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Quine vs. Quine
Abstract Knowledge and Ontology

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How does Quine, one of the most important philosophers of the twentieth century, fare in the first decades of the twenty-first century? It appears that new developments in metaphysics and epistemology, such as grounding/fundamentality theory and even the ongoing debate on realism in the philosophies of science and mathematics, tend to ignore his work. In contrast to this trend, I believe that Quine's rich and complex ideas have much to contribute to the current debate. Indeed, some of his ideas have a philosophical potential that has yet to be fleshed out and realized. In this chapter, I will focus on a cluster of Quinean ideas that are especially fruitful in meeting some of the current challenges, both general methodological challenges and challenges concerning abstract knowledge and ontology.

Exploiting the philosophical potential of Quine's ideas is, however, a bit tricky. First, there are inherent tensions both among and within Quine's ideas. Second, Quine's arguments for some of his ideas are orthogonal to their philosophical significance. To make the most of Quine's ideas we have, therefore, to take an active stance: accept some of his ideas and reject others, sort out the different versions of relevant ideas, supply new arguments, sharpen or revise some of the ideas, connect them with non-Quinean ideas, show which new theories and new solutions to problems they lead to, and so on. Clearly, this is a major project. What I will attempt to do here is more modest. I will choose a particular cluster of four Quinean ideas and specific Quinean versions of these ideas, suggest a particular construal and/or development of these ideas, and explain why they are fruitful for contemporary philosophy in general and for dealing with abstract knowledge and ontology in particular. Unavoidably, the project will, at times, pit Quine against Quine. My goal is not to reconcile Quine's ideas but to highlight the fruitfulness of some of his ideas, and this requires fleshing out in full, and magnifying, certain elements of his thought, regardless of their agreement with other elements.

In a project of this kind it is important to distinguish between Quine's original ideas and my own construal, development, and use of these ideas. But this task is not straightforward. Different readers (including commentators) differ in their interpretation of Quine, and what I regard as the original version of a Quinean idea might differ from what others regard as its original version. I will support my attribution of various ideas (or versions of ideas) to Quine with quotations from, and references to, his writings, but detailed exegesis cannot be offered here. The paper itself builds upon and further develops my earlier work on Quine Sher 1999, 2016; however, its point is new and it stands on its own.

11.1 The Liberating Force of Quine's Ideas

One of the lamentable features of twentieth-century analytic philosophy is its tendency to 'police' the formulation of philosophical questions. From the Linguistic Turn to Naturalism, twentieth-century movements demanded that we reformulate epistemic, metaphysical, and moral questions as questions about language, questions of psychology or neuro-science, and so on. Today, many of us seek to ask philosophical questions in their original philosophical form, yet without being led back to the old answers. The challenge is to approach the classical questions in a substantive, open-ended, undogmatic, unbiased manner, and without unnecessary restrictions, whether traditional or more recent.[1] While Quine's naturalism, or certain restrictive versions of his naturalism, magnify this challenge, other Quinean ideas point in especially fruitful directions for meeting it.

The challenge of freeing ourselves from unnecessary restrictions, however, is not rooted just in restrictive ideologies. Some unnecessary restrictions, as we shall see below, arise from deeply rooted traditions. The return to the traditional analytic-synthetic and apriori-aposteriori dichotomies, which is quite popular today, exacerbates the problem. Sometimes even the demise of detrimental traditions introduces obstacles. This is the case with the demise of foundationalism, a highly problematic yet deeply inculcated epistemic methodology characterized by the requirement that the justification of human knowledge be strictly hierarchical and ultimately based

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[1] One way to think of the idea of an open-minded, open-ended, unbiased philosophical investigation is in terms of 'look and see'. Don't assume in advance that X must be so and so, or that there are only these or those familiar options with respect to X, but look and see. Reduce as much as possible the ideological, theoretical, methodological, and generally accepted constraints on what you should look for and what you can and cannot expect to find. (The expression 'look and see' is usually associated with Wittgenstein, but there are several differences between his use of this expression and mine. In particular, for me 'look and see' is not specifically directed at language. Nor is 'looking/seeing' contrasted with 'thinking', 'saying', or 'theorizing'. Looking and seeing is what Franklin, Crick, Watson, and others did when they investigated the structure of DNA, it is what Gödel did when he wanted to find out whether mathematics is complete, what Kant did when he figured out a way to avoid Humean skepticism, etc.)

on absolutely certain truths.[2] Foundationalism's influence was so deep that most philosophers still identify the foundational enterprise of philosophy with the foundationalist methodology. As a result, many philosophers see the end of foundationalism as the end of foundational philosophy, ruling out the possibility of reviving the foundational enterprise by developing a new (genuinely philosophical as distinct from scientific) foundational methodology, different from foundationalism. While some of Quine's ideas stand in the way of a new methodology of this kind, others offer fruitful ways of pursuing it.

The need for greater freedom is especially urgent in philosophical endeavours concerned with abstract fields of knowledge, such as logic and mathematics. One widely accepted 'truism' about logic is that a philosophical foundation for logic is impossible due to circularity. Some of Quine's ideas do not just free us from the accustomed ban on circularity, but suggest gainful uses of circularity. Another obstacle to an open-minded search for foundation for logic is due to the powerful tradition of regarding logic as non-factual. Logic may be purely linguistic or conceptual or conventional or pragmatic or . . ., but it is not factual. This view, both in its traditional and in its newer, twentieth-century version, limits our investigations of logic by preventing us from considering new conceptions of logic. This obstacle, too, is removed by some of Quine's ideas.

Another endeavour facing both traditional and twentieth-century obstacles is realism with respect to abstract theories. Wittgenstein (1967) thought that one of the hardest challenges of philosophy is the challenge of realism without empiricism. The real challenge, in my view, is realism without either empiricism or Platonism. This challenge is especially important for dealing with the question of *mathematical* realism. One major obstacle to an open-minded consideration of such realism is the bifurcational, 'either-or' thinking associated with the traditional dichotomies. For example, the apriori-aposteriori dichotomy implies that there are exactly two options with respect to mathematical realism: either it is empirical or it is apriori. If it is empirical, we fail to meet Wittgenstein's challenge. If it is apriori, then, being committed to mathematical reality, it is committed to a world that is not accessible to empirical cognition, i.e. to a Platonic world (or something like it). Going beyond both empirical and Platonic realism requires nonbifurcational thinking. Some of Quine's ideas free us to engage in just this kind of thinking.

11.2 Four Innovative Quinean Theses

Below I will consider a cluster of Quinean ideas that replace four cornerstones of traditional and/or early twentieth-century philosophy: (a) the analytic-synthetic

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[2] What the absolutely certain truths are may vary from one foundationalist to another. For Descartes, for example, the absolutely certain truth is the Cogito, while for empiricist foundationalists, the certain truths are simple observational truths. For a contemporary description of foundationalism, see, e.g., Sosa (1991a, 1991b). For some of its problematic characteristics, see section 11.2.2.

dichotomy, (b) the foundationalist methodology, (c) the apriori-aposteriori (or apriori-empirical) dichotomy, and (d) the posits-reality opposition.[3] I will call the claims that (a)–(d) hold and are central to philosophy the '(positive) analytic-synthetic thesis', 'foundationalist thesis', '(positive) apriori-aposteriori/empirical thesis', and 'non-reality-of-posits thesis'. I will call the rejection of (and/or alternatives to) these theses the 'negative analytic-synthetic thesis', 'holistic thesis', 'negative apriori-aposteriori thesis', and 'posits thesis'.

11.2.1 The Negative Analytic-Synthetic Thesis

Let me begin by describing the dialectic of this section: following a brief discussion of the *positive* analytic-synthetic thesis, I argue that it is detrimental to an open-minded investigation of significant philosophical questions[4] and that Quine's *negative* analytic-synthetic thesis removes this detriment. I then indicate that Quine's own discussion of the positive and negative analytic-synthetic theses oscillates between (i) being relevant and irrelevant to this detriment and (ii) being supportive and non-supportive of its removal. I conclude that to fruitfully employ Quine's negative analytic-synthetic thesis, we ought to have an independent stance toward it. We ought to selectively accept some of the things Quine says about it and reject (or put aside) others. A similar dialectic characterizes my discussion of the rest of Quine's theses.

Turning to the (positive) analytic-synthetic thesis, this thesis says that statements[5] are divided into two non-empty and disjoint kinds: synthetic and analytic. Quine considers quite a few characterizations of the analytic-synthetic division and, in particular, of analyticity. But not all of these are of interest to us here. A few characterizations that are of interest include:

(1) The analytic-synthetic thesis asserts a 'fundamental cleavage between truths which are *analytic*, or grounded in meanings independently of matters of fact, and truths which are *synthetic*, or grounded in fact' (Quine 1980b, 20).

(2) 'Statements which are analytic by general philosophical acclaim ... fall into two classes. Those of the first class, which may be called *logically true*, are typified by:

(1) No unmarried man is married.

... But there is also a second class of analytic statements, typified by:

(2) No bachelor is married.

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[3] By the posits-reality opposition I understand the opposition, rooted in the idealism-realism dichotomy, between real objects, objects residing in the world, and ideal objects, mental objects created by us.

[4] See fn. 1 above.

[5] Following Quine, I use 'statements' (and sometimes 'sentences') as a generic term for bearers of analyticity and syntheticity which are smaller than theories and disciplines. The precise identity of such bearers—whether they are linguistic entities, mental entities, propositions, etc.—is not central to the present discussion.

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The characteristic of such a statement is that it can be turned into a logical truth by putting synonyms for synonyms' (Quine 1980b: 22–3).

(3) 'Analytic statements of the second class reduce to those of the first class, the logical truths, by *definition*; "bachelor", for example, is *defined* as "unmarried man"' (Quine 1980b: 24).

(4) 'In the extreme case where the linguistic component [as distinct from the factual component in the truth of statements] is all that matters, a true statement is analytic' (Quine 1980b: 41).

(5) 'A limiting kind of statement which is vacuously confirmed, *ipso facto*, come what may . . . is analytic' (Quine 1980b: 41).

(6) Analytic truth is 'truth by convention' (Quine 1976a: 77).

(7) Analytic truth is truth by 'legislative postulation' (Quine 1976c: 118), where legislative postulation is 'the propounding of a deliberate choice unaccompanied . . . by any attempt at justification other than in terms of convenience' (Quine 1976c: 120).

In what way is the analytic-synthetic thesis, as it is reflected in these citations, detrimental to a substantive, open-ended, and unbiased philosophical investigation? First, let me note that although the analytic-synthetic distinction is a distinction between two types of statements, it has important epistemic ramifications. Synthetic statements are factual; analytic statements are nonfactual. Synthetic statements are true or false (largely) due to the way the world is; analytic statements are true or false exclusively due to the way our language, concepts, meanings, conventions, pragmatic considerations, postulations, etc., are. This induces a bifurcation of fields of knowledge: synthetic fields are (largely) factual; analytic fields are (altogether) nonfactual. Synthetic knowledge is based on investigations of the world; analytic knowledge is based on investigations of our language (concepts) and/or on pragmatic decisions.

Proponents of the analytic-synthetic thesis regard physics, and especially experimental physics, as a paradigm of a synthetic field of knowledge, and logic as a paradigm of an analytic field of knowledge. Some regard mathematics, too, as analytic. Quine describes these views as follows:

(8) 'Logic and mathematics are purely analytic or conventional' (Quine 1976a: 77).

(9) 'The logically true sentence . . . is a sentence which, given the language, automatically becomes true' (Quine 1976c: 108).

(10) 'The linguistic doctrine of logical truth . . . say[s] that logical truths are true by virtue purely of the intended meanings, or intended usage, of the logical words." (Quine 1976c: 110).

(11) 'True sentences generally depend for their truth on the traits of their language in addition to the traits of their subject matter; . . . logical truths . . . [are] the limiting case where the dependence on traits of the subject matter is nil' (Quine 1976c: 113).

(12) 'The linguistic doctrine of logical truth is sometimes expressed by saying that such truths are true by linguistic convention' (Quine 1976c: 115).

Quine is also well aware of the epistemic dimension of the view that logic is analytic:

(13) 'The linguistic [i.e. analytic] doctrine of logical truth . . . is an epistemological doctrine' (Quine 1976c: 110)

(14) 'I now perceive that the philosophically important question about analyticity and the linguistic doctrine of logical truth is *not* how to explicate them; it is the question rather of their relevance to epistemology' (Hahn and Schilpp 1986: 207).

The main problem with the analytic-synthetic dichotomy, from the present perspective, is that if, in approaching a theory or a field of knowledge, we categorize it as analytic, then we rule out in advance an open-ended investigation of its factuality. That is to say: if we decide, to begin with, that logic is analytic, then we rule out, to begin with, the possibility that logic is significantly factual or (in Quine's words) 'world-oriented'.[6] We leave no room for investigating *whether* logic is world-oriented, in *what way* it is world-oriented, *what in the world* it is oriented toward, and whether it is *sufficiently world-oriented* to warrant realism.

The negative analytic-synthetic thesis, construed as addressing this problem, says that we should not take it as given that statements, theories, and fields of knowledge are divided into two non-empty and disjoint kinds, analytic and synthetic. That is, we should not take it for granted that some statements (theories) are true or false exclusively due to facts about our mind (broadly understood as including language, conventions, pragmatic considerations, postulations, and, one might add, concepts, features of our brain, etc.), while others are true or false due to the way the (extramental) world is. In particular, we should not take it as given that logical statements fall under the former category. It is an open question, a question that should be open to substantive, open-ended, and unbiased investigation, how logic stands with respect to the world on the one hand and the human mind on the other, to what extent it is factual or linguistic (conventional), and whether realism (or a certain conception of realism) applies to it.

What would investigating the factuality of logic in a substantive, open-ended, and non-biased manner be like? Suppose we approach logic without a prior categorization of its truths as analytic. One way we may proceed is this:

We may start by asking what is logic's role in knowledge. Suppose the answer is: logic's role is to enable us to expand our knowledge of the world through the use of an especially strong type of inference, an inference that offers an especially strong guarantee of transmission of truth from premises to conclusion.[7] Suppose we next

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[6] See Quine (1986a: 97).

[7] What strength (or kind of strength) the transmission of truth by a logical inference is required to have is part of the investigation. If our conclusion coincides with Tarski's (1983) initial characterization of

ask what kind of truth a logical inference has to transmit from premises to conclusion in order to extend our knowledge of the world. Suppose our investigation leads to the answer that genuine knowledge of the world requires a strong norm of truth, a substantive, robust correspondence norm (of one kind or another),[8] rather than a weaker norm (say, a norm of coherence or pragmatic truth, or a deflationist norm of truth). In particular, the requisite norm of truth demands a significant connection between true statements/theories and their target in the world. Next, the investigation centres on the question: given that logical inference has to transmit correspondence truth (truth in the world) from premises to conclusion, what constraints, if any, does this impose on logical inference? Suppose that an open-ended, unbiased investigation leads to the conclusion that to transmit truth-in-the-world from premises to conclusion, a logical inference must be constrained by the world. For example, if the world is such that a statement S_1 is correspondence-true and a statement S_2 is correspondence-false, a logical inference cannot say that S_1 logically entails S_2. A logical inference has to take into account the connections, in the world, between the situations responsible for the truth-values of S_1 and S_2. A proposed theory or a game that violates these factual constraints cannot be accepted as a logical theory.

Suppose that further investigation reveals a certain facet of the world, or a certain type of relation between situations in the world, such that, if logical inference is based on this facet of the world or this (type of) relation in the world, it transmits correspondence truth from premises to conclusions with the requisite force. (Suppose, for example, that some situations responsible for the truth-value of sentences are connected by certain relations that have especially strong modal force, sufficiently strong to serve as a basis for logical inference.)[9] In that case logic will be factual not just in the negative sense of being constrained by the world but also in the positive sense of being based on certain features of the world. But if we accept the analyticity of logic as given, an open-ended investigation, one that might lead to such a conclusion, is blocked.

Of course, an open-ended and unbiased investigation may also lead to the conclusion that logic is, after all, analytic, that it is dependent only on the human mind (language, conventions, pragmatic considerations, and so on) and not at all on the world. But this possibility does not subvert my point. In order to engage in a substantive, open-ended, and unbiased investigation, we cannot categorize logic

logical consequence, then the strength of logical inference has to do with modal force and formality: the transmission of truth from premises to conclusion by logical inference has to be both necessary and formal. But this is not essential for our sketch of an open-ended investigation of logic.

[8] By 'correspondence norm of one kind or another' I mean a correspondence norm that may differ from the traditional correspondence norm in not requiring the correspondence relation to exhibit the specific pattern of copy (mirror-image) or direct isomorphism. Instead, it may allow more complex and circuitous patterns. (See discussion of the posits thesis below.)

[9] Their modal force will be greater than that of physical relations and even physical laws. One possible candidate for such relations is *formal* relations, where formality is characterized by certain conditions that endow it with an especially strong modal force. But there is no need to pursue this specific possibility here.

in advance as analytic (or, for that matter, synthetic). The character of logic is to be determined based on a thorough philosophical investigation, not prior to such an investigation.

Now, someone might argue that the categorization of logic as analytic is, indeed, based on a full-scale, open, unbiased investigation of logic. But I think this is factually incorrect. There have been very few comprehensive philosophical investigations of logic, let alone investigations of the possibility that logic is factual, in the philosophical literature, and most claims that logic is analytic have not been based on such investigations. Be that as it may, my claim is that *the analytic-synthetic thesis is detrimental to substantive and unbiased investigations of topics such as logic if, and to the extent that, it is accepted prior to, or without, a thorough investigation of these topics themselves*. An unbiased investigation of logic should not rule out, at the outset, the possibilities that logic is synthetic, that logic is analytic, that logic is partly synthetic and partly analytic, that logic is neither synthetic nor analytic (i.e. that the analytic-synthetic distinction does not cut the world, language, or philosophy, 'at the joints', in the sense of Sider 2011).

I have presented a reason for rejecting the analytic-synthetic distinction based on the contemporary concern with unwarranted restrictions on open-ended philosophical investigations of classical philosophical questions. How are Quine's grounds for rejecting the analytic-synthetic thesis related to this reason? Is Quine's main claim, or one of his main claims, that the analytic-synthetic thesis (dichotomy, distinction) is detrimental to substantive, open-ended, and unbiased philosophical investigation of subject-matters such as logic?

No. Quine rejected the analytic-synthetic thesis on several grounds. Some of his grounds, including the circularity ground which dominates his most comprehensive discussion of analyticity (Quine 1980b), have nothing to do with the present ground. They are largely centred on the claim that analyticity has never been given an adequate, non-circular, definition and that such a definition is unlikely to be found.[10] Other grounds for his rejection of the analytic-synthetic division include the claim that it takes exceedingly small units, namely sentences, as significant units of meaning, the claim that any theory is open to revision based on empiricist-pragmatic considerations, and so on. But the concern about open-minded, open-ended, unbiased philosophical investigations of such topics as the factuality of logic[11] is not one of Quine's reasons for advancing the negative analytic-synthetic thesis.

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[10] It is curious that many of Quine's objections to analyticity center on circularity, since as a holist Quine sanctions definitions and explanations that involve circularity. Why he regards the definition/explanation of analyticity as an exception and whether he is justified in so doing are questions I will not address here.

[11] For 'open-minded, open ended, unbiased philosophical investigations' see once again fn. 1 above. In the case of logic, one thing that an open-minded approach might lead us to consider is that there is something specific in/about the world that is the factual basis of the veridicality of logic (say, a type of law that underlies logical inferences).

At the same time, some of the negative things Quine says about the analytic-synthetic dichotomy, and in particular analyticity, can be naturally incorporated in our own grounds for rejecting them. A few examples of such statements are:

(15) '[The] belief in some fundamental cleavage between truths that are *analytic*, or grounded in meanings independently of matters of fact, and truths which are *synthetic*, or grounded in fact' is a 'dogma'. (Quine 1980b: 20; part of this sentence was cited earlier).

(16) It is 'ill-founded' (Quine 1980b: 20).

(17) 'That there is [an analytic-synthetic] distinction to be drawn . . . is an unempirical dogma of empiricists, a metaphysical article of faith' (Quine 1980b: 37).

(18) 'Analyticity . . . is a pseudo-concept which philosophy would be better off without' (Quine 1976b: 171).

(19) 'The linguistic [analytic] doctrine of elementary logical truth . . . leaves explanation unbegun' (Quine 1976c: 113).

(20) 'We have been at a loss to give substance to the linguistic doctrine, particularly of elementary logical truth, or to the doctrine that the familiar truths of logic are true by convention' (Quine 1976c: 121)

(21) '[The analytic-synthetic] dichotomy . . . encourages confused impressions of how language relates to the world' (Quine 1960: 67).

Furthermore, in some places Quine explicitly entertains the possibility, and even asserts, that logic is factual or based on certain features of the world:

(22) 'Consider . . . the logical truth "Everything is self-identical", or "$(x)(x = x)$". We can say that it depends for its truth on traits of the language . . . and not on traits of its subject matter; but we can also say, alternatively, that it depends on an obvious trait, viz., self-identity, of its subject matter, viz., everything' (Quine 1976c: 113).

(23) 'Logical truth . . . may . . . depend on . . . features of the world . . . that our language reflects in its grammatical constructions rather than its lexicon' (Quine 1986a: 95).

(24) 'Logical theory, despite its heavy dependence on talk of language, is . . . world-oriented rather than language-oriented' (Quine 1986a: 97).[12]

However, when considered in their larger context, these citations lose much of their significance. Thus, what (22) affirms, Quine says, is not the factuality of logic but its obviousness. The claim that logic is factual, just like the claim that logic is purely linguistic, amounts to nothing more than the unexplanatory claim that logic is

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[12] See also the last part of Quine (1980b) and his discussion of quantification and identity (in Quine 1960 and elsewhere).

obvious. Similarly, in his (1986a) book, where (23) and (24) are located, Quine appears not to take the factuality of logic as a significant possibility:

(25) 'One could . . . maintain that the . . . matter of Tom's being either mortal or not mortal is due . . . to pervasive traits of nature . . . *if one could make sense of the issue at all*' (Quine 1986a: 15, my italics).

(26) 'Is logic a compendium of the broadest traits of reality, or is it just an effect of linguistic convention? . . . [This] question . . . *has proved unsound; or all sound, signifying nothing*' (Quine 1986a: 96, my italics).[13]

At the end of the day, it seems that Quine's rejection of the view that logic is analytic is not intended to clear the way for a philosophical investigation which is open to the possibility that *logic is substantially factual*.[14] Yet a judicious use of his negative analytic-synthetic thesis, involving a reinterpretation and further development of some of its elements, opens the door to just such an investigation.

Other obstacles to an open-ended and unbiased philosophical treatment of logic, as well as other subject-matters, are removed by Quine's holistic thesis, or a holistic thesis traceable to Quine.

11.2.2 *The Holistic Thesis*

There are, arguably, two Quinean holistic theses, and they stand in some tension with each other. I will call them the 'one-unit' or 'wholistic' thesis and the 'interconnected-ness' thesis. Both theses have an epistemic as well as a linguistic dimension;[15] here I will focus primarily on their epistemic dimensions. To emphasize their differences, I will consider an especially strong version of the first thesis.

(a) *The One-Unit or Wholistic Thesis* says that the smallest unit of epistemic significance is our body of knowledge as a whole. In Quine's words: 'The unit of empirical significance is the whole of science' (Quine 1980b: 42). If we interpret 'the unit' à la Russell as implying 'the only unit' (hence also 'the smallest unit'), and 'the whole of science' as 'the whole of knowledge', *wholism* or *one-unit holism* follows. This was both Dummett's (1981) and Glymour's (1980) understanding of Quine's

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[13] In the last part of his (1980b), Quine reduces the significance of the factuality of all knowledge by emphasizing its pragmatic character. See also the last page of 1976c: knowledge is partly factual but mostly pragmatic. (Some commentators—e.g. Janssen-Lauret (2017)—regard the pragmatic element as inherently supporting the factual element. I tend to focus on the tension between the two. See paragraph preceding section 11.1 of the present chapter for a comment on differences among commentators.)

[14] Quine does eliminate the sharp boundary between the factual and the conventional, but what this means, when it comes to logic, is that logic must be as much conventional as it is factual (or that logic must be shaped by pragmatic considerations as much as by factual-veridical considerations), not that logic might be deeply factual.

[15] Some philosophers view these as two different theses, the one a linguistic thesis ('meaning holism'), the other an epistemic thesis ('confirmation holism'). This might be a reasonable view if our goal is to minimize internal tensions in Quine's philosophy. But it is not the best approach if our goal is to understand the philosophical potential of Quinean holism. (It is also less reasonable when we consider Quine's admonition against separating language from theory (knowledge).)

holism, and they both regarded this type of holism as unreasonable.[16] Dummett emphasized that understanding, learning, use, and productivity require *structure*, and structure requires multiple significant units. Glymour, who focused on the application of this principle to scientific knowledge, argued that one-unit holism is incompatible with actual scientific practice: scientists do not behave as if the only significant unit of scientific knowledge is science as a whole. Their practices of confirmation, infirmation, revision, etc., all testify to their understanding of science as consisting of multiple units. I think that Dummett and Glymour are both right: one-unit holism (understood as above) is not a viable version of holism.

(b) *The Interconnectedness Thesis.* The interconnectedness thesis says that our body of knowledge is an interconnected network of distinct units: statements, theories, and disciplines. Each unit, though distinct, is in principle connected to other units, both within and across theories/disciplines, where these connections are open-ended and sometimes bi-directional. This type of holism is introduced in part VI of Quine (1980b) and affirmed throughout the Quinean corpus. It is this type of holism that interests us here, and in what follows I will use 'holistic thesis' for the interconnect-edness, rather than one-unit, thesis.

The holistic thesis is open to several emphases, construals, and developments. Quine focused, among other things, on the so-called Duhem-Quine thesis and, in general, viewed holism as a pragmatist-empiricist methodology. The Duhem-Quine thesis says that there are in principle many ways to respond to evidence (counter-evidence) in science. Instead of changing a given hypothesis in response to counter-evidence, we can change an interconnected hypothesis, claim, law, principle, or assumption. There are no 'crucial experiments' in science, experiments that could, would, or should force us to withdraw from, or revise, a particular scientific claim or hypothesis. We are always free to consider multiple reactions to 'recalcitrant experience':

(27) 'Any statement can be held true come what may, if we make drastic enough adjustments elsewhere in the system. Even a statement very close to the periphery can be held true in the face of recalcitrant experience by pleading hallucination or by amending certain statements of the kind called logical laws. Conversely, by the same token, no statement is immune to revision' (Quine 1980b: 43).

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[16] Dummett talked about Quinean holism with respect to language (meaning), calling the linguistic analog of 'one-unit' holism—namely, the view that the smallest unit of meaning is our language as a whole—'total' holism. But much of his criticism of total holism could just as well be directed at epistemic wholism or one-unit holism. (Note that my division of Quine's holism into one-unit holism and the holism of interconnectedness—(b) below—is orthogonal to the common division of his holism into meaning holism and confirmation holism. On my reading the two forms of Quine's holism, one-unit holism and interconnectedness holism, apply both on the level of language (meaning) and on the level of knowledge.)

In response to criticisms (by, e.g. Grünbaum 1976), Quine attenuated his formulation of this thesis (see Quine 1976e), though he did not withdraw from it altogether.

Quine's pragmatist construal of holism is expressed in such claims as:

(28) 'The considerations which guide [our scientific practice] . . . are, where rational, pragmatic' (Quine 1980b: 46).

And his empiricist gloss on holism is evidenced both by what he does not say and by what he does say. He does not talk about the interface of our body of knowledge with abstract features of the world. Instead, he claims that our only cognitive access to the world is sensory, thus limiting it to facets of the world that are open to sensory perception. This focus on empiricism is also present in Quine's introduction of holism (the holism of interconnectedness) in his (1980b) paper:

(29) 'The totality of our so-called knowledge or belief, from the most casual matters of geography and history to the profoundest laws of atomic physics or even of pure mathematics and logic, is a man-made fabric which impinges on *experience* only along the edges. Or, to change the figure, total science is like a field of force whose boundary conditions are *experience*' (Quine 1980b: 42, my italics).

(30) '*As an empiricist* I . . . think of the conceptual scheme of science as a *tool*, ultimately, *for predicting future experience in the light of past experience*' (Quine 1980b: 44, my italics).

And he concludes his paper with an empiricist gloss on (28) above:

(31) 'Each man is given a scientific heritage plus *a continuing barrage of sensory stimulation*; and the considerations which guide him in warping his scientific heritage *to fit his continuing sensory promptings* are, where rational, pragmatic' (Quine 1980b: 46, my italics).

Holism's potential contribution to the contemporary revival of classical philosophical interests, however, requires expanding Quine's own perspective. Two aspects, in particular, can make important contributions to this revival: (i) Holism can be used as a *foundational* methodology, where 'foundation' is understood in the strong sense of *veridical justification*: justification of correctness with respect to the world. So used, it applies to *all* fields of knowledge, including fields of abstract knowledge. (ii) Holism has the resources for explaining humans' capacity not just for empirical discovery but also for *abstract discovery*. (i) is especially important for investigating the possibility of a factual foundation for logic. (ii) is also important for investigating the prospects of mathematical realism of the kind we are interested in, namely realism without empiricism or Platonism.

(c) *Holism as a Foundational Methodology.* Holism, as a methodology, is often contrasted with foundationalism. Indeed, it is often thought to be anti-foundational

and not just anti-foundationalist. But the latter thought, I believe, is unwarranted: holism is compatible with the idea of *foundation without foundationalism*. That is to say, holism can be viewed as a foundational methodology that differs from, or offers an alternative to, foundationalism. To see what alternative holism offers to the foundationalist conception of the foundational enterprise let me give a short overview of some of the problematic features of this conception. Foundationalism sets rigid structural demands on veridical justification. Essentially, the justificational structure is required to be strictly hierarchical. Each non-minimal unit of knowledge must be justified based on lower units in the hierarchy, until reaching the hierarchy's base or minimal units. This rigid conception of justification makes it virtually impossible to provide a systematic, theoretical, philosophical justification for the minimal units of knowledge. In particular, it makes it impossible to provide a theoretical foundation for logic. Logic lies at the bottom of the foundationalist hierarchy; hence there is no field of knowledge lower than logic, nothing in term of which we can justify logic. This is a problem by itself, but it also undermines foundationalism's ability to provide a veritable justification of other units of knowledge. Ultimately, every unit of knowledge is justified based on the minimal elements, and if these are left unjustified, our entire body of knowledge is left unjustified. One could argue that the minimal elements are self-justifying or that these elements are obvious, hence do not require justification. But this falls short of providing a systematic, theoretical justification for these units, hence for our body of knowledge as a whole.

The holistic alternative to the foundationalist methodology is based on the principle that veridical justification need not be hierarchical. It removes the strict ordering (hierarchy) requirement on theoretical justification. There is room for multiple patterns of justification, exploiting the rich network of interconnections among units of knowledge. In principle, we may use any items of knowledge to justify any other items, provided there are significant relations between them that are pertinent to veridicality. It is true that some justificatory connections are inherently hierarchical, but justification is not limited to such connections. Logical inference is hierarchical in character, and its contribution to justification is, in this sense, foundationalist-like. But the justification of our method of logical inference itself need not be hierarchical. Consider our sketch of a philosophical investigation of the factuality of logic above. Such an investigation may lead to a factualist justification of logic and its method of inference, and in this sense it is foundational. But it is not foundationalist. It draws from a large network of connections between epistemic, metaphysical, possibly mathematical and other items of knowledge, our general understanding of human knowledge and its relation to the world, general principles of rationality, and common-sense thinking. This type of foundation is thoroughly holistic, but it is justificatory in character. It sets out to justify our method of logical inference by showing that it plays logic's designated role in knowledge, that it guarantees the transmission of correspondence truth (truth in the world) from premises to conclusions with an especially strong force, that it is based on laws that actually hold in the world, and so on.

Such justification is also Neurathian, in the sense of the boat metaphor[17] that Quine appeals to time and again. Justification is a step by step process. At each step we use whatever resources are available to us at the given place and time, but we use them critically and constructively, so they produce an incremental foundation. The foundational process is subject to critical examination, which at times leads us to step back and change direction. But it leaves no question unaddressed as a matter of principle: no question is too basic to be theoretically investigated. And it actively seeks answers to one question after another. This is the kind of process that characterizes the actual practices of scientific, mathematical, philosophical research: both discovery and justification. And a theoretical account of this process is made possible by Quinean holism, adjusted to the foundational undertaking.

An especially important aspect of the holistic method is its capacity to handle circularity. Foundationalism's inability to provide a theoretical foundation for logic is closely associated with its total ban on circularity. All forms of circularity violate the strict ordering requirements of foundationalist justification; therefore, circularity is automatically banned. But a foundation for logic cannot avoid some measure of circularity. We cannot theoretically justify any unit of knowledge without using logic, and the same applies to the justification of logic itself. Holism lifts the total ban on circularity while providing resources for limiting circularity. In establishing logic we have no choice but to use some logic. But the justification as a whole is very far from 'P; therefore P'. As our sketch of a foundational investigation of logic clearly shows, the main burden of the foundational investigation falls on other branches of knowledge (e.g. epistemology and metaphysics), general understanding of human interests, common-sense thinking, and so on, with logic itself providing no more than what it provides for any investigation, namely, certain tools of reasoning. What logical tools to use in a foundational investigation of logic is just a small piece in the foundational puzzle. And the investigation itself need not be undermined by changes in or of logic. Just as using current physical tools does not hamper revision (or even revolution) in physics, so using current logical tools does not rule out revisionary conclusions concerning logic.

Quine himself supports most aspects of the holistic foundational process described above: anti-foundationalism, a wide network of interconnections between units of knowledge (including justificatory connections), a Neurathian conception of knowledge, rejection of a total ban on circularity, and so on. But he denies the viability of a veridical justificatory foundation, which he calls the 'doctrinal' project of epistemology (Quine 1969: 69). In rejecting a distinctly philosophical method of veridical foundation his starting point is empiricism. His grounds are Humean skepticism plus the observation that no significant progress on this front was made by his empiricist predecessors, most notably Carnap.[18] (As for logic, there is no sign that

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[17] See Neurath (1983).   [18] See Quine (1969: 69–75).

Quine requires philosophy to provide a systematic *veridical* foundation for logic.) But there is no compelling reason for those who are looking for *new ways* to approach the classical challenges of philosophy to give up the challenge of a systematic veridical foundation for knowledge. Although Quine himself never explored the epistemic potential of his revolutionary theses beyond empiricism and naturalism, they make important contributions to a new revival of classical philosophical projects.

(d) *Holism as a Method of Discovery, including Abstract Discovery.* I have claimed that by sanctioning new patterns of veridical justification, holism can play a significant role in a renewed foundational project, one that encompasses abstract knowledge, such as logical and mathematical knowledge, alongside empirical knowledge. But the new patterns of justification we have considered so far involved connections between units of knowledge, not connections between units of knowledge and the world. The latter are crucial for a veridical foundation of knowledge, empirical and abstract. Now, if we ask ourselves whether a holistic conception of knowledge could sanction only one type of connection between theories and the world or multiple types of connections, I think the answer is 'multiple types'. But Quine sanctions only one type of connection between world and theory, or world and knower: sensory perception. 'The stimulation of his sensory receptors is all the evidence anybody has had to go on, ultimately, in arriving at his picture of the world' (Quine 1969: 75).

My next and final suggestion concerning Quinean holism is that we extend it to connections between theories and the world. Knowledge involves two large, inter-connected, networks: a network of cognitive connections between mind and world, and a network of connections among theories. Utilizing both networks, we maximize both our ability to reach the world—make discoveries—and our ability to justify our theories—systematizations of our discoveries—vis-à-vis the world.

Expansion of Quine's narrow, one-dimensional view of the route from mind to world is essential for exploring the possibility of realism without either empiricism or Platonism, especially in mathematics. To further explore the prospects for such a realism, let us turn to the next Quinean thesis, which we will combine with holism.

11.2.3 The Negative Apriori-Aposteriori Thesis

In contrast to the analytic-synthetic dichotomy, Quine does not devote much space to the apriori-aposteriori dichotomy, or, as he calls it, 'the apriori-empirical' dichotomy. Yet most commentators agree that his opposition to this dichotomy is deep and firm.[19] Commentators also connect Quine's attack on apriority to his attack on analyticity, and Quine himself, as we have seen, says that the main import of the analytic-synthetic dichotomy is epistemic.

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[19] See, e.g. Gibson (1982, 1988), Dilman (1984), Parsons (1986), Hylton (2007), and Elgin (2011).

How is the apriori-aposteriori dichotomy related to the analytic-synthetic dichotomy? The analytic-synthetic dichotomy bifurcates *statements* or *truths* into two kinds, factual and nonfactual. Synthetic statements are factual, analytic statements are non-factual. This induces an analogous bifurcation of *knowledge*. Knowledge of synthetic statements is factual, knowledge of analytic statements is not: it is linguistic, conventional, pragmatic, etc. The analytic-synthetic bifurcation, however, does not draw any divisions within the factual realm. All factual statements are alike: synthetic. It is here that the apriori-aposteriori bifurcation goes beyond the analytic-synthetic bifurcation. Some factual knowledge—*aposteriori factual knowledge*—is experiential (empirical); other factual knowledge—*apriori factual knowledge*—is nonexperiential (nonempirical); indeed, it is *completely* independent of experience. It is this second epistemic bifurcation, the bifurcation of factual knowledge, that I would like to focus on in talking about the positive and negative apriori-aposteriori theses.

The positive apriori-aposteriori thesis says that there is a cleavage between two kinds of knowledge, experiential knowledge and knowledge independent of experience. Within the factual domain, apriori, experience-independent, knowledge is naturally identified with abstract knowledge, two paradigms of which are logical and mathematical knowledge. As I construe it here, it also says that this bifurcation should be our starting point in investigating factual knowledge. This means that we begin our epistemic investigations with a cleavage between two essentially different types of knowledge, and this significantly limits the space of possibilities open to factual knowledge. The negative apriori-aposteriori thesis rejects this cleavage. As construed here, it says that we should not legislate in advance that abstract factual knowledge is of an altogether different kind from nonabstract knowledge. Whether the world has abstract (e.g. mathematical) features, whether humans have cognitive access to (at least some of) these features, how their cognitive access to abstract features of the world relates to their cognitive access to nonabstract features, and which combinations of cognitive capacities are at work in different fields of knowledge are, and should be, open questions. The world may be multifaceted; humans' cognitive capacities may be complex and varied; they may involve a variety of elements in multiple combinations. The apriori-aposteriori bifurcation stands in the way of a substantive, open-ended, and unbiased investigation of these possibilities.

The apriori-aposteriori bifurcation, construed as an abstract-empirical bifurcation, is especially problematic for an open-ended, unbiased investigation of the possibility of realism without either empiricism or Platonism. Let us focus on realism in mathematics.[20] Mathematical realism requires the factuality of mathematics, i.e. it requires that mathematical knowledge be knowledge of some facet(s) or features

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[20] As in the case of correspondence, I focus on realism broadly construed. Genuine connection with, and correctness in, the world are essential, but other things are open to critical examination, hence revision.

of the world: objects in the world, properties or relations of objects in the world (or of their properties), structures of objects/properties, etc. Taking the empirical-abstract cleavage as given means that we have only one option concerning non-empiricist mathematical realism: mathematical knowledge is apriori, and this suggests that it is abstract knowledge. The question, then, is whether abstract knowledge can be factual without being Platonic. Now, if abstract and empirical knowledge are of altogether different kinds, as the abstract-empirical bifurcation implies, then their targets (or objects) must be altogether different as well. Otherwise we would be able to use the same, or similar, cognitive capacities to reach their targets/objects (or at least the common features of their respective targets/objects). That is, if we accept the bifurcation together with the factuality of mathematics, then mathematical objects, and abstract objects more generally, must be altogether different from objects accessible to sense experience. But this is exactly what Platonism says. Speaking metaphorically, Platonism says that there are two different worlds, a physical or empirical world, and an abstract, platonic, world, and these worlds are known by different faculties. The physical world is known largely through sensory perception, the Platonic world is known exclusively through other faculties, such as intuition and/or intellect. Physics and mathematics study two different worlds. Physics—the physical, spatio-temporal world, mathematics—the Platonic mathematical world. The possibility of mathematical realism that is neither empirical nor Platonic is ruled out. If, then, we want to investigate the possibility of realism without either empiricism or Platonism, we have to give up the apriori-aposteriori bifurcation.[21]

By adopting the negative apriori-aposteriori thesis, then, we are able to make sense of the possibility of realism without either empiricism or Platonism. For example, we can consider the possibility there is one world, that this world has (or its objects have) both physical and abstract features, that we have a wide array of cognitive capacities (including sensory perception and intellect), and that we use these capacities in various combinations and with the help of various resources (tools, bits of knowledge generated in various areas) to gain knowledge of both the physical and the abstract features of this one world. This picture includes elements of the (extended) holistic thesis we discussed earlier: multiple cognitive capacities, multiple interconnections between these capacities, indirect cognitive routes exploiting interconnections between diverse units of knowledge, and so on. To further flesh out this picture, let us turn to the last Quinean thesis to be considered in this paper, the posits thesis.

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[21] As holists, we have to qualify this claim somewhat: we might be able to achieve the same result by changing some other relevant assumption we have not taken into account. But giving up the apriori-aposteriori dichotomy is at least one way to salvage the investigation of realism without empiricism or Platonism.

11.2.4 The Posits Thesis

For Quine, posits[22] are an integral part of human knowledge. Although posits are 'myths' created by humans (Quine 1980a: 19), they 'are not *ipso facto* unreal' (Quine 1976d: 251).[23] On the contrary. Molecules and even ordinary objects are posits, but 'the benefits of the molecular doctrine . . . and the manifest benefits of the aboriginal posit of ordinary bodies, are the best evidence of reality we can ask' (Quine 1976d: 251–2). What are the benefits of posits? They 'round and simplify our account of the flux of experience' (Quine 1980a: 18). Here we have two central elements of Quine's epistemology: the central role of experience and the centrality of pragmatic consid-erations. Our epistemic goal is to account for experience, and success is measured primarily by pragmatic standards. Posits are used to achieve this goal. All the objects of science are posits from a broad philosophical perspective external to scientific and mathematical theories, but real from a perspective internal to these theories. From an intermediate perspective, theories are committed to the reality (existence) of those objects that satisfy Quine's criterion of ontological commitment, which says that the objects a given theory is committed to are the objects over which the bound variables of a first-order rendition of this theory have to range for the theory to be true. (See, e.g. Quine 1980a.)

But a somewhat different perspective on posits is, I believe, especially useful for a contemporary consideration of mathematical realism.[24] Here we start by reflecting on the world. One possibility concerning the world is that it has various kinds of objects—for example, physical objects—but no mathematical objects. No mathemat-ical individuals such as the numbers 0,1,2, no sets, no triangles. But while there are no mathematical objects in the world, objects in the world and their properties do have mathematical properties. (I use 'property' in a broad sense that includes relations and functions.) For example, the objects denoted by 'The Morning Star' and 'The Evening Star' stand in the *identity* relation, the property of being a moon of Earth has the cardinality property ONE, the property of being a hydrogen atom in a molecule of water has the cardinality property TWO, the relation *x exerts physical force on y is*

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[22] Quine uses 'posit' in a few senses (related to each other yet different in their focus). Sometimes he uses 'to posit' in a sense akin to 'acknowledge', namely, acknowledge or assert or be committed to the existence or reality of something. (See e.g. the first uses of 'posit', but not the later uses, in Quine 1960: 22).) Sometimes he uses 'posit' in a sense that is more akin to, or associated with, 'myth', 'speculation', or 'supposed' (supposed objects), namely in a sense in which the question of the reality of posits arises. (See, e.g. Quine 1960: 3, (last paragraph of) 22, and 249. For the question of reality see fn. 3 above.) And sometimes his use of 'posit' is ambiguous or intermediate between the first two. Here I am interested in his second use of 'posit'. I focus on his discussion of posits in Quine 1976d, which I interpret as centred on posits in the second sense. (For an insightful, though somewhat different, account of Quine's attitude to posits and ontology see Janssen-Lauret 2017.)

[23] See also Quine (1960: 22): 'To call a posit a posit is not to patronize it.'

[24] This point might be extendable to the abstract parts of empirical science, but I will not discuss this possibility here.

symmetric, the relation of being taller than is transitive, and so on.[25] Suppose further that these and other mathematical properties are governed by laws. Then if we, humans, want to know the world, we need a discipline that studies these and other mathematical properties and their laws. This discipline is mathematics.

Suppose, however, that we, humans, are such that it is easier for us to detect relations, laws, and regularities when we think of their bearers as individuals rather than as higher-level properties. Suppose our cognitive processing is more efficient and our intellectual capacities greater in the former setting than in the latter. We get confused when we think of properties of properties, properties of properties of properties, and so on, but it is easy for us to see (detect, figure out) properties of, and in particular relations between, individuals. In that case, we will be more successful in detecting relations between, say, cardinalities, discovering laws governing cardinalities, and so on, if we think of them as individuals—numbers—rather than as properties of properties. If this indeed is the case, then it will make sense for us to build a first-level model of second-level cardinality properties, a model in which cardinalities are treated as individuals. These individuals will be posits. They will be artifacts that we ourselves create. But they will help us to study laws governing mathematical features of the world.

How do we get from this scenario to mathematical theories of the kind we are familiar with today, mathematical theories that talk about mathematical objects (numbers, sets) and have enormous ontologies of such objects, far larger than the ontologies of objects that exist in the actual world (according to our scenario)?

Well, we know how mathematical objects will enter into such theories according to our scenario: as posits, systematically correlated with mathematical properties. But what about the enormous ontology of these posits? To see how we can explain the size of their ontology in our scenario, note first that laws in general go beyond the scope of actual objects in the world. For example, the laws of physics hold not just in actual physical situations but also in counterfactual physical situations. Note, too, that the counterfactual scope of some laws is larger than that of others. (For example, the counterfactual scope of physical laws is larger than that of biological laws.)[26] Now suppose the counterfactual scope of mathematical laws is greater than that of physical laws.[27] In that case the laws of mathematics will have an especially large counterfactual scope. One way to represent the especially large counterfactual, or modal, force of mathematical laws is to posit an especially large ontology of mathematical objects: numbers, sets, etc.

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[25] When I want to indicate the level of properties I use italics for first-level properties and small caps for second-level properties.

[26] Intuitively, biological laws hold in all biologically-possible situations, physical laws hold in all physically-possible situation, and the latter situations properly include the former.

[27] This could be explained in terms of, e.g., the degrees of invariance of mathematical and physical properties, but it will take us too far afield to go into this here and it is not needed for the rough sketch of our scenario.

A large ontology is also useful for expressing mathematical laws in full generality. For example, to express the laws of finite cardinalities in complete generality it would be useful to have a denumerable collection of posited numbers rather than a finite collection. To express the relation between properties and power-properties (analog of sets and power-sets) in full generality, it would be useful to have an indenumerable collection of posited sets. And so on.

Now let us turn to realism. The hypothetical scenario described above is just a rough sketch that leaves many things out, but it is sufficient to suggest the possibility that the world is such and humans are such that they build mathematical theories of the world along the lines delineated in that scenario. This possibility involves a deep and solid, if complex and circuitous, connection between mathematical theories and the world, a connection that could, in principle, serve as a basis for mathematical realism.[28]

Would such a realism have to be either empirical or Platonic? I think the answer is 'No'. Let me begin with empiricism. Assuming holism and the negative apriori-aposteriori theses, it is quite likely that our cognitive access to the laws of, say, cardinality and symmetry is neither empirical nor purely apriori. It is quite likely that non-sensory resources (such as intellect, figuring out, combinatorics) play too large a role in our cognitive access to mathematical reality for this access to count as empirical. At the same time, our access to mathematical features of the world is likely to be too interwoven with our cognitive access to other features of the world to count as purely apriori.

What about Platonism? The study of mathematics, in our scenario, involves posited mathematical objects but not real objects. It targets real mathematical properties and real mathematical laws, but it assumes there are no real mathematical objects. This is a significant step towards realism without Platonism. It does not guarantee non-Platonism, but significantly, many of the problems involved in mathematical Platonism, hence much of the motivation for avoiding mathematical Platonism, have to do with Platonic objects such as numbers. For example, it is numbers (as objects, not as cardinality traits of situations in the world) that raise the formidable problem of cognitive access and are resistant to evidence. So, depending on how we treat mathematical traits of properties (not as universals, for example), there is a fairly good prospect for mathematical realism without Platonism.

This result, however, stands in some tension with several Quinean principles. Although Quine, as we have noted above, considers posits from three perspectives, none of these coincides with the perspective taken here. From Quine's broadest philosophical perspective all objects are posits. From his narrowest, intra-theoretical

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[28] The complexity of this connection is reflected, for example, in the 'route' of reference characteristic of mathematical theories in our scenario. Reference in first-order number theory, for example, proceeds in two steps: from numerical singular terms to posited numbers, and from posited numbers to second-level cardinality properties.

perspective, all objects are real. And from his intermediate perspective, the perspective of ontological commitment, objects that have to be in the range of bound variables for a given first-order theory to be true are *ipso facto* real. Speaking about Quine's view of posits, Kemp (2006: 112) notes: 'we can ask how and why the adoption of certain forms of language—the referential ones—takes place. We can try to explain how and why human beings have adopted certain linguistic terms and thereby posited certain entities . . . in terms of what is practical, what helps the organism, what explains a certain phenomenon, and so on . . . But those are not themselves ontological questions, questions of what exists or is real.' In contrast, our consideration of posits is intended to distinguish between what is real and what is merely a posit, a crucial question for mathematical realism. While Quine's principle of ontological commitment treats numerical objects—numbers—as real, we suggest they might be mere posits. Our approach also stands in some tension with Quine's indispensabilist argument for mathematical realism. This argument substitutes mathematics' instrumental utility for empirical science for what we regard as the main, if not the only, task of mathematics: discovering the mathematical structure (features, laws) of the real world.

11.3 Conclusion

In this chapter I have pointed out the promise of a cluster of Quinean theses for contemporary philosophy: for the revival of classical philosophical questions, for the foundational enterprise, and for realism without either empiricism or Platonism. I focused primarily on abstract disciplines and subject matters. My claim is that whether we regard the directions in which Quine himself took these theses as viable, the theses themselves have a lasting core that should not be neglected by contemporary philosophers.[29]

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