
ON “ON WHAT THERE IS”*

BY

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Abstract: All sides in the recent debates over the Quine-Putnam Indispensability thesis presuppose Quine’s criterion for determining what a discourse is ontologically committed to. I subject the criterion to scrutiny, especially in regard to the available competitor-criteria, asking what means of evaluation there are for comparing alternative criteria against each other. Finding none, the paper concludes that ontological questions, *in a certain sense*, are philosophically indeterminate.

(What is C. trying to pull?)

marginalia on Quine’s copy of a letter from Carnap

1.

A lot of philosophy of mathematics is motivated by considerations arising from what has come to be called the Quine-Putnam indispensability thesis;¹ the claim, roughly, that if one’s best scientific (physical) theory requires existential quantification over certain entities, then one is ontologically committed to such entities.² Many books in this area, such as Chihara (1990), Field (1980), Hellman (1989), and Maddy (1990), draw their philosophical *raison d’être* from the view that scientific theories commit us to the existence of mathematical objects this way. The indispensability thesis, it seems, drives philosophers to hard choices: rewrite one’s science, rewrite one’s mathematics, or regretfully embrace extravagant ontologies.

It’s quite unsurprising, therefore, that such a seminal claim has once again come under intense scrutiny; and equally unsurprising, I guess, to find philosophers on both sides of the philosophical fence. Maddy strongly

relied on it in her 1990; but as her articles in 1992 and 1994 make clear, she has, of late, become distrustful. Sober (1993) also offers objections; while Resnik (1995) is supportive.³

Rather than plump down on one side or the other in this debate, I want, instead, to explore the possibility that the status of the Quine-Putnam indispensability thesis is philosophically irresolvable. For the thesis requires the antecedent application of a criterion for evaluating the ontological commitments of a discourse, and I claim there is no principled way to choose among competing criteria. Since my claim is a negative existential, I won't be able to conclusively show it. Rather, I'll be satisfied if I make clear why it's *unlikely* tools are available to decide on such a criterion.

After making this case, I'll close the paper by indicating how certain other important philosophical issues about the differences between various sorts of "posits" emerge when we dismiss worries about ontological commitment the way I urge us to; and these issues, I suggest, are more tractable once they crawl out from under the long shadow cast by ontology (at least in the form of the subject bequeathed to us by Quine).

2.

We start with a distinction between a "criterion for what exists" (CWE) and a "criterion for recognizing what a discourse commits us to" (CRD). Philosophers have long argued over alternative CWEs. A nominalist, for example, claims that only concrete objects (of one sort or another) exist; platonists, notoriously, think otherwise. Other philosophers may also claim that anything that exists is causally efficacious, or perhaps, that anything that exists is susceptible to observation (e.g., via the senses, or with the aid of acceptable instrumental interventions), or is in space and time, or, and so on.⁴ These are all variant CWEs.

Quine (1948), however, is quite clearly *not* offering a CWE, but only a CRD.⁵ The distinction matters: those committed to one or another CWE commonly debate about what properties everything has, whereas Quine's criterion addresses the logician's tamer concern with merely knowing how to tell what ontological commitments a discourse has, and this *regardless* of the properties of those commitments.

Now, although *Quine* doesn't do so, one may combine any of the above CWEs with Quine's CRD.⁶ If, for example, one thinks that anything that exists must be causally efficacious, then one will make a point of only uttering discourses which can be regimented so that they have existential commitments solely to causally efficacious items. So too, the nominalist will utter discourses which can be regimented so that they have existential commitments solely to *concreta*. And so on.⁷

But our present interest is not in alternative CWEs; it's in alternative CRDs. What do some of *these* look like? Well, even if one accepts the idea that scientific theories must be regimented in first-order languages, nothing requires the first-order existential quantifier (despite its logical role in such languages) to carry the burden of *ontological* commitment: one can, that is, regiment a scientific language just the way Quine likes, and simply look elsewhere in the regimented theory for the *ontological* commitments. For example, one can provide a special predicate, 'susceptible to observation' say, or 'causally efficacious', or, and so on, and recognize the ontological commitments of a discourse to be solely those objects falling under the extension of *that* predicate, to treat only *those* objects as existing (or *real*). Indeed, any of the alternative candidate CWEs mentioned above can be impounded as the intended interpretation for such an "existence" predicate.

Three points. First, I'm not wedded to using "existence" predicates here (the example is illustrative); one might be inclined to use more than one kind of quantifier (quantifiers with subscripts, say, only one of which is taken to carry ontological import), or any of the other sorts of devices that logicians have dreamed up. The point is that we have great latitude in which idioms of a given formal discourse we choose to invest with ontic significance. Nevertheless, in what follows, I will focus on the existence predicate option for concreteness.

Second, the import of "provide a predicate" should not be misunderstood. The idea is that the unregimented discourse of science *already has* one or more phrases which are taken to carry the burden of ontological commitment, be it 'causally efficacious', 'observational', or whatever. When regimenting, therefore, one mints a predicate that, more or less, replicates this role.

Third, I need to stress that the "existence predicate" move doesn't require avoidance of "objectual quantifiers": *our* regimented languages can employ good old fashioned Tarskian semantics. Of course, the quantifiers arising in the metalanguage where Tarskian semantics lives are no more to be understood as having ontic force than the quantifiers in the object language are; ontic force will be carried in the metalanguage by a predicate similar to the one carrying ontic force in the object language.⁸

Admittedly the move contemplated here is weird-sounding in just the way Quine has described as "ruining the good old word 'exist'" (1948, p. 3): we can find ourselves saying, that is, *in the vernacular*, that there are things which nevertheless *don't* exist (or don't *really* exist). For example, if our "existence" predicate is 'susceptible to observation', we'll find ourselves asserting that there are numbers, but they don't exist (because they're not susceptible to observation, say). And I won't deny that in the right circumstances (i.e., among philosophers) this may raise eyebrows. But

linguistic intuitions about what “sounds weird” are not reliable indications of incoherence.⁹

For, frankly, intuitions can be mustered to support either Quine’s approach or the alternative existence-is-a-predicate treatment. On Quine’s side, and provided we treat the first-order (objectual) existential quantifier as a translation of the ordinary-language phrase ‘there is’, one can urge that if our best theories force us to say, “*There are numbers, there are functions,*” that’s enough to ontologically commit us to the existence of numbers and functions. But the intuitive force for such a position, I must stress, largely arises from the antecedent impression that the ordinary language ‘there is’ *already* carries ontological weight.¹⁰

And so, on the other hand, a good case can be made that physicists, and other scientists too, usually regard *their* employment of mathematics to be ontologically neutral. Despite the (indispensable) use of quantification over mathematical entities to formulate scientific theories, and to make empirical inferences, mathematical talk is taken to be *true* even though, simultaneously, it isn’t taken to be about anything “real”. This gives powerful intuitive evidence that *some* uses of the ordinary language ‘there is’ (e.g., in the context of applied mathematics) *do not* carry ontological weight.¹¹

3.

If the foregoing is right, untutored (or even tutored) intuition can’t adjudicate a choice among candidate CRDs (one’s intuitions are too obviously tainted by one’s career choice). So here’s a stab at an *argument*: Granting the claim that our best scientific theory is *justified* additionally suggests that one should take *all* the existential commitments of that theory to have been justified similarly. Let’s call this the “global justification strategy”.

It’s important to note, at the outset, that justification of the truth of a body of doctrine can come apart from the justification of the existential commitments of that doctrine; and this simply because our taking a body of doctrine to be *true* does *not* require that Quine’s criterion be applied to it to determine what ontological commitments it has.

Indeed, as I’ll illustrate briefly, the recent debate over the Quine-Putnam indispensability thesis has focused more on the empirical justification of *mathematical truth* than on the justification of the ontological commitments that mathematical truth (given Quine’s criterion) brings with it. The move, as I suggested above, has been to undercut ontological commitment to mathematical entities by undercutting the claim that the statements codifying those existential statements (among others) are *true*.

One version of this approach grants the indispensability of mathematics

to empirical science while denying that such indispensability provides justification: Sober (1993) claims that scientific practice clearly shows that mathematical statements are justificationaly separable from empirical ones because, although scientific tests are designed to decide between competing hypotheses, this is hardly ever in such a way as to place mathematical claims at risk.

Maddy (1992) argues that scientists routinely distinguish between scientific doctrine they take to be true, and doctrine they take to be merely instrumentally valuable for prediction, even though the latter can be just as indispensable for the purposes that scientific doctrine is put to as the former. Given this, the indispensability of mathematical doctrine for empirical application no longer seems to require its truth.¹²

Resnik's (1995) countermove is to give a version of the Quine-Putnam indispensability thesis immune to the above objections, to claim, that is, that applied mathematics is not justified (in any sense) by its indispensability; rather, the truth of mathematical doctrine is *presupposed* when it arises in application. He gives the following argument which I have condensed slightly (Resnik, 1995, pp. 170–71):

- 1) In stating its laws and conducting its derivations science assumes the existence of many mathematical objects and the truth of much mathematics.
- 2) These assumptions are indispensable to the pursuit of science; moreover, many of the important conclusions drawn from and within science could not be drawn without taking mathematics to be true.
- 3) So we are justified in drawing conclusions from and within science only if we are justified in taking the mathematics used in science to be true.
- 4) We are justified in doing science.
- 5) The only way we know of doing science involves drawing conclusions from and within it.
- 6) So we are justified in taking that mathematics to be true.
- 7) So mathematics is true.

What's striking about Resnik's argument is that, although both the truth of mathematical doctrine *and* our undertaking the burden of ontological commitment to mathematical entities are explicitly acknowledged in the first premise, *ontological commitment plays no further role in the argument*. And, actually, this should be no surprise: drawing conclusions is a matter of a relationship between *sentences*, not a matter of what entities those sentences commit us to. And so it's open to one to accept Resnik's presuppositional ploy, to claim that indeed, the indispensability thesis commits us to the *truth* of mathematics *without* conceding that it commits us to the existence of mathematical objects as well.¹³

Two points should now be clear. First, as suggested earlier, *despite* the fact that the letter of the indispensability thesis is couched in terms of ontic commitment, and *because* of the (usually implicit) acceptance of the Quinean CRD, debate over the thesis takes place at the sentential level: arguments for or against it are posed in terms of the truth of mathematical doctrine; and this despite the fact that the major underlying motive for attacking the thesis in the first place is the various epistemic and acausal peculiarities that mathematical *objects* are taken to have. Ontological commitment to mathematical objects on the basis of existential commitment is presupposed by all parties to the debate, but itself plays no significant role in arguments either for or against the indispensability thesis.

Second, once one *refuses* to take Quine's criterion for granted, and provided one can show that some significant difference exists between kinds of posits in a scientific theory, one can deny that the existential commitments of a scientific theory are equally justified *ontologically* despite our presupposing the truth of *all* the sentences in such a theory.

It's worth adding that Quineans, or at least those who subscribe to his epistemology of theory-adoption, use broad considerations about theoretical value (simplicity, scope, fecundity, etc.), which gives the impression that epistemic factors routinely brought to bear by scientific practitioners to evaluate theories are ones indifferently applying to all the ontological posits of said theories. But detailed examination of the epistemology here shows that quite significant and systematic epistemic differences between these sorts of posits exist. The much celebrated epistemic and acausal peculiarities of mathematical posits are actually not metaphysical properties of such objects, but a methodological indication of how different our epistemic access to mathematical posits is from our epistemic access to non-mathematical posits. In addition, there are good reasons to think that mathematical posits are introduced into a theory because of their structural role in making theoretical manipulation easier. I've discussed these matters at length elsewhere.¹⁴

4.

The flow of argument in section 3 went like this. We started by examining what we took to be an argument in favor of Quine's CRD, namely the global justification strategy of showing that all posits of a scientific theory are justified in the same way. Thus our attention naturally turned to the recent debate about the Quine-Putnam indispensability thesis, where this particular claim seems to be in contention, and in particular, to Resnik's argument for the thesis, whereupon Quine's criterion (or something like it) popped out as an explicit assumption.

Resnik, of course, was *not* trying to provide an argument for Quine's

criterion; and indeed, it now looks like the global justification strategy (or anything like it) as a support for Quine's criterion would *beg the question* against opponent CRDs. For a theory may be justified by an experiment, say, but this only justifies the existence of those items that our *already-in-place* CRD allows us *in principle* to admit the theory as committed to in the first place. Notice that no story of justification, however powerful, allows us to recognize a commitment to neutrinos, numbers, and whatever the connective '&' refers to, unless we've *already* granted '&' a potential ontological-committing role.

One might try to enlist grammatical similarity to protect one or another version of the global justification strategy against the charge of begging the question. *All* predicates into which the existential quantifier quantifies are the same, ontologically speaking; for all such predicates are regimented translations of grammatically-similar ordinary-language locutions.¹⁵ But, frankly, there is no good argument for this. In Quine's version of first-order logic, the existential quantifier plays two quite distinguishable roles: an implicational role *vis-à-vis* constants, and an ontological role. We've known for some time that these roles can be separated;¹⁶ and as I said at the end of section 2, the attitude of scientists towards the use of mathematics in scientific languages perhaps shows that the unregimented use of 'there is' already exemplifies such a separation of roles. Furthermore, as already mentioned, otherwise identical predicates (identical, that is, grammatically, and in how the ordinary-language quantifiers operate with respect to them) can still be distinguished by whether their extensions fall under what is taken to be the "existence" predicate. Consequently, similarity of grammatical role does *not* require similarity of ontological role (accepting *this is already* to rule out alternative CRDs, under the guise that one is simply respecting grammatically-natural kinds).¹⁷

It's worth stressing that a *philosophical* debate about ontology, about, say, whether mathematical objects exist or not, should not be a debate about whether certain criteria have been correctly applied or not; it should be a debate about which criteria are *appropriate*. Once these are decided on, philosophical debate (in this arena, anyway) is *over*; there is now only the formidable problem of regimenting a discourse, and then reading off ontological commitments according to the CRD; there may also be, in light of the CWE, one or another *program* of reworking the regimentation of one or another scientific theory (to avoid undesirable ontological commitments otherwise imposed by the choice of the CRD).¹⁸

5.

We have been focusing on alternative CRDs which, in a clear sense, are *narrower* than the Quinean one; and indeed, this is natural, since the brunt

of the Quine-Putnam thesis has been to force ontological commitment to mathematical objects (on the basis of scientific doctrine) that *abstracta*-adverse philosophers are otherwise loath to take on. But the criterion is used, by Quine in particular, in other ways: to *rule out* commitment to objects that the use of his CRD does not commit us to. Perhaps we can find examples of genuine justification for Quine's CRD in his polemics against the ontologically profligate.

Quine (1948) seems to utilize two sorts of arguments against the hapless sciolists McX and Wyman. One, employed both against attributes (non-extensional properties) and *possibilia*, has to do with sloppy individuation conditions for purported entities.¹⁹ I propose to leave this well-plowed area aside, and simply grant that if one's individuation conditions for a purported type of entity are much sloppier than the individuation conditions for the things we ordinarily take ourselves to be committed to (houses, roses, sunsets), that may be a reason to repudiate one's commitment to the entities in question. But this doesn't bear on the question of competing criteria (sloppy individuation conditions can arise, or fail to arise, regardless of one's CRD).

The other sort of argument Quine regularly employs (and in this respect he's been *quite* influential) is Occam's razor, the dictum that one should not multiply entities unnecessarily. This characterization of the dictum is open to more than one interpretation, but the primary way it has been applied by Quine, and those who have followed him, is to formulate scientific theories in a way that involves existential quantification over the smallest number of kinds of entities possible. This translates into a requirement that, all other things being equal (such as "simplicity"), one formulates one's theories so that there are as small a number of logically inequivalent instantiated predicates as possible. This is how we'll understand Occam's razor in what follows.

The first point to make is that, surely, the razor, however construed, is not a uncontestable principle of first philosophy: it needs justification. Justification, perhaps, is not far to seek (given *our* interpretation of the razor, anyway). If one theory T' requires fewer instantiated logically inequivalent predicates than another, T^* , where the two theories are otherwise the same, then T' , in some sense, is easier to manipulate than T^* . One, after all, needs to draw implications of the theory with regard to (and on the basis of) a smaller number of independent predicates: in certain cases, the number of primitives of the language (axiomatically) is smaller.²⁰

But it's hard to see why this sort of principle (with this sort of justification) can be used *against* more generous criteria than Quine's. Consider the scorned McX's position that there are attributes. Quine has him say:

There are red houses, red roses, red sunsets; this much is prephilosophical common sense in which we must all agree. These houses, roses, and sunsets, then, have something in

common; and this which they have in common is all I mean by the attribute of redness. (Quine 1948, pp. 9–10)

Well, on one view of McX's suggestion, a different criterion than Quine's is *not* being offered. Instead, we're being given an inference rule which licenses us to infer, from a claim that a predicate is instantiated, that something *else* exists *too*, namely that property (attribute, whatever) that the items (the predicate holds of) *have*.²¹ Now perhaps we can object to a language with an inference rule of this sort by means of Occam's razor as we understand it here. For one needs to know what all these new existential commitments are *doing* for us; and we're within our rights, one might think, to *rewrite* the theory eliminating such an inference rule, if the result is as good.²²

But there is *another* way to understand McX, and this is as offering a different CRD: one is committed to attributes and properties *even if* one can't explicitly *assert* one's commitment via the existential quantifier. One is committed solely by virtue of possessing meaningful predicates, and one can *see* that one is so committed even if one can't quite *say* it.

I've deliberately alluded to Wittgenstein's (1961) notorious say/show distinction to describe the possibility in question. Of course, it's always within one's right to make explicit one's "tacit" commitments by augmenting the language (if one can); although as soon as *that's* done, one is open to an attack by Occam's razor. So, interestingly, Occam's razor, as we have interpreted it, actually supplies motivation for suppressing explicit acknowledgments of one's ontological commitments when the result of doing so is a theory with a larger number of instantiated materially inequivalent predicates.

There is another way of understanding the alternative criterion being explored here, however: one *is* expressing ontological commitments to the attribute *RED* when one says "houses are red"; one just isn't doing it *the same way* that one does by saying "there is redness". And if it is suggested that ontological commitment should always be recognized by the same idiomatic means (in a regimented theory), a *good* response is this: *this* requirement can saddle us with what are (given Occam's razor) otherwise less acceptable theories.²³

Alternative CRDs are proving peculiarly evasive with respect to philosophically respectable arguments that can decide among them: if one *already* understands the ontological commitments of a theory a certain way, one can claim that ontological commitments have been justified when a theory is justified; so too, once we have been told what CRD is in place, we can justify a version of Occam's razor (via one or another version of the comparative simplicity of theories). But it's hard to see how any form of Occam's razor can be used to adjudicate *among* CRDs, because it's hard to see how such a version of Occam's razor could be philosophically *justified*.²⁴

The attempt to use Occam's razor to adjudicate among alternative CRDs is simply confused: the razor instructs us to choose that theory with the least number of kinds of entities (all other things being equal). But one can't use anything like *that* to adjudicate among different CRDs; one has to apply one or another criterion *first*, and only *then* Occam's razor.

I suggested at the outset that the debate over the Quine-Putnam indispensability thesis is philosophically indeterminate, and from the foregoing discussion, it looks clear *why*: a CRD is so fundamental that there's no hope of slipping a rationale *under* it. In a way similar to how any argument supporting the use of logical principles would need (one would think) to employ those very same logical principles it was providing justification for, so too, arguments supporting one or another CRD seem to either beg the question against the opponent, or be intelligible to begin with only if that CRD is already in place. The natural conclusion is that there is no bedrock *below* one's CRD, no place to get a foothold to apply pressure against an opponent.

But the analogy with logic only goes this far and no further. An important difference is that choosing an alternative logic almost always has real and profound effects when it comes to applications (consider the choice between intuitionistic and classical logic, for example, and the impact of the choices on one's mathematics); this can provide principled means for choosing among such alternatives. Unfortunately, choosing an alternative CRD has no significant effects whatsoever (and this makes a choice of such a criterion insignificant in a way that a choice among logical systems never is). The reason is that one can mix and match CRDs with *CWEs*.

Here's an illustration. Suppose I think a suitable *CWE* is to link existence to causal efficacy. Under such circumstances, it really won't do to adopt *Quine's* CRD, as that puts me at a distinct disadvantage (now I have to rewrite my regimented discourse, or perhaps treat some of it as false). The right move here is to square my *CWE* with my CRD, to simply deny, that is, that recognizing the existential commitments of a discourse suffices for recognizing the ontological commitments. Perhaps I should adopt a predicate view of the ontological commitments of a discourse, say, treat only those terms falling under a certain predicate as ontologically committing.

But it's precisely at this point that the apparent tools philosophers have for adjudicating debates in this area evaporate; for now theories with exactly the same syntactic and semantic properties can be used to draw rather different conclusions about what one is *justified* in taking to exist. In other words, all the competing pairs of matching *CWEs* and CRDs are entirely on a par with regard to the pertinent evidence (namely, the scientific theories we accept). As long as one chooses a *CWE* which *doesn't* square with one's chosen CRD, one can think something substantial

is afoot: regimentation of scientific discourse becomes fraught with philosophical complexity. But once one sees how such complexity is due to a CWE operating at cross purposes with a CRD, such an impression vanishes.

6.

So it looks like we must conclude that not only is it philosophically indeterminate what CRD is suitable, but that the question of *what there is*, understood in its philosophically broadest sense, is equally philosophically indeterminate.

I hasten to add that, by this last phrase, I don't mean that *what there is* is philosophically indeterminate; for I glibly talk about what there is, based on my knowledge of science and the world around me (pretty much the way you do). I say, "there are chairs", "there are neutrinos", "there are prime numbers", just like you. It's only when someone asks me, "but do numbers *really* exist?" that I'm taken aback (and for good reason): *that's* the question which is indeterminate.

One possible way out is to open a pathway to evaluating CWEs independently of CRDs. This can be done either by settling on a CRD independently of the question of what CRE one should adopt, a project we have been vainly attempting throughout this paper. Or vice versa (something we haven't tried yet).

Quine, as I have suggested, settles on a CRD, and lets science do the rest. When pressed, as noted in note 10, he invokes the triviality of his choice of CRD. Indeed (although it's a bit desperate), one might claim further that his CRD is trivial because it's based on a purely technical move that makes sense only within certain sorts of regimented languages, and that it draws none of its philosophical significance from how we interpret (ontologically-speaking) idioms in the ordinary vernacular. But claims of triviality can't handle competitors: as we have seen, there are alternative CRDs, and because of the way these interlock with alternative CWEs, Quine's choice turns out to be philosophically *tendentious*.²⁵

The other route may seem more promising, especially to those who want a greater role for *philosophical* argument in metaphysics than the Quinean picture offers. One can argue that the forgoing discussion has shown only that the logician's gambit of first settling on a CRD, and only then, if at all, turning to the issue of what CWEs are appropriate for staking out what exists, is misguided (if only because it is so metaphysically tendentious). Instead, we must first provide an appropriate *CWE*, and only then determine what a suitable CRD will look like.

Indeed, perhaps a case can be made for the priority of settling on CWEs first, since after all, what motivates so much work in philosophy of mathematics is precisely that the Quinean CRD fits so badly with

conflicting CWEs that other philosophers explicitly and implicitly are committed to.

One should not overlook how radical this suggestion really is, however: one is not just rejecting the logician's request to go first, one is also denying that scientific *discourse* is the sole determinate of *what there is*. Something else, metaphysical principles of some sort perhaps, are going to be needed to provide a choice among the competing CWEs.

Reasons of space prevent me from saying very much about this suggestion now, but I think its prospects are *not* good. I'll briefly and sketchily indicate why I think this and leave details for later work. I claim there are only two places one can look for ways of adjudicating among competing CWEs. The first is, broadly speaking, showing how ontological commitment is linked to *explanation* so that one must take a certain sort of object to exist in order to keep the cogency of the sorts of explanations we take seriously. This route (I claim) is blocked by the fact that explanation operates at the sentential level, and is indifferent to how we tease out the ontological commitments of the sentences which provide the explanations we take seriously.

The other route operates by a kind of canvassing of ontological intuitions of various sorts. Unfortunately, such intuitions in practice seem to be little more than intellectual prejudices. They are not universally shared (not even among similarly-trained philosophers); and given that such intuitions are used as a basis for argument, rather than themselves being open to justification, it seems unlikely they compel assent to a particular CWE. How are we to use intuitions to adjudicate between the physicist convinced that mathematical objects are just the non-existent reifications of a mathematical formalism, and the mathematician who is convinced of the existence of these things? The disagreement, after all, is based, *to begin with*, on conflicting intuitions.

7.

The philosophical indeterminacy we've been exploring here, with respect to CRDs and CWEs is *not* as horrible as it may sound. As I've mentioned, it isn't as if, after all, we can't wonder whether there are even primes other than 2, or more than two genetically distinct kinds of porcupine, and so on. *Those* questions all make sense.

And, along more broadly philosophical lines, it isn't as if we can't ask what sorts of considerations go into legitimizing *existential* commitments to *abstracta*, and whether they are different from the considerations that legitimate empirical commitments.

Indeed, we can even note, and avoid, certain kinds of "explanatory blunders" by making the sorts of distinctions between existential

commitments that I suggest. For example, if someone says that a good explanation for why he realized that $2 + 2 = 4$ is that, in fact, the numbers in question *have* that relation and he *intuited* it, we can complain that this explanation is not acceptable, *not* because mathematical objects don't really exist (whatever *that* would mean), but only because *abstracta*, and truths about them, are not discovered in anything like a quasi-perceptual way (i.e., talk of intuition is a bad explanation because it covers up precisely what needs to be explained, and in just the ways that talk of perception in the empirical context does *not*).

So too, if one inaugurates a nominalist-style program on the epistemic grounds that there are genuine problems explaining how our knowledge of mathematical objects can be made to fit with general constraints on epistemic stories: that such stories require, say, a reliabilist connection between *abstracta* and those who know about such *abstracta*, we can, again, tease apart the various kinds of existential commitments in question, and show that the epistemic practices of scientists towards the various kinds of commitments are significantly different. We can explain, that is, the epistemic datum that would-be nominalists are concerned with; and indeed, explaining that datum is, I think, the philosopher's job, and a job that can be done perfectly well without getting embroiled in broadly-construed questions about what exists.

In other words, the important question, the important *philosophical* question, about mathematical objects is *not* whether (in contrast with robuster empirical objects) they exist or not, but what kind of epistemic story we should tell about what mathematicians know, how they know what they know, and what story we should tell about the role mathematics plays in our conceptual scheme – doing so will simultaneously reveal what sort of role *existential* commitments to mathematical objects *play* (relative, of course, to one or another regimentation of scientific discourse); but in doing *this*, there is no need (and no *way*) to evaluate whether such objects really "exist" or not.

8.

In the days of yore, our forefather Carnap (1950) distinguished between meaningful questions and meaningless ones. Ontological questions, in particular, divided into external ones and internal ones. External questions are apparently asked about what exists and what doesn't independently of any linguistic framework. Such questions, if sensible, are not to be interpreted ontologically, but rather are "pragmatic" questions about which framework (conceptual scheme, formal language) one should choose for one or another purpose. Internal questions are asked within one or another framework; these questions, although sensible, do not carry the

philosophical weight that ontological questions, in the broad sense, are supposed to. If one persists in asking, "Are there prime numbers?" outside of any such framework, the question suffers from lack of a context to make it meaningful. But ask the same question within such a framework, and an answer is philosophically *trivial* in the sense that its answer is stipulated once a linguistic framework is chosen (although, despite the stipulative nature of the answer, it might take work to establish its truth value). Carnap's criterion for ontological commitment, being wedded to a conceptual scheme chosen on the basis of convenience, really is a *philosophically* trivial one; for, presumably, the specific criterion one uses to evaluate commitments (when carried out in an internal way) comes automatically with the framework itself.²⁶

I'm sympathetic to the changes Quine wrought in this picture: do the regimentation of all of science, and mathematics applied to that science, within one formal scheme, and use one topic-neutral logic across it; this better captures what goes on in science than the Carnapian vision of piecemeal formalized systems tailored for particular purposes. Although there are reasons to doubt this Quinean modification suits our entire intellectual heritage,²⁷ it works quite nicely when it comes to the interesting amalgam of science and applied mathematics that our empirical science operates with, and that Quine is primarily concerned with.

But Quine went further: he repudiated Carnap's assimilation of the broad philosophical concern with ontology (metaphysics) with the meaningless sort of question. Ontological questions, to the extent they are reformulatable *within* our conceptual scheme, are meaningful. What prevented this from *simply* being a terminological decision to call Carnap's internal questions "ontological" (with the added caveat that there is only *one* on-board in-progress conceptual scheme to pose these questions in) was Quine's wedding such "ontological issues" to the existential quantifier via his criterion: in doing so, he achieved a technically crisp criterion (but, as I have tried to show, at the expense of its Carnapian triviality).

Carnap raised worries with Quine's importing the traditional philosophical term, "ontology" to describe the role he gave the existential quantifier in evaluating what a discourse is committed to (Carnap 1950, p. 215, n. 5). Quine, in turn, believed that Carnap's separation of external and internal ontological questions relied on a bogus analytic/synthetic distinction.²⁸ Quine is widely taken to have won the battle on this; but Carnap's impression that there is something trivial about ontological commitment was deeper than the tools he used to support that claim.

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NOTES

* This paper is dedicated to the memory of George Boolos. He started me in this direction when he wrote me (back in 1992) that: "There are a number of writers, myself included, who believe that there is no version of platonism that is either obviously true or obviously false. That is, there is no interesting doctrine deserving the name of platonism to be defended or refuted." This claim strikes me as both true and in need of explanation. My thanks to Arnold Koslow, Nathan May, and Michael Resnik for their comments on an earlier version of this, and also to the audience at the Graduate Center on 16 October 1996, especially Jerrold J. Katz, for the same reason.

¹ Quine (1948) and Putnam (1971) are *classicus loci*.

² Putting the doctrine this way allows wriggle-room. Scientific theories, couched as they are in an enriched vernacular, do not (grammatically-speaking) transparently reflect their existential implications. In Quinean hands, these existential implications are read off of first-order regimented *translations* of scientific theories; and in such a context (*relative* to a particular translation) the doctrine, and its implications, are technically crisp: the ontological commitments of a theory *T* are directly read off of sentences of the form $(\exists x)S$ deduced from *T*. See the discussion of Quine's criterion in Gottlieb (1980), chapter 2. But when regimentation is allowed other resources (e.g., higher-order logic, modalization, substitutional quantification), the impact of Quine's criterion is murky at best. My approach to the indispensability thesis is designed to avoid this particular thicket.

A word about terminology. "Existential commitment," as we have seen, is syntactically characterized. "Ontological commitment," by contrast, only arises relative to a *criterion* for such commitment: something is taken to exist on the basis of a criterion employed to detect such commitment in a discourse.

³ I too have contributed to the subject. See my 1997a and 1997b. But I've been deliberately coy in those papers about whether I favored the thesis or not; this paper explains why.

⁴ Van Fraassen (1980) seems to take *susceptibility to observation* to be a CWE. Hacking (1983) is tempted by *causally efficacious*, but eventually settles on something even narrower: *used by us to intervene in phenomena*. *Presence in space and time* is another common suggestion; and it's also one Quine (1948) explicitly argues against.

It's sometimes difficult to distinguish when a philosopher is supplying an *ontological* criterion, as opposed to merely airing *epistemic scruples*; but I believe the cases I've mentioned are clear examples of *ontological* strictures, although motivated (in some cases) by explicit epistemic views.

⁵ He calls it "a more explicit standard" (1948, p. 13) which we "now" have.

⁶ I suspect Quine would deny it's the philosopher's or logician's role to dictate CWEs. *That* role belongs to the scientist. Or better yet, the scientist simply determines what's *true*, and the Quinean logician then reads off what exists from a regimented version of what's true. So, actually, it's *nobody's* job to dictate CWEs.

⁷ Although the above is a strategy attempted by some, it's proven to be *really hard*: no wonder that Quine, despite his nominalistic lusts, has never actually *embraced* nominalism.

But another strategy has become quite popular of late: treat sentences with criterion-violating existential commitments as *false*, and then tell a story why these otherwise false sentences are instrumentally valuable for finding truths. This move is relatively explicit in Hacking (1983), van Fraassen (1980), Cartwright (1983), and Maddy (1994). I'm sceptical it can work for mathematical posits because I doubt that, in physics for example, one can isolate the offending sentences from the rest of physics in such a way that leaves anything to be "true". Notice, however, that one powerful motivation for the approach is an implicit acceptance of something like Quine's CRD.

⁸ Tarski (1944) noted that his approach is neutral in regard to the various notions of truth available. It's ontically neutral as well.

⁹ Philosophical tradition allows more leeway with this kind of talk if we switch to “real”. “There are numbers, but they aren’t *real*”, sounds better, and has antecedent philosophical resonances. Notice, in any case, that the problem *doesn’t* arise in the regimentation *proper* unless one insists on subvocalizing appearances of the existential quantifier with the ordinary language phrase, “There is”.

¹⁰ It’s this which allows Quine (1981, p. 175) to take his criterion as trivial, and write: “The solemnity of my terms ‘ontological commitment’ and ‘ontological criterion’ has led my readers to suppose that there is more afoot than meets the eye, despite my protests.” Recall that he has also written (1970, p. 89): “What there are, according to a given theory in standard form, are all and only the objects that the variables of quantification are meant in that theory to take as values. This is scarcely contestable, since ‘ (x) ’ and ‘ $(\exists x)$ ’ are explained by the words ‘each object x is such that’ and ‘there is an object x such that’. Some languages may have no clear equivalent of our existential phrase ‘there is’, nor of our quantifiers; but surely there is no putting the two asunder.”

¹¹ See my 1997a for a fuller explication of this point.

¹² Both these strategies require that one somehow isolate the mathematical doctrine that one wants to treat as false from physical doctrine that one otherwise takes to be true. I’ve already expressed doubts about the possibility of doing this.

¹³ Resnik (1995, p. 170) knows this. He writes: “... the claim in (1) that scientists presuppose mathematical objects depends upon taking the mathematical parts of their scientific writings at face value and applying something like Quine’s criterion of ontic commitment.”

¹⁴ This topic is the burden of most of Part I of my 1994, as well as of my 1997a and 1997b.

¹⁵ For whether such a locution sustains ontological weight or not turns on its semantics, and that, in turn, requires us to honor whatever results the science of linguistics brings to bear on the topic. But how could linguistics legislate a semantic difference between grammatically-indistinguishable locutions? One sees a version of this argument in Benacerraf (1973, p. 408).

¹⁶ Indeed, this insight is behind debates over substitutional quantification between Quine, Barcan-Marcus, and others.

¹⁷ It’s surprising, perhaps, that the Benacerrafian requirement that identical grammatical roles require identical semantical roles (and therefore (!) identical ontological status) has turned out to be a disguised version of the old Humean/Kantian claim that “existence is not a predicate”.

¹⁸ This is how to understand work such as Field (1980), or Hellman (1989): they have already decided what *ontological* criteria they want to use, and they are already presupposing *something like* Quine’s CRD. This, perhaps, makes their programs unappealing to those of us who don’t find the choice of criteria convincing.

¹⁹ Quine 1948, p. 4: “How many possible men are there in that doorway?”

²⁰ Nevertheless, there are contexts, such as that of pure mathematics, where Occam’s razor, construed this way, isn’t relevant. See my 1994.

²¹ Actually, the implicit principle is stronger than I indicate: the property in question exists whether the predicate is instantiated or not. We leave this particular wrinkle aside.

²² This is *one* way to understand Quine’s objection to McX (1948, p. 10): “That the houses and roses and sunsets are all of them red may be taken as ultimate and irreducible, and it may be held that McX is no better off, in point of real explanatory power, for all the occult entities which he posits under such names as ‘redness’.”

²³ Note: The CRD being explored at the moment is neither one which reads such commitments off the quantifiers, nor one that reads them off of a privileged (existence) predicate, but one which reads them off of the presence of *any* predicate at all.

²⁴ Notice the same problems with Occam’s razor would arise if we tried to use it against Quine’s CRD, and in favor of some narrower version (say, an existence-predicate version).

The considerations we'd use to *formulate* theories would remain the same: so the debate could turn only on how we read off ontological commitments *from* theories which are otherwise semantically and syntactically *identical*. This leaves us without tools to debate with. I'll expand on this point momentarily.

²⁵ I stress again the other factors that can make the triviality thesis seem plausible: (1) the tendency to *read* the existential quantifier as a direct translation of the ordinary "there is"; (2) the related tendency to read Tarskian semantics as giving a straightforward ontological interpretation.

²⁶ Alas, this is *not* Carnap's view. Disastrously, he accepts Quine's way of reading ontological commitment from the variables in a conceptual scheme (see Carnap 1950, p. 214, n. 3). I stress again: there is a strong tendency to read ontic commitments in a standard way off of what, after all, is only a formalism. (In calling it a formalism, I don't mean to understand it as "uninterpreted": it is still a formalism even if it comes equipped with Tarskian "semantics".)

²⁷ In particular, I think the Carnapian approach fits more nicely than Quine's picture our practice in *pure* mathematics. See my 1994 for a specific discussion on this matter.

²⁸ Quine (1951), pp. 45–46, and Quine-Carnap (1990), p. 406.

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