

Quine's Deflationary Structuralism

Paul A. Gregory
Washington and Lee University

1 Introduction

W.V. Quine is a structuralist. He says as much in various of his later works, and we should take him at his word. But what does it amount to when he espouses a “global ontological structuralism”? As I shall argue here, Quine’s structuralism is best understood as a distinctive form of metaphysical deflationism. In particular, ontological structuralism is an important development of Quine’s long-standing deflationary attitude toward metaphysics—an attitude which stretches back at least as far as “Two Dogmas of Empiricism.” A clearly articulated structuralist aspect begins to appear only in the late 1960s, becoming more obvious in the 1980s, and given explicit statement in the 1990s. Despite the late emergence of structuralism, it is a central part of Quine’s overall naturalism.

By “deflationism” or “a deflationary attitude” toward a set of questions or claims I mean the downplaying of the philosophical importance of those questions or claims by, for instance, suggesting that their alleged content is not quite what one took it to be. Perhaps the claims are not actually meaningful, or not in the way one previously thought, or perhaps there are no determinate answers to the questions as initially understood. The questions or claims must then be discarded or reconceived. Quine’s structuralism deflates the role of objects to neutral nodes, emphasizing the sentence to sentence inferential structure of a theory, and shows that the results of ontological inquiry are much different than we might have expected.

Let’s begin at, or near, the end of the story. “Structure and Nature” (1992a) contains the most extended, focused discussion of structuralism. Quine claims to be a global structuralist:

The point I now want to make is one that over the years I have repeatedly made in terms of what I call proxy functions. The point is that if we transform the range of objects of our science in any one-to-one fashion, by reinterpreting our terms and predicates as applying to the new objects instead of the old ones, the entire evidential support of our science will remain undisturbed. The reason is twofold. First, implication hinges only on logical structure and is independent of what the objects, the values of the variables, may be. Second, the association of observation sentences with ranges of

neural input is holophrastic. It is independent of reifications, independent of whatever objects the observation sentences or their parts may be taken to refer to as terms.

The conclusion is that there can be no evidence for one ontology as over against another, so long anyway as we can express a one-to-one correlation between them. Save the structure and you save all.

This global ontological structuralism may seem abruptly at odds with realism, let alone naturalism. . .

Naturalism itself is what saves the situation. . . The very notion of object, or of one and many, is indeed as parochially human as the parts of speech; to ask what reality is *really* like, however, apart from human categories, is self-stultifying. . .

My global structuralism should not, therefore, be seen as a structuralist ontology. To see it thus, would be to rise above naturalism and revert to the sin of transcendental metaphysics. (1992a, pp. 8-9)

Here we see, in thumbnail, some of Quine's familiar themes: the proxy function argument; the indifference, given a theory structure and its evidential support, to the interpretation of the objects; the tension between the assertion of that indifference and Quine's alleged realism; and the appeal to naturalism to resolve that tension. What receives new emphasis here is the structuralism. It is in the title of the essay. Quine calls it "global ontological structuralism", and "My global structuralism". Yet he denies that it is a structuralist ontology, again appealing to naturalism and eschewing transcendental metaphysics. Far from clarifying his views, appeal to structuralism seems to increase the tension supposedly resolved by the appeal to naturalism. Is this a new element in Quine's ontological picture? What work is it doing and why does it receive emphasis only this late in the game?

After reviewing the proxy function argument, I will briefly discuss Carnap's metaphysical deflationism and Quine's rejection of it. This will be a springboard for exploring, through a close reading of key passages, how Quine develops his own deflationism through the latter half of the 20th century, culminating in what I am calling his deflationary structuralism.

2 The Proxy Function Argument

The main argument for Quine's structuralist conclusions is the proxy function argument, and it is worth reviewing in its mature form before going any further.

Clarifying the ontological commitments of our theories was a long-standing concern for Quine. His views regarding regimentation and the role of existential quantification are well-known: to examine the ontological commitments of a theory—the range of objects it posits—we must first regiment it so that it is stated in first order quantificational language. We then examine what the

values of the existentially quantified variables are supposed to be, and thereby we see the ontology of the theory. There is no question here of any sort of transcendental metaphysics. We are seeing to what objects we are committed when we state our ongoing theory as clearly and simply as possible.¹ A concomitant interest of Quine’s was whether, and to what degree, we can increase the ontological economy of our theory by reinterpreting or reducing one domain of objects to another, thereby showing that only one kind of object suffices rather than two. Standard examples from Quine’s work include reducing numbers to sets, physical objects to place-times, place-times to quadruples of numbers, and mental states to correlated bodily states. (1981, pp. 15–19)

The notion of a proxy function is inspired by these intertheoretic reductions, but since proxy-function reinterpretation preserves a one-to-one mapping² between the two ontological domains, no economy is gained via a proxy function. Instead, we gain insight into ontology and its evidential support. Suppose we have a theory stated in a regimented language. This will include a stock of predicates, e.g., ‘ D ’ for ‘is a dog’, ‘ M ’ for ‘is a mammal’, etc.; perhaps some terms ‘ a ’ for Fido, ‘ b ’ for Tiger, etc.; and a domain, \mathbf{D} , of objects, x . We then introduce a proxy function, f , that does two things. One: it gives a one-to-one mapping of objects from the domain \mathbf{D} to a new domain \mathbf{D}' . Two: it reinterprets each of the predicates and each of the terms so as to apply not to objects in the original domain, but to their images, under the mapping, in the new domain. Thus, where originally we might claim Da , Fido is a dog, or $(\forall x)(Dx \rightarrow Mx)$, all dogs are mammals, we now claim $f(D)f(a)$, the proxy of Fido is a proxy of a dog, or $(\forall x)(f(D)x \rightarrow f(M)x)$, all proxies of dogs are proxies of mammals. If, for example, we take f to map objects in \mathbf{D} to their space-time complements in \mathbf{D}' , our unwieldy symbolic claims may be read as (even less wieldy), the space-time complement of Fido is the space-time complement of a dog, all space-time complements of dogs are space-time complements of mammals. Of course, we can drop the ‘ $f(\dots)$ ’ and ‘space-time complement of...’ in order to smooth discussion, keeping in mind the (now implicit) reinterpretation.

The proxy function completely alters the ontology of the theory, but the truth values of statements are preserved, since the predicates are duly reinterpreted as well. We apparently have an entirely different theory, with an entirely different ontology, yet it is supported or undermined by exactly the same observational evidence, and guides the same verbal behavior. The implicational structure of the theory—what sets of sentences imply what further sentences—will carry over as is, and speakers’ utterances in response to stimulation will also remain unchanged.

This last point bears some explanation. An initial objection to the proxy

¹See, among others, (Quine 1980a; Quine 1983, orig. 1948). I am not here concerned to argue for the correctness of this view or weigh in on questions of first versus second order logics. Nor will I take care to distinguish here between commitments of the theory and commitments of scientists and philosophers. Nothing I hope to illuminate here turns on these issues.

²Actually, proxy functions need not be one-to-one, though this is required by what I am calling “the proxy function argument”. Indeed, in the earliest discussions and on some later occasions, proxy functions are not restricted to one-to-one. In cases of reductive reinterpretation, proxy functions can be many-one. More on this below.

function argument might claim that it clearly cannot work, for when I am confronted by Fido and say ‘That’s a dog’ or ‘That’s a mammal’, I am clearly responding to the dog or the mammal in front of me and not to some space-time complement of the dog or the mammal. But, as indicated briefly in the quotation above, Quine takes observation sentences as holophrastic³ responses to stimulation, playing both their semantic and evidentiary roles in language without regard to any postulated reference of their terms. Objectual reference is only fully developed in sentences using relative clauses with pronouns, or in the quantified variable in a regimented language. But in those very contexts reference is subject to free reinterpretation via the proxy function. Thus, all that matters to the evidential support and linguistic use of a theory are its implicational structure and the association of observation sentences (taken holophrastically) to ranges of stimulation. Proxy functions upset neither of these, so we can vary at will our interpretation of the objects.

I am not concerned here to defend the details of this proxy function argument. It is the main argument used from “Ontological Relativity” (1969a) forward to argue for what Quine variously called ‘inscrutability of reference’, ‘ontological relativity’, and (in an interesting turn I will discuss later) ‘ontological indifference’. Much has been written on these matters. Here, I am interested in the proxy function argument in order to understand Quine’s structuralism, deflationism, and naturalism. We can already see an extreme demotion of the role of objects, they drop out of the evidentiary relation and are “as parochially human as the parts of speech”.

3 Carnap’s Deflationism

Carnap famously developed a deflationary attitude toward metaphysics and epistemology. He saw allegedly deep philosophical disputes not as disputes over matters of fact, not as attempts to discover the truth values of meaningful philosophical claims. Rather, when metaphysical disputes or claims are not simply meaningless, they are best understood as decisions regarding the choice of a linguistic framework for inquiry—decisions guided by pragmatic considerations. This deflation of metaphysics and epistemology to the explication and comparative analysis of alternate frameworks was supposed to engender a spirit of tolerance among philosophical disputants. Once the stakes are properly conceived, and competing frameworks are clearly explicated, philosophers can avoid bogging down in merely verbal disputes, get on with the pragmatic evaluation of frameworks, and thereby play a positive role in the production of scientific knowledge. This metaphysical deflationism and the use of explication in order to avoid fruitless dispute are, of course, mutually reinforcing aspects of Carnap’s view. When disputants come to share this deflationary attitude towards their own proposals, clarity, tolerance, and pragmatic assessment are supposed to foster the continuation of fruitful inquiry. Finally, and perhaps most deeply,

³That is, as a single whole unit, as if a single word. For more detail, see Chs. 2 & 5 of my (Gregory 2008).

framework explication and metaphysical deflationism support a view of philosophy as methodologically distinct from empirical science, while still allowing philosophy a clear, rigorous, and progressive role in the advance of knowledge.

Though Carnap's *Aufbau* (1967, orig. 1928) is often remembered as an archetypal text in empiricist reductionism, seeds of Carnap's deflationism are clearly present in its attempt at ontological neutrality. The bulk of the work is, indeed, focused on a reduction of the domain of physical objects to that of phenomenal objects. But this was not simple empiricist foundationalism. Rather, the reduction was part of the larger goal of showing the intertranslatability of the phenomenal object language with the physical object language, and of the physical object language with the general psychological language, and, therefore, of the phenomenal with the general psychological. (1967, §§54–60, orig. 1928) If the languages describing each of the three domains were intertranslatable, there would no longer be a question of primacy of ontology. Anything that can be said in the language of one could be equivalently said in the language of each of the other two. So we would achieve ontological neutrality in our theorizing, and metaphysical debates over the primacy or fundamentality of one domain would then obviously be meaningless.

The details of the attempt to reduce the physical to the phenomenal are revealing. Carnap employs structurally definite descriptions in which an object (or type of object) is identified solely by its relations to other objects and not in terms of presupposed ontological categories. He starts from whole sensory moments—Gestalt instants including all sensory input at a given instant. He then presents a method to, via the basic relation *Rs* (remembered similarity), break down these whole sensory moments and single out the visual field via the structurally definite description of it as the unique five dimensional field which varies across time (3 dimensions for color and 2 spatial dimensions). In principle, all the objects of the phenomenal domain—including auditory data, tactile data, etc.—would be specified in this purely structural manner. Further, the whole structure of the phenomenal domain would be shown intertranslatable with the structure of the physical domain, and then with the structure of the general psychological domain. Were this successful, each object domain, and its relation to the others, would be captured through precise structural/formal characterization. The unification of the object domains would result, for no reference to the metaphysical character of one domain over another would be required, and any scientific statement could be translated into a purely structural statement. (1967, §§13–15, 70–83, orig. 1928)

The *Aufbau* project ultimately comes up short. Translational reductions between the domains are not to be had, due to the holistic nature of theories that Quine discusses in “Two Dogmas” and “Epistemology Naturalized”—reasons which, in part, drive Quine's move toward naturalism.⁴

Important for present purposes is the emphasis on structurally definite description as grounding ontological neutrality, and ontological neutrality as motivating an enlightened deflationary attitude toward ontology, metaphysics gen-

⁴See, e.g., (Gregory 2008, chap. 2; Quine 1969b, pp. 74–78; Quine 1980a, sec.5, orig. 1951)

erally, and even epistemology. The attitude develops through the period of *The Logical Syntax of Language*, where we have the Principle of Tolerance in Syntax, “*It is not our business to set up prohibitions, but to arrive at conventions.*” Moreover, at the end of section 62, we have “*As soon as logic is formulated in an exact manner, it turns out to be nothing other than the syntax either of a particular language or of languages in general.*” And Part V is dedicated to articulating the view that “*the logic of science takes the place of the inextricable tangle of problems which is known as philosophy.*” (Carnap 1937, secs.17, 62, 72)

Carnap’s emphasis on structure and the deflation of metaphysics are in even greater evidence later on in “Empiricism Semantics and Ontology” (1956, orig. 1950). Here we see Carnap using a relativized analytic/synthetic distinction to delineate various candidate linguistic frameworks. This framework notion is then used to reconceive the import of ontological questions and claims. A given framework defines a language and its analytic claims. That language can then be used to describe and investigate the world. Typically, the framework will carry ontological commitments of some kind: asserting the existence of numbers, properties, space-time points, or what have you. On this view, the question “are there numbers?” is ambiguous between what Carnap calls the internal and the external question. An internal question is answered either by examining the analytic claims of the framework itself or by doing some empirical investigation using the categories of the framework. If the analytic statements of the framework posit numbers, then there are numbers. In contrast, “are there rocky planets in other star systems?” while not analytic in the framework, may be answered via empirical investigation. A very traditional metaphysician might be unsatisfied with our answer to the first question. To say that this framework analytically posits numbers, she may object, does not answer the question. She wants to know if there “really” are numbers. This, of course, is an attempt to ask what Carnap calls the external question. On Carnap’s views, the only sense that can be made of this question, “are there numbers?”, taken *externally*, is by asking which framework will be most effective for our inquiry: one with numbers or one without? Framework choices, being logically prior to meaningful inquiry and constrained only by pragmatic concerns, do not constitute genuine judgments of truth. Rather, they are pragmatically guided decisions. Hence, they lack metaphysical import. Only given a framework can there be genuine judgments of truth. Many a traditional philosophical dispute is then seen as meaningless, consisting only of competing framework proposals in need of explication so their pragmatic merits can be considered. The apparent metaphysical import of such disputes is a symptom of the disputants’ failure to appreciate this. There is no determinate answer to be given outside of a framework. Thus, much traditional metaphysics is deflated to the status of pragmatic framework choice.

We see a deep metaphysical deflationism at work in Carnap, and a generous reliance on structural considerations to support and motivate that deflationism. The *Aufbau* relies on structurally definite descriptions and intertranslatability in trying to achieve ontological neutrality. *Logical Syntax of Language* presses

tolerance and pluralism in syntax as the route to clarity and progress in philosophy and science. “Empiricism, Semantics, and Ontology” proposes the analysis of linguistic structures as the means by which philosophers can see the meaninglessness of traditional metaphysical dispute, clarify pragmatic questions of framework choice, and play a distinct and positive role in the production of knowledge.⁵

4 Quine Reinflates Metaphysics

Carnap’s deflationism in “Empiricism, Semantics, and Ontology” depends on the internal/external distinction, and the internal/external distinction depends on the analytic/synthetic distinction. Quine’s arguments in “Two Dogmas of Empiricism”⁶ have been taken by many to undermine the analytic/synthetic distinction. Thus, Quine’s rejection of analyticity amounts also to a rejection of Carnap’s deflationism,⁷ and we see Quine famously declaring at the end of “Two Dogmas” that “Ontological questions, under this view, are on a par with questions of natural science.” (1980a, p. 45, orig. 1951) In particular, Quine admits no significant distinction between (what Carnap saw as) the external, purely pragmatic questions of framework choice, and the internal empirical questions of scientific inquiry proper.⁸ Quine sees all questions of ontology as questions of natural science. Rather than a rejection of pragmatic concerns, this is supposed to be a “more thorough pragmatism” (1980a, p. 46, orig. 1951) wherein there is no sharp separation between the allegedly purely pragmatic and the genuinely empirical. Whatever portion of our theory we choose to revise, we do so in order to maintain or improve the fit of the whole with ongoing sensory experience. The considerations which prompt this are “where rational, pragmatic.”⁹ (1980a, p. 46, orig. 1951) See also (Gregory 2003a; Gregory 2003b).

One implication, as I have argued elsewhere,¹⁰ is that Quine has *reinflated* metaphysics. That is, in contrast to the anti-metaphysics of Moritz Schlick and A.J. Ayer¹¹ or the subtler deflationism of Carnap, Quine sees at least some metaphysics as legitimate. Without the analytic/synthetic distinction, Quine sees science as continuous with philosophy, so there is no special external preserve from which genuine judgment is excluded in favor of purely pragmatic choice. Hence, there is no preserve for a philosophy distinct from science, and genuine metaphysical dispute and discovery are carried out within science itself—a sci-

⁵For more on this reading of Carnap see, e.g., (Friedman 1987; 1991; 1994) and (Creath 1990; 1991).

⁶As well as arguments in “Truth by Convention” and “Carnap and Logical Truth” (1976a, orig. 1936; Quine 1976b orig. 1954/60)

⁷I am not interested in defending or disputing this claim here. For more detail, see (Gregory 2003a; Gregory 2003b).

⁸Not that scientific questions contain no pragmatic element whatsoever, of course.

⁹Similar remarks appear at the end of “On What There Is.” (Quine 1980b, pp. 16–17, orig. 1948) That is also the work where bound variables gain the spotlight.

¹⁰(Gregory 2003a; Gregory 2003b)

¹¹This is not to deny, of course, that the anti-metaphysics of Schlick and Ayer is itself highly metaphysical.

ence that is continuous with philosophy. It is still not the case that anything goes in metaphysics. In particular, the traditional metaphysics eschewed by Carnap, et al. still fails to be sufficiently empirically grounded. But in contrast to both tradition and his positivist predecessors, Quine claims that metaphysics is carried out within science. Though the philosopher (or philosophically minded scientist) may clarify, refine, and simplify via regimentation and reduction, we are pursuing metaphysics when we pursue science.

We are left, now, with a slight interpretive problem. Our end point was to be that Quine espouses a deflationary metaphysics, but I have just (briefly here, and at length elsewhere) cast him as undermining Carnap's deflationism and reinflating metaphysics. What gives? Well, we need to tell (and find evidence in support of) a story in which Quine develops a different kind of deflationism. In particular, we need a story of Quine's deflationism which is consistent with all ontological questions being "on a par" with those of science, and which brings structure to the fore.

Let's see what we can find.

5 Deflationism and Structure in Quine

In "The Scope and Language of Science" (1976c, orig. 1955/57) we see Quine developing some of the themes of the end of "Two Dogmas". Most salient for our purposes are: the tension between our desire to avoid naively reifying the categories of our language and our understanding that we cannot escape some language or other; the continuity between philosophy, science, and common sense; and the implications these first two points have for realist scientific ontology. Typically for Quine, the bulk of the paper involves a discussion of the workings of language, its role in the acquisition of a common sense view of the world, the increased systematicity of science as it emerges from common sense, and how scientific language can be regimented in order to more clearly and precisely examine the ontological commitments of theory. A few general points are worth elaborating here. Though it would be a mistake to attribute structuralism to Quine in the 50s, we do find this early in the essay:

The general task which science sets itself is that of specifying how reality "really" is: the task of delineating the structure of reality as distinct from the structure of one or another traditional language... The notion of reality independent of language is carried over by the scientist from his earliest impressions, but the facile reification of linguistic features is avoided or minimized. (1976c, pp. 232–233, orig. 1955/57)

The naive, or pre-philosophical, desire here is to in some sense "really" capture the structure of reality and not simply recapitulate the unreal vagaries of our language. But we cannot avoid language altogether:

Thought, if of any considerable complexity, is inseparable from language—in practice surely and in principle quite probably. Science, though

it seeks traits of reality independent of language, can neither get on without language nor aspire to linguistic neutrality. To some degree, nevertheless, the scientist can enhance objectivity and diminish the interference of language, by his very choice of language. And we, concerned to distill the essence of scientific discourse, can profitably purify the language of science beyond what might reasonably be urged upon the practicing scientist. (1976c, p. 235, orig. 1955/57)

Well and good: we must look at the language of science and see to what extent we can strip it of unreal structures. Though we cannot eliminate language altogether, and though the practicing scientist may have less inclination for this enterprise than we—the philosophically minded—have, we can “distill the essence” of theoretical language. We can investigate what structure theory attributes to the world. Quine, as one expects, winds up with an extensional language of first-order quantification, an ontology of physical objects and classes thereof, and predicates which are supposed to promote theoretical clarity and intersubjective agreement. We see here an attempt to balance the tension between, on the one hand, recognizing the parochial status of our conception of objects and, on the other hand, recognizing that our standard of reality cannot significantly transcend common sense and its refinement in science. This is mildly deflationary, and in a sense familiar to readers of Quine: transcendentalism is rejected, and the analysis of scientific theory in order to illuminate ontological commitments is a part of the scientific enterprise itself.

“Posits and Reality” (1976d, orig. 1955/60) puts a slightly different spin on these themes. Here we see greater emphasis on how our standard of scientific reality grows out of common sense. Further, when this is properly understood, we see that any attempt to ontologically privilege one domain of objects over another is misguided. We have (a slightly different sort of) ontological parity coming to the fore here. What distinction can be made is based in pragmatically different sorts of fundamentality that are not in competition with one another. He writes:

Something went wrong with our standard of reality. We became doubtful of the reality of molecules because the physicist’s statement that there are molecules took on the aspect of a mere technical convenience in smoothing the laws of physics. Next we noted that common-sense bodies are epistemologically much on a par with the molecules, and inferred the unreality of the common-sense bodies themselves. Here our bemusement becomes visible. Unless we change meanings in midstream, the familiar bodies around us are as real as can be; and it smacks of a contradiction in terms to conclude otherwise... (p. 251)

Our one serious conceptual scheme is the inclusive, evolving one of science, which we inherit and, in our several small ways, help to improve... (p. 252)

Statements about bodies, common-sense or recondite, thus commonly make little or no empirical sense except as bits of a collectively significant containing system. (Quine 1976d, p. 254, orig. 1955/60)

The perspective of any one of the three domains can be used to cast doubt on either of the others. We may reflect that common-sense bodies are posited only in order to simplify and organize the domain of sense data, or that the particles of physics are posited to simplify and organize the laws governing common-sense bodies, or that we only have a notion of sense data after thinking critically about our contact with and understanding of common-sense objects. Quine, after toying with the reader by emphasizing how each domain seems to undermine the others, reinstates sanity¹² by pointing out that we arrive at the dire-seeming result only by losing track of our standard of reality. We learn to use the term ‘real’ and to distinguish the real from the unreal as we learn about common-sense bodies. Insofar as we modify this common-sense understanding of ‘real’ we do so through the systematization and increased critical application of common-sense standards that constitutes our maturing scientific approach to the world. What we find is not that any one of these domains is more or less real, but that useful focus on one versus the others depends on the purpose of theorizing:

Sense data are *evidentially* fundamental. . . The physical particles are *naturally* fundamental. . . Common-sense bodies, finally, are *conceptually* fundamental. . . (1976d, p. 252, orig. 1955/60)

No one is *ontologically* fundamental. No one provides a new and final definition of ‘real’.

Quine’s attitude in “Posits and Reality” bears striking similarity both to Carnap’s attitude in the *Aufbau* and his attitude in “Empiricism, Semantics, and Ontology”. First, recall that one of Carnap’s concerns in the *Aufbau* was to illustrate ontological neutrality via the intertranslatability of the three apparently competing object domains: the phenomenal, the physical, and the general psychological. Here, we have Quine making a different but congruent point regarding the apparently competing domains of sense data, physical particles, and common-sense bodies. Intertranslatability is out the window, of course, so that is no route to neutrality. Indeed, rather than some sort of cosmic philosophical neutrality, Quine sees the interrelation between these domains as one of equally valuable, though pragmatically different sorts of fundamentality. Second, this is similar also to the “Empiricism, Semantics, and Ontology” ideal of pragmatic choice of alternate frameworks, but, again, without any commitment to a claim of deep philosophical neutrality—that element is replaced by Quine’s notion that each of the domains, while independently valuable in its own right, can also be incorporated into the overall scientific enterprise. Despite the differences, there

¹²This rhetorical move—creating a seeming conceptual crisis, only to reverse course or reassess and restore stability—is a favorite of Quine’s. In later works it involves his appeal to naturalism. I discuss it a bit more near the end of the paper.

is an important similarity to the spirit of these moves—a deflation, or downplaying, of the importance of ontological competition, a rejection of the desire and quest for the “really real” or “fundamental ontology”, and an assertion of a pragmatic/scientific attitude toward what remains of ontological questions. Insofar as we can make sense of ontological questions and answers, they are neither philosophically special, nor deeply fundamental. Rather, they are refined outgrowths of common sense, part of an overall pragmatic and empirical approach to knowledge. Though Quine has, indeed, reinflated metaphysics with respect to Carnap’s version of deflationism, we can see here a subtly altered downplaying of the import and fundamentality of metaphysics—a different deflationism.

One last point about Quine’s “Posits and Reality”: the title is a striking allusion to Schlick’s “Positivism and Realism”. (1991, orig. 1932/1933) Schlick’s essay is a wonderful expression of the more typical positivist attitude that sense data are indeed fundamental, and that no ontology should be admitted other than what can be reduced to sense data. Far from being deflationary with respect to ontology and metaphysics, Schlick’s (and many other positivists’) anti-metaphysics is out-and-out metaphysical: sense data are real and nothing else is. Clearly, in “Posits and Reality” Quine is at pains to contrast himself with this attitude—sense data are not fundamental for Quine, nor is metaphysics (positivist or otherwise) separate from science. Quine finds a place for empirically respectable metaphysics. Though, as we are seeing, it is a much deflated version of metaphysics in comparison to the tradition.

What of the proxy function argument? The earliest appearance of proxy functions, so-called, is in the 1964 “Ontological Reduction and the World of Numbers.” (1976e, orig. 1964)¹³ This paper is concerned both with the question of whether a Pythagorean ontology is warranted by the Löwenheim-Skolem theorem, and with the more general question of criteria for ontological reduction. The term ‘proxy function’ is introduced for a function which maps the objects of one theory onto the objects of another theory. In this essay Quine does not require proxy functions to be one-to-one. Rather, he allows many-to-one proxy functions in cases where the reduction of one domain to another results in a decrease in the number of objects or size of the domain.¹⁴ It is not until later that Quine restricts proxy functions to the one-to-one mappings. We do start to see explicit talk of relating the logical structure of one theory to another:

These cases suggest that what justifies the reduction of one system of objects to another is preservation of relevant structure. . . It emerged early in this paper that what justifies an ontological reduction is, vaguely speaking, preservation of relevant structure. (1976e, pp. 214, 219, orig. 1964)

But talk of structure does not take center stage. Nor is deflationism accentuated.

¹³At least as far as I have found. I would be delighted to learn otherwise.

¹⁴The example in “Ontological Reduction and the World of Numbers” is that of reducing impure numbers such as n degrees centigrade or n meters to the pure number n and new predicates. (1976e, p. 207, orig. 1964)

It is, however, implicit in his attempts to delineate just what degrees of freedom there are in reinterpreting the ontology of one theory in terms of another.

“Ontological Relativity” (Quine 1969a) goes further. Section I (the first of the two Dewey Lectures) focuses on various examples to illustrate indeterminacy of translation, based on the indeterminacy of the field linguist’s analytical hypotheses. Inscrutability of reference—that we cannot say absolutely to what a speaker is referring—then follows from the indeterminacy of translation. The end of Section I begins to note that wholesale reconstrual of a universe is possible, especially when the objects, such as numbers, are abstract. We know abstract objects by their laws—i.e., by the structure of the interrelations between the objects:

Always, if the structure is there, the applications will fall into place. . .
(p. 44)

The subtle point is that any progression will serve as a version of number so long and only so long as we stick to one and the same progression. Arithmetic is, in this sense, all there is to number: there is no saying absolutely what the numbers are; there is only arithmetic. (1969a, p. 45)

Here Quine is trying to clarify his assertion that we can vary what we take to be the referents of arithmetical claims, so long as the structure remains invariant, but that we cannot therefore claim that numbers are any things fulfilling that structure. Rather, he claims, we must stick—at any given time—with one progression. This insistence—that despite the relativity of ontological interpretation we must settle on some interpretation or other in order to answer ontological questions—will become a familiar refrain. It is part of Quine’s general naturalism, that we cannot stand aloof from all theory to pass or suspend judgment on ontological questions. More on this below.

Section II (the second of the two Dewey Lectures) expands the discussion from abstract objects to objects in general and dwells on the inscrutability of reference within the home language. Specification of reference/ontology is meaningful only relative to a particular manual of translation into a background language—even if the language one is translating is also the background language. The main emphasis in Section II of “Ontological Relativity” is deflationary in that it focuses on the double relativity of discussing ontology—dependence on choice of 1) background theory, and 2) translation or interpretation. The points relevant to our discussion are drawn out across a few pages:

Reference would seem now to become nonsense not just in radical translation but at home...

Fair enough; reference *is* nonsense except relative to a coordinate system...

Querying reference in any more absolute way would be like asking absolute position, or absolute velocity, rather than position or velocity relative to a given frame of reference...

What makes sense is to say not what the objects of the theory are, absolutely speaking, but how one theory of objects is interpretable or reinterpretable in another. (1969a, pp. 48–50)

This rejection of an *absolute* ontology is very deflationary. There is, however, little emphasis on structure. The initial arguments for ontological relativity are based mainly on translation or reinterpretation. Nor do we yet see the characterization of objects as neutral nodes. In fact, Quine does not invoke (one-to-one) proxy functions for seven more pages.

He initially gives the proxy function argument in terms of “theory forms”. A theory form is the uninterpreted logical structure of the theory—what remains invariant in the standard proxy function argument. The point is that given any theory form there will be multiple ways to interpret the variables and predicates so as to preserve the pattern of truths and falsehoods. No one interpretation is fundamental or privileged, and we can fix an interpretation only in terms of an antecedently accepted vocabulary. (p. 54) The argument does not appear in terms of proxy functions until p. 57, and though the notion of theory forms alludes to structure, structure is far from emphasized. The remainder of the essay discusses the underwhelming merits of Pythagoreanism (again).

A point worth noting before moving on: the idea of relativity to a background theory raises the issue of infinite regress. If we want to find the real objects and persist in asking “to what objects are we *really* referring?” we can only reinterpret into a new background language. We halt the regress, writes Quine, “by acquiescing in our mother tongue and taking its words at face value.” (p. 49) That is, we cease to search for an absolute or transcendental answer, and we just *use* our words. This is not a *solution* to the regress, any more than choosing a frame of reference in relativistic physics is a solution to the fact that position and velocity are not absolute. Quine’s point is, of course, the same: ontological relativity is not a problem to be solved, it is the nature of ontology. Indeed, the final paragraph compares this regress to the one we encounter in the semantics of truth, saying:

In their elusiveness, at any rate—in their emptiness now and again except relative to a broader background—both truth and ontology may in a sudden and rather clear and even tolerant sense be said to belong to transcendental metaphysics. (p. 68)

It is hard to get more deflationary—if not outright dismissive—of ontology; though the structuralism that becomes explicit in the remaining works, does go further.

The full-on proxy function argument is laid out in more or less its final form in “Things and Their Place in Theories” (1981). “Things”, which is distilled from parts of “Science and Sensibilia”—the Immanuel Kant Lectures given at Stanford in February of 1980—is also the place where structure first gets significant explicit emphasis. The article proceeds in three parts. In Part I, Quine declares that our conceptual apparatus is a bridge linking perception to perception. He would like to understand how this largely successful bridge is constructed

and functions. This, he argues, requires understanding reference, and so the bulk of Part I is devoted to Quine's familiar story of how reference emerges in language. Part II discusses what objects constitute our ontology, including, of course, what domains of objects might be reinterpreted in terms of others or even reduced to others.

In Part III Quine discusses familiar examples of the reduction of one domain to another: numbers to classes, physical objects to place-times, place-times to classes, mental states to bodily states. The familiar emphasis of this discussion is that reductive reinterpretation (two domains reducing to one) increases ontological economy. In addition, Quine stresses the arbitrariness or freedom of choice in these reinterpretations.¹⁵ This observation drives the remainder of the essay, and proxy functions (now restricted to one-to-one) take center stage. After reviewing the proxy function argument, Quine writes:

The apparent change is twofold and sweeping. The original objects have been supplanted and the general terms reinterpreted. There has been a revision of ontology on the one hand and ideology, so to say, on the other; they go together. Yet verbal behavior proceeds undisturbed, warranted by the same observations as before and elicited by the same observations. *Nothing really has changed.* (1981, p. 19, my emphasis)

From a naive understanding of our access to objects, there is a vast and consequential change wrought by the proxy function. It is a double change: we are (or our theory is) now talking about different objects, and we are asserting different predicates of them. But the change is only apparent. The sentence to sentence inferential structure remains unchanged. Moreover, since the semantic and epistemic checkpoints of theory—observation sentences—play that role holophrastically, their work is equally undisturbed. Verbal behavior in communication and theory testing continues as usual. Nothing really has changed. Quine concludes,

Structure is what matters to a theory, and not the choice of its objects. . .

The objects, or values of variables, serve merely as indices along the way, and we may permute or supplant them as we please as long as the sentence-to-sentence structure is preserved. The scientific system, ontology and all, is a conceptual bridge of our own making, linking sensory stimulation to sensory stimulation. I am repeating what I said at the beginning. . .

Our overall scientific theory demands of the world *only that it be so structured* as to assure the sequences of stimulation that our theory gives us to expect. More concrete demands are empty, what with the freedom of proxy functions. (1981, pp. 19–22, my emphasis)

¹⁵Again, not that *anything* goes, but there is a broad range (in principle, infinite range) of reinterpretations.

Though Quine won't label it as such for another 10+ years, the structuralism is plain to see here. So is the extreme deflationism. We have the bridge metaphor. We have the denigration of objects as mere indices. We have the rhetorical ploy of declaiming a "twofold and sweeping" change only to undercut it, within the same paragraph, as no real change at all. Moreover, and finally, we have the explicit recognition that theory amounts to no more (and no *less*) than a structure enabling us to "foresee and control the triggering of our sensory receptors in light of previous triggering". (1981, p. 1) "What evaporates is the transcendental question of the *Ding an sich*." (1981, p. 22) All of this communicates Quine's deeply deflationary attitude toward ontology. There is a total, or near total, abandonment of the notion of objects as the ontological ground for theory, elevating, instead, the implicational structure relating whole sentences to whole sentences. In the 1983 "Ontology and Ideology Revisited," Quine writes, "what matters is structure; the objects, concrete and abstract, familiar and recondite, matter only as neutral nodes in the structure. . . I agree with my disturbed readers that ontology has undergone a humiliating demotion." (1983, pp. 500–501) We can do ontology—yes—but only from within scientific theory, properly regimented. And what we find is not at all what we might have expected. Rather than uncovering a favored domain of objects, or even a small number of equally supportable domains, we find that the values of the variables are indefinitely reinterpretable under any available evidence.¹⁶ At best, what remains invariant is the structure.

Pursuit of Truth (1992b, First Edition 1990) makes the deflationism and structuralism explicit. Quine doubles down on the talk of "neutral nodes," (p. 33) and emphasis on structuralism increases. The arguments are the same, based on proxy functions and holophrastic observation sentences. Immediately after his discussion of the development of reification and reference, Quine titles §12 "Indifference of ontology". It opens:

Reference and ontology recede thus to the status of mere auxiliaries. True sentences, observational and theoretical, are the alpha and omega of the scientific. They are related by structure, and objects figure as mere nodes of the structure. What particular objects there may be is indifferent to the truth of observation sentences, indifferent to the support they lend to the theoretical sentences, indifferent to the success of the theory in its predictions. (1992b, p. 31)

He then launches into a familiar discussion of proxy functions to support this indifference. In the first edition of *Pursuit of Truth*, the following section §13 was titled, "Ontological relativity." By Quine's account in the new preface, the Revised Edition was spurred by work for and discussions had at conferences in San Marino and Girona during 1990. §13 now becomes, "more emphatically," "Ontology defused."¹⁷ The change in title here is significant, further emphasizing the deflation of metaphysics and ontology—it is indifferent and defused. We

¹⁶And no further evidence will help—even if we idealize and imagine having all possible evidence, ontological relativity remains.

¹⁷§22 and §§28–29 also received major changes.

had seen this shift in progress above in “Things”. Moreover, Quine’s additional material in the Revised Edition discusses how, though we may begin with a common sense notion of *bodies*, we progress, via an only partially-apt metaphor that we must ultimately abandon, to a notion of *objects*—physical particles, numbers, etc. But, when put under the very critical light that distinguishes mature science and naturalistic philosophy from their beginnings in common sense, this conception of objects evaporates. It is defused, indifferent, deflated. (pp. 34–35) To cap it off, in the Revised Edition, Quine adds an entirely new paragraph to the end of §13 “Ontology defused”:

The objectivity of our knowledge of the external world remains rooted in our contact with the external world, hence in our neural intake and the observation sentences that respond to it. We begin with the monolithic sentence, not the term. A lesson of proxy functions is that our ontology, like grammar, is part of our own conceptual contribution to our theory of the world. Man proposes; the world disposes, but only by holophrastic yes-or-no verdicts on the observation sentences that embody man’s predictions. (Quine 1992b, p. 36)¹⁸

Objectivity is rooted in our contact with the world, but not by our contact with unconceptualized objects. Objectivity, as Quine understands it here, is grounded in sentences and the structure of their interrelations, not in ontology.¹⁹ We have here, then, deflationary structuralism. All we lack is the label.

In “Structure and Nature,” of course, Quine finally provides the label: “global ontological structuralism.” (1992a, p. 9) The proxy function argument, which does not even appear in the earliest works considered here, now has the lead role in Quine’s deflationary approach to ontology and metaphysics:

The conclusion is that there can be no evidence for one ontology as over against another, so long anyway as we can express a one-to-one correlation between them. Save the structure and you save all. . .

The very notion of object, or of one and many, is indeed as parochially human as the parts of speech; to ask what reality is *really* like, however, apart from human categories, is self-stultifying. (1992a, pp. 8–9)

This returns us to where we began. The proxy function argument shows the indifference of ontology to evidence and the parochial nature of our conception of objects, but also the futility of attempting to transcend our categories.

A deflationary attitude runs throughout all the works surveyed. Quine refines and elaborates it over the decades until it becomes deflationary structuralism. Early on, guided by pragmatic holism, the focus is on resisting attempts

¹⁸A version of this discussion and paragraph can also be found in *On Quine: New Essays* (Leonardi & Santambrogio 1995, p. 351)

¹⁹For more detail on objectivity in this sense, see Chapter 5 of my (2008).

to transcend an appropriate standard of reality—one originating in common sense and critically extended in science and philosophy. Simultaneously, we are counseled to avoid naively taking the language of science at face value. Regimentation and a critical philosophical eye shows us that the domain of objects we are interested in depends somewhat on the questions we are asking. These elements are part of the *mise-en-scène* of Quine’s naturalism throughout. When proxy functions first enter the frame, the focus shifts to questions of reductive ontological economy and the reinterpretability of ontology. Aided by one-to-one proxy functions, we soon see the inscrutability of reference and the double relativity of ontological interpretation. As long as our attention is on the relativity of interpreting the values of variables—as in “Ontological Relativity”—the structuralism is at best implicit. But, as all these elements converge—at the end of “Things”—the focus deepens, revealing the structure in the background. We see through the neutral, empty indices to the structure—and structure is what matters most. This trend culminates in the Revised Edition of *Pursuit of Truth* with ontology defused, and in “Structure and Nature” with global ontological structuralism.²⁰

6 Conclusion

Two final points are in order.

First, despite some overarching similarities, Quine’s deflationary structuralism is very different from Carnap’s deflationism. Both share (and share with others as well) a scientifically motivated rejection of transcendental metaphysics. With Carnap’s framework explication and Quine’s regimentation, both are committed to the value of analysis of language by philosophers (or philosophically minded scientists). Clarifying the language of our theorizing is a requirement for serious ontological study, and can also yield benefits to the practice of science itself. But Carnap starts with structure. For Carnap the analysis of structure is in some sense philosophically prior (though not prior in practice) to scientific investigation, and it is supposed to underwrite metaphysical neutrality—a position from which to pragmatically assess alternatives. And this, of course, depends on a sharp distinction between analytic and synthetic, external and internal. Quine’s rejection of these distinctions and his resulting embrace of holism give a very different cast to his approach to metaphysics. As we saw, there is a reinflation. Certain questions of metaphysics and ontology are perfectly legitimate, as long as they are understood as part of our empirical and pragmatic assessment of ongoing theory—that is, as long as they are understood as part of science. But this empiricism and pragmatism still constitute a deflation with respect to transcendentalism. Moreover, as Quine’s ontological views develop through the recognition of ontological relativity to the embrace of

²⁰In “Structure and Nature” and *Pursuit of Truth*, Quine also considers “more extravagant departures” from our theory—cases in which the rival theory has a significantly different structure, resisting sentence-by-sentence translation. (1992a, p.9; 1992b, §§41-43) I leave discussion of such cases for another time.

structuralism, the result is a unique form of metaphysical deflationism. Under full critical examination, the fundamentality of objects drops out, and structure is what matters. Where Carnap starts with structure, Quine ends with it.

Second, what of realism? I have been emphasizing Quine's deflationary attitude that downplays objects, elevates structure, and emphasizes the human origins of our categories. Yet, Quine has repeatedly claimed that this does not undermine his realism: "Naturalism itself is what saves the situation." (1992a, p. 9) The ensuing passage in "Structure and Nature" (at the start of this essay) recalls a similar one in "Things and Their Place in Theories":

Now how is all this robust realism to be reconciled with the barren scene I have been depicting? The answer is naturalism: the recognition that it is within science itself and not in some prior philosophy, that reality is to be identified and described. (1981, p. 21)

It might seem too easy or too convenient to retreat to naturalism when questions about realism arise. How is Quine's deflationary structuralism any kind of realism at all? Why not take this relativity, deflationism, and structuralism as a *reductio* of Quine's whole approach to ontology? The typical charitable answer leans on the distinctions between epistemology and ontology, evidence and truth, and avers Quine's principle, expressed in "Things" as, "We must speak from within a theory, albeit any of various," (1981, p. 22) or, expressed in "Structure and Nature" as, "naturalism would still counsel us that reality is to be grasped only through a man-made conceptual scheme, albeit any of various." (1992a, p. 9) On the one hand, it is difficult to know what more to add to these proclamations. To a Quinean bent of mind, they speak for themselves. On the other hand, absent a Quinean bent of mind, they seem too pat, and demand significant interpretive work. Here I will simply try to put them into the context of Quine's ontological/metaphysical deflationism, in hopes that it will both deepen my case for reading Quine's structuralism as deflationary and illuminate the naturalist maneuver.

Quine's naturalist maneuver occurs most frequently in contexts in which epistemological considerations have shown how tenuous our evidence for theory turns out to be. Typically, he has taken the discussion to the brink of apparent skepticism, especially as compared to a naive or pre-theoretic epistemological standpoint. The restoration comes by reflecting on the fact that we can do no better: this—despite the transcendental pretensions of many a philosopher—is how we have always gotten along. We must work at all times from within some theory or other, and when we are doing so, we are (tentatively) taking its claims to be true, its categories and objects to be real. To attempt to do otherwise is "self-stultifying." It would leave us verbally flailing. This move occurs in microcosm, remarked on earlier, at a number of points in "Ontological Relativity." One is when Quine insists that we must settle on one progression to take as the values of arithmetical variables. Despite seeing that the structure of the progression is epistemologically crucial, we must, nonetheless, use that structure, and that use commits us to certain values of those variables. Another

is when discussing the regress of ontological reinterpretation. We saw that nothing stops the regress other than taking some background theory at face value, using it. This is not a dodge—it is just how theory works. Similarly, the move is applied in macrocosm in the reciprocal containment of epistemology and ontology. The opening two paragraphs of “Things” celebrate this reciprocal containment: our talk of external things is a human-made conceptual bridge, but we can discover this only while committed to those very external things, and there is nothing we can be more confident of than them. Interpreting ontology and reflecting on the evidential support of theory are epistemological tasks. And whatever tenuousness of evidence they reveal, whatever tentativeness of acceptance they counsel, whatever deflationary attitude they inspire, acceptance of theory in use is acceptance of its categories and objects as real, and its claims as true. After all, we must accept some theory in use, or we cannot even engage in these epistemological reflections, much less extend our science.²¹

This is the crux of the naturalist maneuver—no matter how skeptical or critical our epistemological investigation may become—we are simply stuck with our critical, tenuous, structuralist, immanent standards. And they are enough. Any attempt to wriggle out of this to a neutral and/or transcendental position, on Quine’s view, will fail. Even as we extend and refine common sense through science, and further through scientifically minded philosophy—even as we begin to see the tenuousness of this picture—we also begin to see the illegitimacy of the imagined transcendental standard against which our naturalistic pursuit seemed so anemic. This immanent and ongoing extension, systematization, and fortification of theory is the best we can do. Cautious, defeasible acceptance does not undermine realism. Rather, it constitutes realism. While epistemology may make our contact with the world appear meager, there is no higher standard. We must live within our means.²²

With respect to ontological considerations, living within our means proves interesting. To extend and improve upon a common-sense conception of objects and the real vs. the unreal, we must clarify ontological commitment. When we do press the nature of ontological commitment, we find that we need to regiment a language in order to make the issue more precise. As we do that, we focus on the existential quantifier as the locus of commitment. But we also see that domains of objects are reinterpretable: sometimes in order to increase economy and/or illuminate previously unsuspected interrelations between domains. Yet the emptiness of even this more precise occupation eventually reveals itself. First, in discussing another’s ontology, we are free to reinterpret at will. Next, this freedom applies to our own theory, and to any theory whatsoever. Finally, the proxy function argument crystallizes the claim that our theorizing, despite where we began, is indifferent to the objects we posit—they are just neutral nodes—as long as we maintain the inferential structure linking those nodes. These are interesting and disconcerting things to have learned. It is a significant deflation of what ontological investigation gets us. The more we push the more

²¹For more on acceptance of theory in use see chapter 3 of my (2008).

²²See (Quine 1995).

it evaporates to “mere” structure and “neutral nodes.” But naturalism tells us we can only do this critical pushing from within some theory or other, and at some point we must—even having understood the structuralist and deflationary results of ontological investigation—relax and use the language, pursue our science. Moreover, when we relax—when we do science and acquiesce in a language and theory by using it, we are fine: the ontology is immanent, and our attitude is realistic. In fact, when we were pursuing critical ontology and recognizing structuralism, we were still acquiescing in our background theory—otherwise we could not proceed. This aspect of Quine’s naturalism, that eventually we must acquiesce in the categories of some theory or other even as we recognize their parochial nature, is perfectly consistent with the more dramatic particulars of Quine’s deflationism.

That Quine’s naturalism is deflationary with respect to transcendentalism is not at all surprising. It is an attitude he shared with Carnap and others. That regimented ontological investigation leads him to deflationary structuralism is rather a greater surprise. I hope to have made clear that Quine has been an interesting kind of ontological deflationist from early on, and that the structuralism that develops during the second half of the 20th century is an integral part of that deflationism.

Works Cited

- Carnap, R., 1937. *The Logical Syntax of Language*, London: Routledge and Kegan Paul, Ltd.
- Carnap, R., 1956. Empiricism, Semantics, and Ontology. In *Meaning and Necessity*. Chicago: The University of Chicago Press, pp. 205–221.
- Carnap, R., 1967. *The Logical Structure of the World and Pseudoproblems in Philosophy*, Berkeley: University of California Press.
- Creath, R., 1990. Introduction. In R. Creath, ed. *Dear Carnap, Dear Van: The Quine-Carnap Correspondence and Other Related Work*. Berkeley: University of California Press, pp. 143.
- Creath, R., 1991. Every Dogma Has Its Day. *Erkenntnis*, 35, pp. 347–389.
- Friedman, M., 1987. Carnap’s Aufbau Reconsidered. *Nous*, 21, pp. 521–545.
- Friedman, M., 1991. The Re-evaluation of Logical Positivism. *The Journal of Philosophy*, 88(10), pp. 505–519.
- Friedman, M., 1994. Geometry, Convention, and the Relativized A Priori: Reichenbach, Schlick, and Carnap. In W. Salmon & G. Wolters, eds. *Logic, Language, and the Structure of Scientific Theories*. Pittsburgh: University of Pittsburgh Press.
- Gregory, P.A., 2003a. Putting the Bite Back into ‘Two Dogmas’. *Principia—an International Journal of Epistemology*, 7(1–2).

- Gregory, P.A., 2003b. “Two Dogmas”: All Bark and No Bite? Carnap and Quine on Analyticity. *Philosophy and Phenomenological Research*, 67(3), pp. 633–648.
- Gregory, P.A., 2008. *Quine’s Naturalism: Language, Theory, and the Knowing Subject*, London: Continuum.
- Leonardi, P. & Santambrogio, M. eds., 1995. *On Quine: New Essays*, Cambridge: Cambridge University Press.
- Quine, W.V., 1969a. Ontological Relativity. In *Ontological Relativity and Other Essays*. New York: Columbia University Press, pp. 26–68.
- Quine, W.V., 1969b. Epistemology Naturalized. In *Ontological Relativity and Other Essays*. New York: Columbia University Press, pp. 69–90.
- Quine, W.V., 1976a. Carnap and Logical Truth. In *The Ways of Paradox and Other Essays*. Cambridge, Mass.: Harvard University Press, pp. 107–132.
- Quine, W.V., 1976b. Truth by Convention. In *The Ways of Paradox and Other Essays*. Cambridge, Mass.: Harvard University Press, pp. 77–106.
- Quine, W.V., 1976c. The Scope and Language of Science. In *The Ways of Paradox and Other Essays*. Cambridge, Mass.: Harvard University Press, pp. 228–245.
- Quine, W.V., 1976d. Posits and Reality. In *The Ways of Paradox and Other Essays*. Cambridge, Mass.: Harvard University Press, pp. 246–254.
- Quine, W.V., 1976e. Ontological Reduction and the World of Numbers. In *The Ways of Paradox and Other Essays*. Cambridge, Mass.: Harvard University Press, pp. 212–220.
- Quine, W.V., 1980a. Two Dogmas of Empiricism. In *From a Logical Point of View*. Cambridge, Mass.: Harvard University Press, pp. 20–46.
- Quine, W.V., 1980b. On What There Is. In *From a Logical Point of View*. Cambridge, Mass.: Harvard University Press, pp. 1–19.
- Quine, W.V., 1981. Things and Their Place in Theories. In *Theories and Things*. Cambridge, Mass.: Harvard University Press, pp. 1–23.
- Quine, W.V., 1983. Ontology and Ideology Revisited. *The Journal of Philosophy*, 80(9), pp. 499–502.
- Quine, W.V., 1992a. Structure and Nature. *The Journal of Philosophy*, 89(1), pp. 5–9.
- Quine, W.V., 1992b. *Pursuit of Truth* Revised Edition, Cambridge, Mass.: Harvard University Press.
- Quine, W.V., 1995. Naturalism; Or, Living Within One’s Means. *Dialectica*, 49(2–4), pp. 251–261.
- Schlick, M., 1991. Positivism and Realism. In Richard Boyd, Philip Gasper, & J. D. Trout, eds. *The Philosophy of Science*. Boston: MIT Press, pp. 37–55.