quine’s oeuvre, is: “To be is to be the value of a bound variable,” (Quine, 1961: 15). However, this formulation is susceptible to gross misunderstanding, especially if one is influenced by the formalities and technical maneuvers of model theory. In mathematical logic, model theory is the study of the relationship between formal theories (a collection of sentences in a formal language expressing statements about a mathematical structure), and their models (those structures in which the statements of the theory hold). Model theory is a branch of mathematical logic where we study mathematical structures by considering the first-order sentences true in those structures and the sets definable by first-order formulas. Model theory studies the relations between sentences of a formal language and the interpretations (or ‘structures’) which make these sentences true or false. It offers precise definitions of truth, logical truth and consequence, meanings and modalities.

Methodology: This work is expository, analytic, critical and evaluative in its methodology. Of course, there are familiar philosophical problems which are within the discursive framework of ‘ontology,’ often phrased by asking if something or some category of things are “real,” or whether “they exist,” concretely. An outstanding example is provided by the traditional problem of universals, which issues in the nominalist-realist controversy, as to the real existence of universals, or of abstract entities such as classes (in the mathematical sense) or propositions (in the abstract sense, referring to the content of an assertion in abstraction from the particular words used to convey it).

Results: In as much as one might agree with Quine’s Criterion of Ontological Commitment, one might also opine that it is nonetheless a feature of **first-order language** (i.e. the language embodied in first-order logic; a symbolized reasoning process comprising relations, functions and constants, in which each sentence or statement is broken down into a subject and a predicate. In this regard, the predicate modifies or defines the properties of the subject) that there should be an exact correspondence between the ontological commitments carried by a sentence and the objects that must be counted among the values of the variables in order for the sentence to be true. However, this in itself is not a reason for thinking that such a feature will generalize beyond first-order languages. It is possible for Quine’s Criterion to degenerate, when the language contains atomic predicates expressing extrinsic properties.

Unique Contribution to theory, practice and policy: Based on Quine’s analysis, a theory is committed to those and only those entities that in the last analysis serve as the values of its bound variables. Thus, ordinary first-order theory commits one to an ontology only of individuals (particulars), whereas higher order logic commits one to the existence of sets, i.e. of collections of definite and distinct entities (or, alternatively, of properties and relations). Likewise, if bound first-order variables are assumed to range over sets (as they do in set theory), a commitment to the existence of these sets is incurred. Admittedly, the precise import of Quine’s criterion of ontological commitment, however, is not completely clear, nor is it clear in what other sense one is perhaps committed by a theory to those entities that are named or otherwise referred to in it, but not quantified over in it. However, it despite its limitations, it has made it possible for one to measure the ontological cost of theories, an important component in deciding which theories to accept, thus offering a partial foundation for theory choice.

Keywords: *Assessment, Criterion, Commitment, Elucidation, Ontological, Study.*

1.0: INTRODUCTION

Indeed, Quine's ontological criterion is meant to uncover a theory's ontological commitments. However, what exactly is Quine's criterion? One of Quine's oldest formulations of it appears in a paper first published in 1939, in which he says: “We may be said to countenance such and such an entity if and only if we regard the range of our variables as including such an entity. To *be* is to be a value of a variable.”¹ In his most-cited paper on ontology, first published in 1948, Quine formulates his criterion thus:

We can very easily involve ourselves in ontological commitments by saying, for example, that *there is something* (bound variable) which red houses and sunsets have in common, or that there is something which is a prime number larger than a million. However, this is, essentially, the *only* way we can involve ourselves in ontological commitments: by our use of bound variables. To be assumed as an entity is, purely and simply, to be reckoned as the value of a variable. In terms of the categories of traditional grammar, this amounts roughly to saying that to be is to be in the range of reference of a pronoun. We are convicted of a particular ontological presupposition if, and only if, the alleged *presuppositum* has to be reckoned among the entities over which our variables range, in order to render one of our affirmations true.²

Also, in one of his last monographs, Quine writes: “So I have insisted down the years that to be is to be the value of a variable. More precisely, what one takes there to be are what one admits as values of one's bound variables.”³ The idea is that to uncover the ontological commitments of a theory, one should formulate it in the canonical language, that is, first-order classical logic and check what values the variables need to take in order for the sentences to come out true. This thus means that the particular quantifier “ \exists ” is stipulated to be read as “there exists.”⁴ Ontology played a very significant role in Quine's philosophy and was one of his major preoccupations from the early 30's to the end of his life.

He published extensively on ontology, perhaps, more than on any other specific philosophical subject, and his work on ontology provided a basic framework for most of the

¹Willard V. O. Quine, (1939) “Designation and existence,” *Journal of Philosophy* 36 (26):701-705.

²W.V. O. Quine, “Two Dogmas of Empiricism,” *The Philosophical Review* 60 (1951): 20-43. Reprinted in W.V.O. Quine, *From a Logical Point of View* (Harvard University Press, 1953; second, revised, edition 1961) pp. 12–13.

³W. V. O. Quine, (1990) “Pursuit of Truth,” *Tijdschrift Voor Filosofie* 53 (2): 366-368.

⁴W. V. O. Quine (1953) “On What There Is,” In *From a Logical Point of View*, (Cambridge: Harvard University Press) pp. 17-19.

discussions of ontology in analytic philosophy in the second half of the Twentieth Century. There are three main themes (and several sub-themes) that Quine developed in his work.⁵ The first main theme is *ontological commitment*. What are the existential commitments of a theory? Quine's answer is that the commitments of a theory (expressed in logical notation) are manifested by the variables of quantification of the theory. This is often expressed by the slogan, "To be is to be the value of a variable."⁶ The second main theme is *ontological reduction*: How can ontology be reduced to (or substituted by) another? And what is the most *economical* ontology that can be obtained for certain given purposes? This is often related to Ockham's razor and to Quine's taste for desert landscapes.⁷ The third main theme is *criteria of identity*. When are entities of some kind (sets, properties, material objects, propositions, meanings, etc.) the same or different? Inspired by Frege, Quine held that the postulation of entities of a given kind requires for its legitimacy that there be a criterion of identity for them. This is often expressed by the slogan "No entity without identity."⁸ All three themes are introduced in Quine's early articles "Ontological Remarks on the Propositional Calculus" and "A Logistical Approach to the Ontological Problem" which were reworked as "Designation and Existence." Although these papers were not the most influential in the public discussion which honor should undoubtedly go to "On What There Is," they set the tone for all future work by Quine.⁹

2.0: FORMULATION AND DISCUSSION OF QUINE'S CRITERION OF ONTOLOGICAL COMMITMENT

The idea of ontological commitment and its connection to the idea of quantification are associated, especially with the work of Quine. In Quine's scheme (as in most others) the highest-level ontic category is that provided by the form of the variable itself; to be assumed as an entity is to be assumed as a value of a variable. Below this level, the question becomes one of the adoption of particular ranges of variables for particular ranges of putative entities (class variables versus individual variables). In excluding semantically plural variables, a possibility that Quine seemingly never considered, his formulation becomes 'singularist.' But, this, it seems, should make no ontological difference. The idea of a distinctively ontic operator is articulated by Quine in several closely related ways. Thus, the question that Quine raises is: What in a given discourse reveals ontological commitments? One of his basic insights in the 1939 papers is that the use of a proper

⁵Howard Peacock (2011) "Two Kinds of Ontological Commitment," *Philosophical Quarterly* 61 (242): 79-83.

⁶Michaelis Michael (2008) "Implicit Ontological Commitment," *Philosophical Studies* 141 (1): 43-46.

⁷Gyula Klima (2005) "Quine, Wyman, and Buridan: Three Approaches to Ontological Commitment," *Korean Journal of Logic* 8: 19-22.

⁸Sam Baron (2013) "A Truth-maker Indispensability Argument," *Synthese* 190 (12): 2413-2417.

⁹Jamin Asay (2010) "How to Express Ontological Commitment in the Vernacular," *Philosophia Mathematica* 18 (3):293-297.

name such as 'Bucephalus' or 'Sherlock Holmes', or of a common name such as 'round' or 'unicorn', or of an abstract name such as 'roundness' is not a sign of existential commitment. One might use the name 'Sherlock Holmes' in a context such as 'John reasons like Sherlock Holmes' without supposing (or presupposing) that 'Sherlock Holmes' denotes an entity. One might treat the whole context '... reasons like Sherlock Holmes' as a predicate for which one can give conditions of applicability that do not depend on there being a denotation for 'Sherlock Holmes'. If, however, from the context 'John reasons like Sherlock Holmes' one goes on to infer 'There is an x such that John reasons like x ', then it appears that I am treating 'Sherlock Holmes' as the name of an entity. The expression "appears" is pivotal, because even the use of the existential quantifier may not reveal an existential commitment, for one may be able to explain away the quantification. The statement 'There is an x such that John reasons like x ' in that particular discourse may be short for, say, 'John reasons like Sherlock Holmes or John reasons like Poirot.'¹⁰ Here, Quine's notion of *fiction, is captured and his* conclusion is that the existential commitments of a given piece of discourse are revealed by the non-fictional uses of quantification in that discourse.¹¹ In "Designation and Existence," he puts the matter thus:

Perhaps we can reach no absolute decision as to which words have *designata* and which have none, but at least we can say whether a given pattern of linguistic behavior *construes* a word **W** as having a *designatum*. This is decided by judging whether existential generalization with respect to **W** is accepted as a valid form of inference.¹²

Furthermore, he says:

Here then are five ways of saying the same thing: "There is such a thing as appendicitis"; "The word 'appendicitis' designates"; "The word 'appendicitis' is a name"; "The word 'appendicitis' is a substituent for a variable"; "The disease appendicitis is a value of a variable." The universe of entities is the range of values of variables. To be is to be the value of a variable.¹³

However, an important kind of example that Quine discusses is the case of negative existential such as 'There are no unicorns,' 'Pegasus does not exist,' 'There is no such thing as hyperendemic

¹⁰W. V. O. Quine, (1939), "A Logistical Approach to the Ontological Problem," *Journal of Unified Science* 9: 84-89.

¹¹Yvonne Raley (2007) "Ontology, Commitment, and Quine's Criterion," *Philosophia Mathematica* 15 (3): 271-275.

¹²W. V. O. Quine, "Designation and Existence," *The Journal of Philosophy* 36: 701-709. Reprinted in Feigl, H. and Sellars, W. (eds.), *Readings in Philosophical Analysis*, (New York: Appleton, 1949), p. 49.

¹³Michaelis Michael (2008) W. V. O. Quine, "Implicit Ontological Commitment," *Philosophical Studies* 141 (1):43 – 47.

fever.' The first statement seems rather unproblematic, for it means 'It is not the case that there is an x such that x is a unicorn.'¹⁴ Quine's strategy for dealing with the other cases is to appeal to Russell's theory of descriptions and to say that 'Pegasus' means something like 'the winged-horse captured by Bellerophon', and that by 'hyperendemic fever' one might mean something like 'the disease which killed or maimed four-fifths of the population of Winnipeg in 1903'. In this case the second and third statements are of the same form as the first, because they mean 'It is not the case that there is an x such that x is a winged horse captured by Bellerophon' and 'It is not the case that there is an x such that x is a disease which killed or maimed four-fifths of the population of Winnipeg in 1903', respectively. This strategy for eliminating names is another of Quine's main sub-themes, and it is discussed more systematically in *Mathematical Logic* and in many later works.¹⁵ The first really clear challenge to Quine's criterion was Cartwright's in "Ontology and the Theory of Meaning."¹⁶ By this time Quine had already distinguished sharply what he called "the theory of reference" (including the notions of truth, reference, satisfaction, extension, etc.) from "the theory of meaning" (including the notions of meaning, analyticity, synonymy, necessity, intension, etc.). The case against the notions of the theory of meaning was made forcefully in "Two Dogmas of Empiricism" and in many later works. It turned out, however, that several of Quine's formulations of his criterion of ontological commitment involved notions from the theory of meaning. Here are some samples:

- (1) 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.¹⁷
- (2) We are convicted of a particular ontological presupposition if, and only if, the alleged presuppositum *has to be* reckoned among the entities over which our variables range in order to render one of our affirmations true.¹⁸
- (3) 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 Q made in the theory be true.

¹⁴Jamin Asay (2010) "How to Express Ontological Commitment in the Vernacular," *Philosophia Mathematica* 18 (3):293-297.

¹⁵Jonas Rafael Becker Arenhart & Raoni Wohnrath Arroyo (2021) "Back to the Question of Ontology," *Manuscrito* 44 (2):47-51.

¹⁶Richard L. Cartwright, (October, 1954) "Ontology and the Theory of Meaning," *Philosophy of Science*, Vol. 21, No. 4: 316-320.

¹⁷W. V. Quine, (1951) "Ontology and Ideology," *Philosophical Studies* 2 (1): 11-15.

¹⁸W. V. O. Quine (1953) "On What There Is," In *From a Logical Point of View*, (Cambridge: Harvard University Press) p. 13.

(4) An entity is assumed by a theory if and only if it *must be* counted among the values of the variables in order that the statements affirmed in the theory be true.¹⁹ Yet, Quine also claims that his criterion of ontological commitment belongs to the theory of reference:

(5) Now the question of the ontology of a theory is a question purely of the theory of reference.²⁰

(6) As applied to discourse in an explicitly quantificational form of language, the notion of ontological commitment belongs to the theory of reference.²¹

And he offers the purely extensional formulation:

(7) 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.²²

Cartwright's point is simply that whereas (1)—(4) can be formulated satisfactorily using intentional notions (i.e. as part of the theory of meaning), (7) cannot be considered to be a satisfactory formulation. The basic problem is that in order for us to claim that an existential quantification presupposes objects of a given kind, we must also quantify over objects of that kind. That is, according to (7): '3x (x is a unicorn)' presupposes unicorns if, and only if, 'x is a unicorn' is true of some unicorn and not true of any non-unicorn; which means: '3x (x is a unicorn)' presupposes unicorns if, and only if, $3x (x \text{ is a unicorn} \ \& \ 'x \text{ is a unicorn}' \text{ is true of } x) \ \& \ \forall x (x \text{ is not a unicorn})$. Thus, 'X is a unicorn' is not true of x. Since there are no unicorns, the right-hand-side is false and, hence, '3x (x is a unicorn)' does not presuppose unicorns. This was a serious challenge and while Quine never acknowledged Cartwright's objections, or the related objections by Scheffler and Chomsky, in the late sixties, he tried other formulations of his criterion, as for example:

My remaining remark aims at clearing up a not unusual misunderstanding of my use of the term 'ontic commitment.' The trouble comes in viewing it as my key ontological term, and therefore identifying the ontology of a theory with the class of all things to which the theory is ontically committed. This is not my intention. The ontology is the range of the variables. Each of various reinterpretations of the

¹⁹W. V. O. Quine, (1953) "Logic and the Reification of Universals," In *From a Logical Point of View*, p. 103.

²⁰W. V. O. Quine, (1983) "Ontology and Ideology Revisited," *The Journal of Philosophy* 80 (9): 499-502.

²¹W. V. O. Quine, (1953) "Notes on the Theory of Reference," In *From a Logical Point of View*, pp. 130-131.

²²W. V. O. Quine, (1953) "Notes on the Theory of Reference," In *From a Logical Point of View*, pp. 132-134

range (while keeping the interpretations of predicates fixed) might be compatible with the theory. But the theory is ontically *committed* to an object only if that object is common to all those ranges. And the theory is ontically committed to 'objects of such and such kind,' say dogs, just in case each of those ranges contains some dog or another. This formulation seems to suggest a model-theoretic criterion of ontological commitment. Given a theory T and an interpretation \mathfrak{I} that is a model of T, then the ontology of T is the universe of \mathfrak{I} .²³

How one formulates the other part depends on one's understanding of Quine's qualification, "keeping the interpretations of the predicates fixed." Since Quine certainly does not mean to keep the *extensions* of the predicates fixed, which would defeat his own example, we must either understand the qualification intentionally or in some alternative extensional way.²⁴ An intentional interpretation will work, but will not satisfy Quine's purposes. A possible extensional alternative is to restrict one's discussion to substructures of a given model. Thus, given T, a model \mathfrak{I} of T and a non-empty class C, T is ontologically committed to entities of C, if and only if C has non-empty intersection with the universe of every model of T that is a substructure of \mathfrak{I} . This will work well for Quine's example of a theory that implies ' $\exists x$ (x is a dog)' but will not work for theories that imply ' $\exists x$ (x is a unicorn),' because they have no models, at least not in any straight-forward sense. Hence, we cannot talk either of the ontology or of the ontological commitments of such theories and we are back to the problem raised by Cartwright. Another issue, raised in the fifties by Alston and later taken up by Searle, is the dependence of Quine's criterion on formalization. Although many people, including Quine, pointed this out, Searle offered the following argument. Suppose that 'K' is an "abbreviation for (the conjunction of statements) that state all existing scientific knowledge" and consider the predicate 'Px' defined as $A = \text{this pen} \ \& \ K$. Searle claims that by asserting ' $\exists xPx$,' we are asserting "the whole of established scientific truth" while being "committed only to the existence of this pen."²⁵ At first sight this seems a ridiculous claim, and one is tempted to reply that if 'K' is an abbreviation for a conjunction of statements, then part of what is being asserted is that conjunction. Now either the statements in the conjunction are written in the notation of the logic of quantification, in which case there will be all kinds of commitments, or they are not, in which case Quine's criterion cannot be (directly) applied. But this would miss Searle's point, "because the criterion does not determine how a theory should be formalized." In fact, the criterion is not even supposed to do that. One observes, then, that by means of this extreme example, Searle is dramatizing the criterion's dependence on formalization. He remarks: "I think that [$\exists xPx$] is an absurd formulation of scientific knowledge, but there is nothing in the criterion

²³W. V. O. Quine, (1968) "Replies," *Synthese* 19 (1-2): 264-269.

²⁴Willard Van Orman Quine (1968) "Ontological Relativity: The Dewey Lectures 1969," *Journal of Philosophy* 65 (7): 185-189.

²⁵ John R. Searle (1969) *Speech Acts*, (Cambridge: Cambridge University Press), pp. 109-111.

that excludes it as a statement of theory."²⁶ Quine agrees with this, although he warns that whatever is saved in ontology is paid for in ideology. Searle, on the other hand, maintains that "the stipulative definition of 'K' guarantees precisely that it contains the same commitments," as the statements it abbreviates.²⁷

3.0: EVALUATION AND CONCLUSION

I think that the question that is really being raised by this argument is the question of what we may call the *implicit* commitments of a theory (or remark, or discourse). A standard claim by Quine is that such statements as ' $\exists x$ (x is a number)' or ' $\exists x$ (x is a set)' are committed to universals, and hence to abstract entities. These claims involve inferences to the effect that all numbers (or sets) are universals, and that all universals are abstract entities. But a theory that implies ' $\exists x$ (x is a number)' need not be committed to universals.²⁸ The theory might imply that there are an infinite number of concrete particulars and that numbers are among them. Or it might not imply anything as to whether numbers are universals or not, but then why should Quine conclude that it is committed to universals? Should one distinguish the *explicit* commitments of a theory from its *implicit* commitments? In this case one might say that whereas Searle's assertion ' $\exists xPx$ ' is only explicitly committed to the existence of this pen, it is (via K) implicitly committed to all kinds of things, such as the existence of electrons, for example. This is a very natural tack, but it opens a real Pandora's Box.²⁹

Using Quine's example of a theory that implies ' $\exists x$ (x is a dog),' can there be dogs without there being hearts, livers, blood, cells, proteins, electrons?³⁰ Would not the theory then be implicitly committed to such things? Where do the implicit commitments of a theory end? From the point of view of a Platonist, the existence of dogs might imply the existence of a property of being a dog, and hence a theory that implies ' $\exists x$ (x is a dog)' would be just as much committed to universals as a theory that implies ' $\exists x$ (x is a number)'. It would seem that (at least) the implicit commitments of a theory would depend on how they are being judged. This is right, however, and (as in other cases in logic) adjudications as to whether a theory is committed to the existence of entities of a given kind will depend on a meta-theory within which the adjudications are made.³¹ If a meta-theory is based on second order logic, for example, then a theory that asserts 'Fido is £

²⁶John R. Searle (1969) *Speech Acts*, (Cambridge: Cambridge University Press), p. 63.

²⁷Jonathan Barker (2021) "Grounding and the Myth of Ontological Innocence," *Australasian Journal of Philosophy* 99 (2): 303-308.

²⁸Donald Davidson (1974) "Replies to David Lewis and W.V. Quine," *Synthese* 27 (3-4):345 - 349.

²⁹Sean Crawford (2008) "Quantifiers and Propositional Attitudes: Quine Revisited," *Synthese* 160 (1): 75 - 80.

³⁰W. V. O. Quine (1981) "Replies to Eleven Essays," *Philosophical Topics* 12 (1): 227-231.

³¹ Alonzo Church, "Ontological Commitment," *The Journal of Philosophy* 55: 1008-1011.

dog' and allows the inference to ' $\exists x(x \text{ is a dog})$ ', may also allow the inference to ' $\exists Z(\text{Fido is a } Z)$ '. We should distinguish, therefore, the explicit commitments of a theory T to entities of a certain kind K as those where there is an explicit assertion within the theory that there are such entities, from the implicit commitments of T (relative to a meta-theory T') as those where the existence of these entities follows from the assertions of T by (non-trivial) theoretical considerations of T'.³² This doesn't really go against the spirit of Quine's proposal, and it is an idea that fits in quite well with his discussion of relativity to a background theory in "Ontological Relativity" and other later works. Moreover, to the extent that one is concerned with the "whole conceptual scheme" or with a "language sufficient for the whole of science," the explicit commitments will suffice, for in this case the theory is the background theory. Evidently it is scarcely possible, within the limits of this paper to examine all the details of Quine's work on ontology and of the fairly large literature that it generated. Thus, the conclusion of this whole discussion in relation to Quine's development of his main themes is seemingly negative, in the sense that it is not very evident whether or not his (technical) solutions to the questions of ontological commitment, ontological reduction and ontology can be sustained. Nevertheless, the questions that he raised, and his work on them, have had an enormous impact on our appreciation of the issues relating to ontology.

Quine's work has been a source of inspiration for several generations of philosophers and logicians in the analytic tradition, and undoubtedly it will continue to be a source of inspiration for future generations as well. In order to have a 'criterion' we must know when a statement is to be rendered in terms of the quantifiers. Since it will not do to say that any statement involving the ordinary expression 'there is' is to be rendered in terms of the existential quantifiers, Quine must now rely on his discussion of 'objectificatory apparatus.' Of course, this is a sad conclusion for Quine, since that discussion did not produce any fruitful consequences. The second 'criterion' must wait on Quine's attempts to give some content to the notions of 'objectificatory apparatus' and 'suitable interplay.' What, finally, can we say concerning Quine's 'criterion for ontological commitment'. It now appears that there are three separate but related 'criteria'.³³ The first of these is put in terms of the ordinary expression 'there is something.'

From the foregoing discussion, it is evident that this is certainly inadequate because there is a whole family of uses of 'there is something' which do not, in any important sense, 'carry ontological commitment.' The second ties the notion of 'ontological commitment' to the existential quantifier. It has been argued that this second 'criterion' cannot be equivalent to the first and that it therefore suffers from at least two difficulties. (1) At best it can represent only one type of ontological disagreement. (2) By itself it does not apply to ordinary language and thus requires

³²Jonathan D. Payton (2022) "Composition and Plethological Innocence," *Analysis* 82 (1): 67-71.

³³Jack Kaminsky, (May 7, 1959) "Church on Ontological Commitment," *The Journal of Philosophy*, Vol. 56, No. 10: 452-458.

supplementation for the third criterion, namely that in terms of 'objectificatory apparatus'.³⁴ This third 'criterion' is inadequate simply for lack of any specification of the meanings of its most important terms. The existential quantifier plays a central role in Quine's criterion of ontological commitment, for it is this device that helps make transparent what entities need to exist for a theory (or collection of statements) to be true.³⁵ However, not all existential quantifiers are created equal. The existential quantifier used by, for example, intuitionistic logicians does not, according to Quine mean the same as the existential quantifier in classical logic:

Some philosophical interest, ontological interest, attaches to deviations in quantification theory. They can affect what to count as there being. The intuitionist's deviant quantification (if "quantification" is still a good word for it) carries with it a deviant notion of existence (if "existence" is still a good word for it). When he recognizes there to be just such and such objects, we may not even agree that he recognizes there to be just those (much less that he would be right in so doing). It is only relative to some translation of his language into ours (not necessarily into our logic, but into our inclusive language) that *we* can venture to say what he really recognizes there to be (in *our* sense of "there to be").³⁶

So it is only through the existential quantifier of classical logic that Quine claims to be able to understand a theory's ontological commitments. It must be noted that intuitionistic logic is a *strictly weaker* brand of logic than classical logic: anything provable in the first can also be proven in the second, but not vice versa. Changing the logic, changes the meaning of the quantifiers. This means that, in order for Quine's meta-ontology to be workable, we need to agree on a single logic with one existential quantifier and this existential quantifier can then be said to adequately capture existence. Quine says we should be employing the existential quantifier of classical logic, when formulating a statement in canonical notation, in order to uncover its ontological commitments.³⁷ That is to say, if Quine wants to know a statement's ontological commitments, he has to formulate it in canonical notation with the classical existential quantifier, because that is how he understands existence. Although Quine gives classical logic a unique place in his criterion of ontological commitment, however, it is worth noting that his insistence on classical logic as the (only) background logic for ontology, has some counterintuitive consequences which he accepts

³⁴Jared Warren (2020) "Ontological Commitment and Ontological Commitments," *Philosophical Studies* 177 (10):2851-2855.

³⁵Tin Perkov (2021) "A Note on Logicality of Generalized Quantifiers," *Logica Universalis* 15 (2):149-152.

³⁶Willard V. O. Quine (1986) "Philosophy of Logic," *Philosophy* 17 (3):392-393.

³⁷W. V. O. Quine, (1956), "Quantifiers and Propositional Attitudes," *Journal of Philosophy*, 53: 177-181.

wholeheartedly.³⁸ One of such counterintuitive consequences concerns sets. Some sentences in English that do not seem to be ontologically committed to sets, do, according to Quine, invoke such a commitment. For example, when responding to Armstrong's claim³⁹ that he does not take the problem of universals seriously, Quine claims that he does take the problem seriously, in his reference to the so-called "Harvard universals." He asserts:

I see no way of meeting the needs of scientific theory let alone those of everyday discourse, without admitting universals irreducibly into our ontology. I have adduced elementary examples such as "Some zoological species are cross-fertile," which Armstrong even cites, and Frege's definition of ancestor; also, David Kaplan's "Some critics admire nobody but one another," an ingenious example whose covert dependence on universals transpires only on reduction to canonical notation.⁴⁰

It is not immediately obvious that these sentences commit one to functions or classes, but their commitment to such entities becomes apparent when we translate them into canonical notation. By Quine's standards, this means that the sentence is ontologically committed to sets.⁴¹ Quine thus downplays any pretheoretical judgments that we might have about the ontological commitments of certain sentences. As Hylton rightly notes, "Quine would have no sympathy for the idea that [a sentence's] ontological commitments are to be judged by what strikes us as 'evident'. He thinks of ontology as an artificial matter, in which little weight is to be placed on pre-theoretic opinions."⁴² The restriction to classical logic may seem arbitrary, especially in the face of certain extensions of classical logic. There are two reasons Quine restricts his criterion to first-order logic. One is the fact that it has a complete proof procedure; and the other reason is that it really has no ontological assumptions of its own.⁴³ Quine takes completeness to be the reason that classical logic is still *logic*, whereas extensions count as mathematics.⁴⁴ The distinction between classical logic and

³⁸ W. V. O. Quine, (1970), "Reasons for the Indeterminacy of Translation," *The Journal of Philosophy* 67: 178–83.

³⁹ David M. Armstrong (1981) "What is consciousness?" In John Heil (ed.), *The Nature of Mind*, (Ithaca: Cornell University Press), p. 125.

⁴⁰ W. V. O. Quine, (1981) *Theories and Things*, (Cambridge, MA: Harvard University Press), p. 182.

⁴¹ Jody Azzouni (2019) "The Challenge of Many Logics: A New Approach to Evaluating the Role of Ideology in Quinean Commitment," *Synthese* 196 (7): 2599-2604.

⁴² Peter Hylton, (2007) "On Denoting" and the Idea of a Logically Perfect Language," In Michael Beaney, (ed.), 2007, *The Analytic Turn: Analysis in Early Analytic Philosophy and Phenomenology*, (London: Routledge), p. 269.

⁴³ Peter Hylton, (2007) "On Denoting" and the Idea of a Logically Perfect Language," In Michael Beaney, (ed.), 2007, *The Analytic Turn: Analysis in Early Analytic Philosophy and Phenomenology*, (London: Routledge), p. 265.

⁴⁴ Roger F. Gibson (1986) "Quine's Dilemma," *Synthese* 69 (1): 27-33.

mathematics, in particular set theory, is something Quine draws only in some of his later works, such as *Philosophy of Logic*.⁴⁵ Quine presents logic as the product of two factors, truth and grammar, but argues against the doctrine that logical truths are true simply because of grammar.⁴⁶ He thinks classical logic is ontologically innocent for “it has no objects it can call its own; its variables admit all values indiscriminately.”⁴⁷ At this juncture, it is important to explain why completeness matters so much to Quine, and why this underscores the ontological innocence of classical logic. Its polemic use is limited, because one's opponent may want to reject the first-order translations of a given theory. But, Quine takes this to mean that such an opponent renders himself or herself unclear:

Polemical use of the criterion is a different matter. Thus, consider the man who professes to repudiate universals but still uses without scruple any and all of the discursive apparatus which the most unrestrained of Platonists might allow himself. He may, if we train our criterion of ontological commitment upon him, protest that the unwelcome commitments which we impute to him depend on unintended interpretations of his statements. Legalistically his position is unassailable, as long as he is content to deprive us of a translation without which we cannot hope to understand what he is driving at.⁴⁸

For Quine, a theorist may wish to avoid supposing the existence of certain (kinds of) entities, for whatever reason. But, to know whether a theory is successful, the theorist needs to check whether the theory would be false if certain unwanted entities were inexistent:

For it can happen in the austerest circles that someone will try to rework a mathematical system in such a way as to avoid assuming certain sorts of objects. He may try to get by with the assumption of just numbers and not sets of numbers; or he may try to get by with classes to the exclusion of properties; or he may try, like Whitehead, to avoid points and make do with extended regions and sets of regions. Clearly, the system-maker in such cases is trying for something, and there is some distinction to be drawn between his getting it and not getting it. The question is when to maintain that a theory assumes a given object, or objects of a given sort, numbers, say, or sets of number, or properties, of [or] points. To show that a theory assumes a given object, or

⁴⁵Willard Van Orman Quine, (1970) *Philosophy of Logic*, (London: Harvard University Press), p. 89.

⁴⁶ W. V. O. Quine, (June, 1995) “Naturalism; Or, Living within One's Means,” *Dialectica*, Volume 49, Issue 2-4, June 1995: 251-256.

⁴⁷Donald Davidson (1974) “Replies to David Lewis and W.V. O. Quine,” *Synthese* 27 (3-4): 345 - 349.

⁴⁸W. V. O. Quine, (1961) *From a Logical Point of View*, 2nd edition, (London: Oxford University Press), p. 105.

objects of a given class, we have to show that the theory would be false if that object did not exist, or if that class were empty; hence, that the theory requires that object, or members of that class, in order to be true.⁴⁹

In metaphysics, ontology is the philosophical study of being, as well as related concepts such as existence, becoming, and reality. Ontology addresses questions of how entities are grouped into categories and which of these entities exist on the most fundamental level. Ontological topics include questions such as whether a thing is real or whether existence can be ascribed to things. A well-known example is the problem of universals, which arose out of the nominalist-realist controversy as to the actual existence of universals or abstract entities. Such entities are generally discussed when we refer to classes or propositions, that is, when we refer to the content of an abstract statement with particular terms. If one reflects on these debates, one notices that philosophers who reject the reality of entities tend to contradict themselves after a certain time. As the history of ontology is complex, one might choose to approach the matter systematically, beginning with a succinct introduction: What does it mean to ask if an entity exists? Admittedly, this is a 'moot or controversial' question; and it is the one which Quine's 'translation program' leaves unanswered. It is interesting to observe that Quine did not focus on the question of whether an entity exists or not, but rather on exploring the scope of what it means to ask about an entity. This constitutes a change in approach to examining what exists and what does not. The question invites us to assess what it means to exist, or to be considered an entity. Quine's research did not provide a catalogue of what exists, but an interpretation of what it means to exist, what the core of a "concept of existence" is as part of a larger "doctrine of being." In order to argue about the existence of a supposed entity, one must adopt a (general) concept of existence that provides a rational standard for the argument.⁵⁰ If we cannot properly characterize what it means to exist, any debate on ontology is reduced to prejudices and arbitrariness. As such, the opening question determines the notion of ontological commitment. It does this by determining two preconditions for ontological debates, namely, the stipulation of a concept of existence and the requirement of coherence. Regardless of how "existence" is determined, all assumptions about "existence" that occur in an ontological debate can only be ascribed if they are ontological commitments given by the previously assumed concept of existence. The idea is that a theory is ontologically committed to all and only those entities that, when the theory is formulated in first-order logic, need to be reckoned as the values of the bound variables in order for the theory to be true. An overlap between metaphysics and logic, regarding issues in ontology, engenders a formal ontology which is a mathematical theory of certain entities, formulated in a formal, artificial language, which in turn is based on some logical system like first order logic, or some form of the lambda calculus, or the

⁴⁹ W. V. O. Quine, (1969), "Epistemology Naturalized" in *Ontological Relativity and other Essays*, (Cambridge, MA: Harvard University Press), p. 93.

⁵⁰Sean Crawford (2008) "Quantifiers and Propositional Attitudes: Quine Revisited," *Synthese* 160 (1): 75-79.

like. Such a formal ontology will specify axioms about what entities of this kind there are, what their relations among each other are, and so on.⁵¹ The question of ontological foundation has undergone a noteworthy revival in recent years. Today, Metaphysicians quarrel about how exactly to understand the asymmetrical and hyperintensional relationship of grounding. One of the reasons for this revival is that the old quantification list meta-ontology inherited from Quine has been effectively criticized by leading philosophers favorable to a meta-ontology, the aim of which is to come to know which facts/items constitute the base of which other facts/items, and to examine the relation of ontological dependence between beings, as well as the hierarchical structure of reality.⁵²

⁵¹Sam Baron (2022) “Counterfactuals of Ontological Dependence,” *Journal of the American Philosophical Association* 8 (2):278-283.

⁵²Karl Egerton (2016) “Getting Off the Inwagen: A Critique of Quinean Metaontology,” *Journal for the History of Analytical Philosophy* 4 (6): 10-11.

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