

Requirements on reality

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There are advantages to thrift over honest toil. If we can make do without numbers we avoid challenging questions over the metaphysics and epistemology of such entities. Authors such as Field (1980) have developed a detailed, integrated, and attractive metaphysics free of numbers, sets and other abstracta. I'll assume that radically minimal metaphysics such as this is *internally* coherent. My focus on this paper is how *revisionary* we need to be about wider theory, in order to incorporate the minimal metaphysics. In **Section 1** I outline a "Moorean" epistemological challenge: that overly revisionary or error-theoretical theories of the world will *not be reasonable to believe* for those that start off with a fair share of common sense and a healthy respect for the testimony of best science. I outline two strategies for responding to this challenge by reconciling educated common sense and minimal metaphysics—'structured metaphysics', in the mode of Fine and Schaffer, and the linguistic strategies favoured by Quine and contemporary fictionalists. **Section 2** focuses on some familiar 'representational' strategies; and **Section 3** develops my own favoured version of this strategy.

1 The Moorean challenge

Field (1980) and Yablo (2001) say that there aren't really any numbers. When speaking literally, they deny that the number of moons of Mars is two—while agreeing that Phobos and Deimos are distinct moons of Mars, and the only such. van Inwagen (1990), Dorr (2002), and Merricks (2001) say that really, there are no tables; though there are subatomic particles arranged in table-like fashion.

Such philosophical theories conflict with the opinions of 'the many and the wise'—with common sense and with science-as-it-is-currently-practiced. If we accept Field's theory, we should stop believing seeming platitudes about the number of things in front of us, and distrust the best confirmed results published in the science journals. It's not surprising that people have felt that this is *too radical* a shift for philosophical argumentation to accomplish.

1.1 An initial Moorean challenge

Jonathan Schaffer argues recently that Field's position is *obviously* incorrect:

... contemporary existence debates are trivial, in that the entities in question obviously do exist. ... Start with the debate over numbers. Here, without further ado, is a proof of the existence of numbers:

1. There are prime numbers.
2. Therefore there are numbers.

1 is a mathematical truism. It commands Moorean certainty, as being more credible than any philosophers argument to the contrary. Any metaphysician who would deny it has ipso facto produced a reductio for her premises. And 2 follows

immediately, by a standard adjective-drop inference. Thus numbers exist. End of story. (Perhaps there are no completely knock-down arguments in metaphysics, but this one seems to me to be as forceful as they come. . .) (Schaffer, 2010)

One thing that we should concede to Schaffer is that his “proof” of the existence of numbers is valid. And most of us believe the premise. But then, most of us don’t start off as mathematical nominalists (it’s supposed to be a radical position, after all). Nominalists like Field should be non-plussed by this argument as stated. For he has urged that we *should* reject both premise and conclusion—and he takes himself to provide forceful arguments for this change in view.

The interesting part of Schaffer’s discussion isn’t so much the highlighted argument itself, but his commentary on the premise—that it commands “Moorean certainty” and “is more credible than any philosopher’s argument to the contrary”. Here is a classic expression of the same sentiment from David Lewis:

I’m moved to laughter at the thought of how *presumptuous* it would be to reject mathematics for philosophical reasons. How would you like the job of telling the mathematicians that they must change their ways, and abjure countless errors, now that philosophy has discovered that there are no classes? (Lewis, 1990, p.59)

So what is the argument expressed in the commentary? One idea is that it claims we are *better justified* in our educated commonsense beliefs (e.g. ‘I have hands’, ‘the number of my hands is two’, ‘there are prime numbers’) than we could be in any philosophical premises incompatible with them. If so, then we always turn arguments against the existence of hands around, and treat them as a ‘reductio’ of the premises, as Schaffer suggests.

But this threatens to be a game of bait-and-switch. The premise about numbers in the simple inference seems obvious to most of us. But the epistemic claims about justification required in the commentary are *highly* non-trivial. And they’re also ones that nominalists discuss at length: one of the central arguments for nominalism is an argument that we exactly *lack* good justification for mathematical claims such as there being prime numbers. So appealing to relative justification just takes us back into the original first-order dispute in the philosophy of mathematics.

1.2 A better Moorean argument

The most impressive Moorean considerations focus, not on the relative *justification* for one’s beliefs, but on conditions under which it is *rational to change one’s beliefs*.

I presently have a vast array of beliefs that, according to Field, are simply false—beliefs about the number of fingers on my hand, on the approximate length of my table, various beliefs about the size of the national debt and the function that describes the trajectory of objects in gravitational fields. Set aside the issue of whether these beliefs are all-things-considered

justified. Something that all sides can agree on is that the belief state I would have to be in to consistently *accept* Field's view is very different from the one I accept now.

The epistemological concern to press is: *under what circumstances is it rational for me to change my beliefs to this drastic extent?* The suggestion is not that it's impossible for anyone to rationally come to believe that there are no numbers. It's simply that *given my starting point* it's irrational for *me* to come believe there are no numbers—at least without much more impressive evidence than philosophy has so far provided.

Here is one picture of belief change that dramatizes the concern. In order to assess an empirical theory, we need to measure it against relevant phenomena to establish theory's predictive and explanatory power—how *good* a theory it is. But these phenomena include platitudinous statements about the positions of pointers on readers, statements about how experiments were conducted, and whatever is described by records of careful observation. But Field's account entails the falsity of numerical records of experimental data. So—for one starting from a commonsensical, science-respecting starting point—the natural conclusion is that his nominalism fails to fit with the data.

(This case only goes through if something that was conceded earlier is in fact correct—that we *do currently* believe in abstracta, in macroscopic things, and the like. One way of resisting the Moorean charge is to resist this description of ourselves, arguing that *we never believed mathematical (or mathematicized physical) claims in the first place*. The idea might be that we only *pretend* or *act under the supposition* that numbers exist. The *hermeneutic* figuralism of Steve Yablo defends exactly this position.)

This is an interesting Moorean challenge—and one that captures the sentiment that trying to *persuade* people of an error theory opens the philosopher to mockery. It relies, of course, on substantive positions in first-order epistemology. But while claims about the relative justification of mathematical vs. philosophical claims took us back in a tight loop to the question of whether mathematical claims are justifiable in the first place, this time we make progress since we have connected the debate to general issues about observation and rational belief-change—for example, of the theory-ladenness of observation.

Interestingly, Field (1989) preempts some of this discussion. He points to cases he thinks analogous, where *scientific evidence* has forced a radical change in view. He argues that when a serious alternative to our existing system of beliefs (and rules for belief-formation) is suggested to us, it is rational to (a) bracket relevant existing beliefs and (b) consider the two rival theories on their individual merits, adopting whichever one regards as the *better* theory. The revolutionary theory is *not* necessarily measured against our best *current take* on what the data is, but against what the *revolutionary theory says* the data is. For example, in the grip of a geocentric model of the universe, we should treat 'the sun moves in absolute upward motion in the morning' as an observational datum. However, says Field, even for those within the grip of that model, when the heliocentric model is proposed, it is rational for them to measure its success against the *heliocentric description* of the content of our observations (which does not describe sunrises in terms of absolute upward motion). Notice that on this model, there's is effectively no 'conservative influence' constraining revolutionary belief-change—since when evaluating new theories, one's prior opinions on relevant matters are *bracketed*. Field can agree that the case for nominalism is disanalogous to the case for heliocentrism in terms of the *weight of evidence* supporting revolution. But this is irrelevant: what is important is that the

model of belief-change has no inherent conservative bias, and so the Moorean attack fails.

The Moorean-friendly description of rational belief change has considerable appeal. If we are to trust a theory's own take on its fit with data and other virtues, can we rule out 'self-aggrandizing' theories that say of themselves that they possess theoretical virtues, or who say silly things about what the data is? It's especially hard to accept that this could be a sensible policy when we are fully aware that the theories are making crazy claims about what the data is—it seems positively irresponsible to bracket this knowledge. But even if we can *sometimes* end up doing this, it beggars belief that we do this *whenever* a prima facie coherent revolutionary alternative to extant best theory arises. A moderate form of the Fieldian proposal would require there to be extant reasons for dissatisfaction with current theory (a "crisis in normal science") in order to justify radical reappraisal. The Moorean can then question whether the distinctively *philosophical* worries of the nominalists may count as creating crisis conditions in the relevant sense.¹

This Moorean case against error-theoretic nominalism—which can with equal justice be pressed against error-theoretic mereological nihilism—worries me deeply. Can we have the best of both worlds? Can we have a Fieldian metaphysics, while avoiding the error-theory that it seemingly brings with it?

1.3 Two reconciliation strategies

How should the radically minimal metaphysician respond to the Moorean challenge? The strategy I will be interested in here is one of breaking the supposed connection between radically minimal metaphysics and revisionism/error-theory. On a traditional conception, metaphysics is concerned with *how things fundamentally are*. If the idea of 'fundamental reality' makes sense, then it seems we can should be able to distinguish two claims: the claim that *in fundamental reality there are no abstracta* (which on this conception articulates the key nominalist claim) vs. the claim *that there are no abstracta* (commitment to which leads to the revisionary rejection of abstracta-strewn scientific and folk theory). The radically minimal metaphysician I have in mind endorses the former, but not the latter. Thus Jonathan Bennett:

"The work of any interesting metaphysician involves two or more levels. I do not mean levels of reality: the metaphysicians I am talking about do not describe reality as stratified; rather, they stratify their accounts of it. At the basic level of speech, thought and conceptualization, they express truths that directly reflect the metaphysical situation; at the less basic level, they say things that are still true, but, as stated, are bad pointers to the metaphysical situation, and one needs an account of what their truth amounts to, comes down to, arises from, in terms of facts

¹There's a second line of response to the Moorean objection we can take from Field. Field compares success in philosophical theorizing to *placing the right bet*. If we compare philosophical theories (of roughly comparable detail), then the analogy is that we need only make the case that the favoured theory is more likely to be true than its competitors. This is quite compatible with it being unreasonable to *believe* the theory. However, unless philosophical theories must meet some reasonable threshold of credibility, I think this simply isn't a good representation of the aim of presenting a philosophical theory. And for any reasonably high threshold (say, over 0.4) I think an analogue of the Moorean case can be pressed.

expressed at the basic level. The non-basic level gets a hearing only because it involves ordinary, familiar ways of saying things.

...

Anyone who thinks he has metaphysical news about the world will distinguish levels of speech about it.”

(Bennett, 2001, p.147-8)

Interesting metaphysicians may balk at Bennett’s characterization in a couple of ways. Perhaps raising the banner of Quine, they insist that Bennett’s talk of ‘direct reflection’ and the like are weasel words. What one needs for metaphysics is the existential quantifier and a serious tone of voice—one should be willing to affirm the ‘ontological implications’ of everything one affirms, in van Inwagen’s phrase. This view has the attraction that we’re able to endorse metaphysical views without bringing in special-purpose vocabulary (‘substance’, ‘fundamental’, ‘basic’) against which critics of metaphysics have traditionally cavilled. For these conservatives, the error-theory is the *honest* consequence of a minimal metaphysics.

The opposite reaction to Bennett’s characterization is that it does not go far enough. A leading theme of contemporary metaphysics is a picture of the world ‘structured’ into the derivative and the fundamental (or, in some versions, into the grounded and the things that do the grounding)—the stratification within reality that Bennett distances himself from. The view works itself out in various ways in the recent literature, in particular in the work of Fine (2001) and Schaffer (2010). Schaffer, for example, argues for a metaphysics structured by the *grounding* relation. Fundamental entities are those that are not grounded in anything, but themselves ground other things. Schaffer can accept the nominalist claim that there are no abstracta in *fundamental reality*—but since there are ‘emergent’ abstracta he faces no problem reconciling this with common sense.

Schaffer’s contention is that—appropriately understood—a stratified metaphysics can give respect the insight of the nominalists, while avoiding conflict with ‘obvious’ truths. We endorse the Moorean truth that there are numbers by finding a place in our metaphysics for abstracta (as derivative existents). But we can engage with “nominalist-like” projects by a (redescription) of them as positing “dependency relations” between numbers and nominalist-friendly relations of congruence and betweenness instantiated by space-time points. Fundamental reality may be nominalistic, even if there are, derivatively, numbers.

I am a fan of the Bennettian picture. Mind-independent reality is thus-and-so (perhaps an ontology of concreta spread through space-time, characterized by the instantiation of various natural properties). The relation between this reality and *representations of it*—including the sentences of natural language and the language of thought—is complex and demands analysis. When the dust settles, some of these representations will turn out to be *true*. But—for example—all that may be required of reality for the representation “there are tables” to be true, is that certain simple particles stand in certain arrangements.

But it’s one thing to open up the possibility of an ‘indirect representation’ account reconciling minimal metaphysics with common sense. It’s another to pin down what story about representation achieves this. The next section outlines some familiar representational strategies, and some natural misgivings about them. The final section explores what the best version of deflationism about the derivative might look like. I think that this will leave us

talking somewhat like Schaffer and Fine—but with a very different conception of what we’re up to.

2 Reconciliation through the philosophy of language

In this section, I will discuss two extant proposals for reconciling minimal metaphysics and common sense: Quinean paraphrase, and revisionary syntax.

2.1 Translate-and-deflate

Quine was sensitive to the need to reconcile ‘desert landscape’ ontology with (certain savable portions of) common sense. His favoured method of reconciliation was paraphrase. We are a given body of common-sensical claims—perhaps involving apparent quantification over glints, quirks and other unQuinean beasts. Quine offers a choice: reject portions of commonsense, or *provide a translation* into kosher vocabulary.

Quine certainly makes room for error-theory (the parts of common-sense that are rejected, not paraphrased). But what *is* the status of the paraphrase relationship? How does it interact with the kind of bridge principles described above?

Quine’s views on the philosophy of language kick in at this point.² His favoured take on ‘truth’, ‘reference’ and so on is *disquotational*. Schemas such as: ‘The beetle is black’ is true iff the beetle is black; give what looks like an extensionally adequate definition of truth as applied to (at least a fragment) of one’s own language. But if we want to call sentences in other languages true or false, we need something extra (you can’t disquote *French* sentences into English). Thus the role for translation/paraphrase. If we use ‘dtruth’ for the disquotationally-defined notion, we can say:

S is true iff S is translated to a dtruth

Thus, ‘la neige est blanc’ is true, because it translates as ‘snow is white’, which is dtrue because snow is white.

Given this translation-augmented disquotationalism (I’ll call it the ‘translate-and-deflate’ account of language), we can see that *for Quine*, giving paraphrases is a way of *avoiding* error theory. Suppose that part of a paraphrase involves mapping ‘Harry kept quiet for Larry’s sake’

²I here follow Field’s presentation of Quine’s views in (Field, 1994). Though Field famously rejected the Quinean approach in his early writings (roughly, the 70’s and 80’s), he has since come to advocate it. However, (especially in the light of criticisms due to Stewart Shapiro) he has come to doubt whether paraphrase is the best device in extending dtruth to truth proper. See the paper cited before, and especially the addenda included in the collected version.

to ‘Harry kept quiet out of concern for Larry’. Even if, in reality, there are no sakes, the first sentence can be true, since it translates to a sentence that is dtrue.³

The Quinean view on philosophy of language has the resources to *deny* the bridge principles that take us from radical minimal metaphysics to error theory. Consider the Field position on the constituents of reality. If we found an acceptable *paraphrase* from mathematics, or mathematized physics, into nominalistically acceptable (and dtrue) talk, then for the Quinean there would be no error theory. In reality, there would be no numbers. But compatibly with that, ‘there are numbers’ would be true.

Of course, it is by no means obvious that such an acceptable paraphrase exists. What I want to emphasize, however, is that the idea that paraphrase is relevant to ontological commitment *prima facie* requires the distinctively Quinean translate-and-deflate philosophy of language. Suppose one rejects such a view for a more robust account of semantic properties such as truth (see, for example Field (1972)). There’s simply no obvious role for any appeal to ‘paraphrase’ within such an account of the conditions for a sentence to be true—and so it’s utterly unobvious what one would be up to in constructing such ‘paraphrases’ from apparently committal talk into a nominalistically respectable theory.⁴

Often, it’s not very clear to what end metaphysicians offer paraphrases. van Inwagen (1990), for example, offers a paraphrase from ordinary macro-talk into plural talk of microscopic things arranged this way or that. What is the status of this paraphrase? Is it intended as part of a Quinean account saving the truth of commonsense? Or does it rather point to an alternative way of speaking, that would *give up* commonsense claims? I don’t think it’s clear from the text *what* we’re supposed to do with it.

The idea that providing appropriate paraphrases shows that the paraphrased theory is not ‘ontologically committed’ to problematic entities makes perfect sense within a certain highly contentious philosophy of language. When advocated by those who do not endorse that particular position, absent further explanation it is baffling.

³Of course, much more needs to be said about the methodology when we’re applying it in the *intralinguistic* case. For suppose we think that, in reality, there are no sakes, and hence a fortiori, Harry did not keep quiet for Larry’s sake. Then our original sentence is dfalse. If the trivial paraphrase (every sentence maps to itself) is plugged into the above scheme, we then read off that it is false. Yet with the paraphrase given above, we get that it is true! Likewise, if paraphrase is symmetrical, then ‘Harry kept quiet for Larry’s sake’ will count as true (since paraphrased to a dtruth) but ‘Harry kept quite out of concern for Larry’ will count as false (since paraphrased to something dfalse). My own view is that this is best developed by understanding paraphrases (and translations) as non-symmetric mappings from a set of sentences Γ into a set of sentences Δ ; and treating the above biconditional as invoking a *specific* paraphrase relation. The biconditional invoking the trivial paraphrase will be a *rival* account of truth to one invoking the paraphrase that maps sake-involving sentences to paraphrases in terms of concern. Of course, this raises the question of *which* such paraphrase to use—is one singled out? We’re here in the territory of Quine’s discussion of the inscrutability of reference and ontological relativity, and I won’t examine such issues further here.

⁴Well, there might be something we could do. In Montague’s suggested treatment of semantics for natural language, we have an initial paraphrase from natural language into a certain rich intensional language; and then semantic theorizing is done via the latter rather than the former. This is interesting close to Quine’s translate-and-deflate idea, except rather than deflating, one gives a substantive characterization of truth conditions. But in the same fashion, one could say that S has semantic property P iff it translates to S' which has property P' . Whether there’s any need for this sort of paraphrase step is however controversial. And even in Montague’s hands, the idea is not to treat the ‘paraphrase’ as liberally as Quine would have.

2.2 Syntactic or semantic rescue

Very different from the Quine translate-and-deflate view is a proposal that Field (1989) suggests (but does not endorse). Rather than regarding ‘there are infinitely many primes’ as false, he canvasses the view that this should be read as something like: *necessarily, if Ω , then there are infinitely many primes*—where Ω is an axiomatization of arithmetic. Now, it’s easy to see what the *paraphrase* that’s being suggested is here. But we ask the question: what’s the significance of this paraphrase? Field’s view at the time was that it was a proposal concerning the *syntactic structure* of mathematical utterances (or their language-of-thought analogue).

On this view, paraphrase isn’t an autonomous part of the analysis of truth, as it was for Quine; but rather codes for certain underlying facts about a more familiar conception of the properties of language—syntactical, in this case—appreciation of which would remove apparent tension between the view of reality advocated, and the common-sense claim at issue.

In the literature on fictionalism various proposals of this kind have been floated. Most endorse interesting and unexpected claims about some aspect of our ordinary language use in the disputed area. As well as the syntactic revisionism of Field (1989) and Rosen (1990), it’s been suggested that the *existential quantifier* as it features in discourse about abstracta has a distinctive semantic interpretation—perhaps ‘there exists’ in English has exactly the syntax it appears to, but picks out the same function from properties to truth values as the complex phrase ‘if there were mathematical objects, there would exist. . .’. This would be semantic rescue from error-theory, parallel to the syntactic ones just mentioned. Of course, if you want to make such claims, you better be prepared to defend them to people with an expertise in the relevant areas (philosophers of language and mind, linguists, psychologists). You can’t make a sentence of natural language or the language of thought have a underlying conditional syntax or semantics just by wishing it were so. Field agreed—though he canvasses the possibilities hereabouts, he prefers to stick with error-theory.

The positions just described illustrate that there are perfectly *familiar* ways of reconciling minimal metaphysics with what the many and the wise say. But I don’t find either of these particular proposals appealing. I don’t like the *global* view of the nature of representation required for the first; and I don’t believe the *local* claims about syntax and semantics required for the second. The jury on the Bennettian framework is still out.

3 Reality requirements as mediator

We can distinguish between the *apparent* ontological commitments of mathematics (or macro-talk, or whatever), and its real commitments—what is required to exist in reality in order for the relevant claims to be true. Each of the theories above have ways of cashing out claims like: ‘All that is required of reality, in order that ‘there are numbers’ be true, is that Peano Arithmetic be conservative over nominalized science’; or ‘All that is required of reality, in order that ‘Billy is sitting’ be true, is that the things that are arranged Billy-wise are also arranged sitting-wise’. For the Quinean, we might talk of suitable paraphrases relating one claim to the other. For syntactic or semantic revisionists, we might talk about the underlying as opposed to superficial syntactic form or semantic interpretation. Even the Yablo-style figuralist

has a notion of the ‘real content’ of an assertion made in the scope of a certain pretence—the way that reality must be in order that, within the pretence, certain pretended-assertions are licensed. The notion of a (potentially non-disquotational) requirement of reality is what groups these approaches together.

We have a general notion of what is required of reality for a claim to be true—with *ontological* commitments being the special case where the requirement is *existential*.⁵ This raises the following thought. Each of the accounts above took a common notion of reality-requirements, and proposed a particular reduction to something more familiar: to syntax, semantics, or translation.

But why go so quickly to questions about what constitutes these properties of language? We should start by getting clear what the properties are, by formulating a theory of reality requirements directly—if it turns out to be reducible to some other features, so much the better. What we want to defend is the view that what is required for ‘Billy is sitting’ to be true, is that, in reality, the things arranged Billy-wise be arranged sitting-wise. If accepted, this would seem to effect the kind of reconciliation between commonsense and minimal metaphysics we were looking for. My proposal is that if this is what we believe, we should come straight out and say so, without tying this in the first instance to contentious claims about translation, syntax and the like.

The remainder of this section is an investigation of the prospects for and constraints on such a theory. In the first subsection I propose some constraints and explanatory obligations on an autonomous theory of reality-requirements. In the second subsection I sketch a view on which truth-conditions and reality-requirements, though different, are jointly determined by metasemantics. And in the final subsection, I compare the emerging position to that of the advocate of a stratified reality.

3.1 Formulating requirements on reality

I noted earlier that once the Quinean translate-and-deflate account of truth is given up, it’s no longer clear what is being done when one ‘gives a paraphrase’. Once we separate off *giving a theory of meaning* (or truth) from *saying what’s required of reality for a sentence to be true*, we have a new role for paraphrase. For we can let semantic theory take care of itself (assigning to words functions from macroscopic possibilities to truth values, or whatever), and offer the paraphrase as an autonomous story about ‘what truth requires of reality’.

The very name ‘paraphrase’ may be misleading, since it brings with it overtones of synonymy, translation, and other semantic notions that we can now disavow. What’s really going on is a certain function f from sentences of English to sentences of some metaphysically revealing language (‘Ontologese’, if you like) is being described. And our account then takes the form: for all S , what it required of reality for S to be true, is for $f(S)$ to hold.⁶

⁵We should say that S is ontologically committed to F s if *that F s exist* is part of the reality requirement of some *consequence* of S —but the detailed formulation of a criterion of ontological commitment is rather delicate, and in any case I take reality-requirements to be the more primitive notion.

⁶I’m going to use ‘holds’ as a placeholder for a disquotational truth-predicate. This aids formulation. We could instead try to replace sentence-to-sentence paraphrase with the definition of a certain *paraphrasing operator*—but

Thus, suppose van Inwagen’s paraphrase of macro-talk succeeded in pairing intuitively true natural language claims with true statements of ‘Ontologese’. On the current picture, semantics itself, formulated in English, need not change. But when we ask, not about what words refer to or what proposition is assigned to which sentence, but rather about *what is required of reality for ‘Billy is sitting’ to be true*, we’d look to the paraphrase relation to give our answer. Likewise, on a Fieldian position, we might give a completely orthodox semantics and syntax for mathematical discourse, and pair that with a paraphrase construed as articulating reality-requirements, that maps a set-theoretical claim p to the true modalized claim $\Box(\Omega \rightarrow p)$.⁷

Not any old mapping from sentences to sentences is plausible as a ‘possible first-order theory of reality-requirements’. Some will be wildly false—saying that ‘Billy sits’ requires of reality that dragons stalk the Earth. But there are interesting questions about whether we should impose any formal constraints on acceptable paraphrase—systematicity, finitude, in principle surveyability, etc.

In a related context, Melia (2005) and Cameron (2008a) explicitly reject the need to give a *systematic* story about how arbitrary sentences are made-true by the world (they may indeed adopt something more radical, saying—in my terminology—that even in an individual case there may be no finitary paraphrase stating the reality-requirements of a single sentence). This is perfectly coherent territory to explore. However, a theory of reality requirements that people like us can *actually articulate* in a finitary way is desirable—even if there’s no transcendental proof that it’s necessary. I take it that there’s no transcendental proof that physical theories are finitely graspable. But surely the best confirmed ones will be, simply due to the fact that they’re the ones we’re in a position to actually weigh up! One shouldn’t forget the pessimistic possibility that the true theory of some area is beyond our ken—but I don’t see there’s any more reason to believe that reality-requirements are ineffable than that any other particular theory would be.

If we do need to actually lay out a theory of reality requirements, the natural way to do that is by some kind of systematic recursion. After all, there are infinitely many sentences to assign reality-requirements too! Similarly, surely there will be recurring patterns between the requirements of complex sentences and the requirements of their simpler parts. And we should prefer a theory that predicts such patterns to one that takes them as brute. So while I am sympathetic to much that Melia and Cameron say in principle, I think they underplay what would be needed to build up a believable account of the reality-requirements of our discourse.

There’s one area in particular that I think we face explanatory obligations, and that concerns the question: What makes it the case a given theory T of reality requirements is the right one? Reality-requirements are after all *contingent* features of sentences. “Snow is white” might have meant something completely different, and if so, surely its reality-requirements would vary. Just as we face the metasemantic challenge to ground the truth-conditions of sentences in

I think this would leave the discussion largely unchanged.

⁷There are others who might use this framework to articulate relations between language and what really exists that are *more* demanding than a disquotational reading might suggest. Thus, one form of truthmaker theory might insist that *all* requirements must end up as requirements that such-and-such exists. If so, the appropriate paraphrase should be from ‘Sparky is charged’ to something existential, for example, *the trope of Sparky’s charge exists*. See Cameron (2008b), Cameron (2008a) for one take on the truthmaker project, and its use in augmenting or minimizing ontological commitments.

more primitive features of the world, we need to similarly ground whatever reality-requirements they carry. Furthermore, reality requirements aren't *unrelated* to meaning-facts; they stand in all sorts of interesting counterfactual dependencies to them. If "Billy sits" had meant what "Sally runs" in fact means and vice versa, then presumably their reality-requirements would also have been switched. Our answer to the question of what grounds reality requirements should afford an explanation of these connections.

(We might attempt to finesse these points. Suppose our semantics took the form of associating to each sentence a structured proposition. Then perhaps the structured proposition has both its truth-conditions and its reality-requirements, essentially. But this just shifts the bump in the carpet. Either there are (different) structured propositions with the same truth-conditions but different reality requirements, or there are not. If there are, then we face the question of why our sentences pick out the structured propositions with *those* particular reality-requirements, rather than the alternatives. If there are not, we face the question of why only our favoured structured propositions exist, and the others do not.)

The reductive treatment of reality-requirements in the syntactical rescue and translate-and-deflate tradition are excellently placed to answer such questions. No mystery in the counterfactual correlations, since reality-requirements reduce to aspects of meaning. And given the reduction, whatever we say to ground the meanings of language in general will *en passant* ground reality-requirements. But if we think of reality-requirements as autonomous, then we can't avail ourselves of these features. So as well as the challenge to articulate a definite theory of reality requirements for a whole language, we need to make a case that by positing this new layer of properties of language, we're not generating metaphysical mysteries.

3.2 Reality requirements, semantics and metasemantics

There are two main aspects to the theory I favour. One is the detailed view on what the reality-requirements of (say) number talk in a nominalist world turn out to be. The other is the development of a broad framework for specifying these requirements, that is capable of addressing the concerns just raised. I'll sketch my favoured view of each in turn (I develop the view fully elsewhere (Williams, 2010), so I will concentrate here on the key themes, rather than the nitty gritty details. My views on these matters are heavily influenced by the work of Rayo (2008).)

On the question of the reality-requirements for number talk, I favour a kind of fictionalism—but the sense in which it is "fictionalist" needs to be handled very carefully. The kind of fictionalism in question is not committed to the psychological claim that we only make-believe that there are numbers (as Yablo may be); nor is it committed to a fictive syntax (the view Field considers) or non-standard semantic values for existential quantifiers, or any other of the familiar slate of options. Instead, the key strategy is to piggyback on what one might initially think of as the reality requirements for a sentence—that "there are numbers" requires that *there be numbers*. Let's call this putative committal reality requirement R. Then the view is that the actual reality requirement is that the world be such that, *according to the fiction that there are numbers*, R holds. Notice that it is not *required of reality* that it contains fictions, or that fictions have things true according to them. Rather, we *use* fictionality to *characterize* the what's required. (This strategy has strong similarities to Yablo's notion of the

“real content” of a fictive utterance—though I emphasize again that my use of the notion in no way presupposes the kind of psychological/semantic deployment of the notion that Yablo favours.) If this specification of reality-requirements works, then the reality-requirements of “there are prime numbers” will be met, even if reality is as Field describes it.

But having committed myself to this position, I face the more metaphysical questions outlined in the previous sections. Why should we think that this is the right account to give of reality requirements? And how can we explain the correlation of reality-requirements and truth-conditions (e.g. that the roles for the symbols for “2” and “1” were reversed, then “1+1=4” would have the truth conditions, and the reality requirements, that “2+2=4” actually does)? I favour tackling these questions simultaneously. Reality-requirements are specified, not by providing a paraphrase independently of semantic theory, but by specifying reality requirements in a compositional way *in the course of giving a semantic theory*.

Just to illustrate how this might come about, we can envisage the following kind of semantic axioms being provided:

- ‘Larry’ refers to x iff x ’s simple parts are the yy , and in reality, the yy are arranged Larry-wise.
- x satisfies ‘sings’ iff x ’s simple parts are the yy , and in reality, the yy are arranged singing-wise.

With the usual compositional clause, the canonical theorems provable in such a theory would include that ‘Larry sings’ is true iff there’s some x with simple parts yy , such that (i) in reality, the yy are arranged Larry-wise, and (ii) in reality, the yy are arranged singing-wise. We earlier canvassed reading off reality requirements from paraphrases, by saying that what’s required of reality for ‘ S ’ to be true is that S^* , where ‘ S^* ’ is the paraphrase of S . We now propose reading off reality requirements from canonical theorems of the form just sketched, by saying that what’s required of reality for S to be true is that the conditions on reality spelled out on the right-hand-side of its canonical theorem, be true. In the case above, what we ask of *reality* is that it contain some simples, arranged in various ways (we also talk of parthood and macroscopic objects, but we don’t explicitly say anything about whether they exist *in reality*).⁸

(I said earlier that I wanted a theory of reality requirements that is autonomous—I didn’t want to start telling natural language semanticists that they weren’t sufficiently mindful of the metaphysical issues. But that the above is a correct specification of the semantic values of sentences is perfectly compatible with the correctness of specifications of semantic clauses that don’t use these special operators. If ‘Larry’ refers to Larry because Larry is the things whose simple parts are, in reality, arranged Larry wise, then it’s also true that ‘Larry’ refers to x iff x is Larry. So there’s no inconsistency between saying that a certain style of semantic theory is of particular interest to the metaphysician (and perhaps only to them)—and that certain less

⁸Compare Azzouni (2004). As he notes, if our view is that a minimal metaphysical base (say, atoms arranged this way and that) is sufficient to allow talk of macroscopic things to be true, then we should be able to happily use such talk within a range of theoretical projects. Why shouldn’t that include giving a semantic theory? Or indeed, in the present case, in saying what reality has to contain in order for the sentences to be true? Just because one’s view is that, in reality, there are no sets, numbers, or macroscopic things, one needn’t forgo appeal to such things in articulating what you *do* think reality contains.

‘loaded’ descriptions of the semantic properties of language are entirely appropriate for the purposes of semanticists and philosophers of language.)

There are immediate advantages from moving from a paraphrase to a compositional specification of reality-requirements of the sort just mentioned. A paraphrase must assign to whole sentences a claim about fundamental reality that is purified of any unwholesome elements. And as Melia (1995, 2000) emphasizes, demanding that such purification be achievable in a finitary way can seem an unreasonable constraint. But from our current perspective, only what occurs within the scope of the “in reality” operator in the canonical theorems need meet this condition on the view just sketched—which increases considerably the expressive power we can achieve (and allows, I think, a more minimal metaphysics to be defended).

Equally vital is the connection forged between reality requirements and semantic values. A theory such as the above both specifies semantic values of terms, and specifies the reality-requirements of sentences. But if we can give a theory of *what makes a theory of this particular form correct for a given natural language*, we will have thereby be able to explain both what makes reality-requirements what they are (directly from that theory), and why this will be correlated with truth-conditions (since the story about how they get fixed will be one and the same). The earlier theory explained counterfactual dependencies between meaning and reality-requirements by reducing one to the other. I propose to explain them by pointing to a common cause—a simultaneous reduction of both to the underlying meaning-making facts about usage and the wider world.

My favoured metasemantic account is in the broadly “radical interpretation” camp—particularly as developed by David Lewis Lewis (1984, 1975).⁹ As I read him, Lewis’s idea is that the correct meaning-fixing theory is that one which is (a) simplest; and (b) fits with a certain set of privileged ‘correlations’ between sentences and propositions.¹⁰ Condition (a) imposes a bias towards *simpler* specifications of semantic theory—but only when doing so wouldn’t give a gross mismatch between the assigned truth-conditions of *S* and the conventions of usage.

Applying this to a theory of requirements, the trade off of these two factors gives an explanation of how non-obvious specifications, with weakened reality-requirements, arise. In a Fieldian nominalistic world, or a mereologically nihilistic world, the most natural, simple specification of semantic values would say, for example, that an object *x* is in the extension of “sings” iff in reality, it sings. This is less complex than the sort of clauses mentioned above—and to that extent, a semantic theory for English that embeds this clause is *pro tanto* better. However, in a nihilistic world, such specifications lead to error theory. On grounds of charity, then, the rival specification is *pro tanto* better, as it *weakens* the reality-requirements so they are satisfiable even in a nihilistic world. All things considered, the small sacrifice in simplicity of the slightly twisted assignment of reality-requirements is worth it, for the massive

⁹I discuss it as applied to meaning in (Williams, 2005, 2007, 2008). In Williams (2007), I raise *objections* to Lewis’s version of this theory—but I’ve always been sympathetic to the general approach, and I think a principled modification of Lewis’s position is available.

¹⁰In my view, (a) is what underlies Lewis’s famous appeal to ‘eligibility’ and ‘reference magnets’—see Williams (2007) for discussion of the relation. On (b), Lewis appeals to his theory of conventions to explain these correlations—they are certain kinds of entrenched regularities of uttering *S* only when one believes that *p*.

gains in charity (fit with conventions of usage) that it stands to gain.¹¹

The full theory has of course not been set out here. But even at this stage, we've seen that there's no *principled* obstacle to giving an autonomous account of reality requirements that doesn't make the reality-requirements possessed by a given natural language simply brute—and which also articulates expected connections between reality requirements and truth conditions. And if this can be done, the sort of quasi-fictionalist story about the reality requirements for statements talking about numbers or macroscopic objects becomes available, without having to adopt revisionary position on syntax, semantic, or buy into the radical translate-and-deflate position of Quine himself.

3.3 Comparison with structured metaphysics

There's a way of reporting the views that I've just been advocating that makes it sound close to the views of Schaffer, Fine and other friends of stratified metaphysics. For on this view, a certain image of *what there is* is projected from total theory. 'There are numbers', 'there are macroscopic objects' and the like will be *true* according to view developed. To put it less coyly and without qualification: numbers and macroscopic objects exist. What could be more natural than to call the totality of what exists our 'ontology'? Within the ontology, there are some entities that not only exist, but are such that they form the 'requirement-base' for the rest—that is, such that what is "required" of reality, in order that the truths be true, never invokes anything outside of this base. We could call this 'fundamental ontology', and call any part of ontology that isn't part of fundamental ontology 'merely derivative'.

While I earlier suggested that the existential component of reality requirements be called 'ontological commitments'; why not call it instead 'fundamental ontological commitments', and allow a standard understanding of 'ontological commitments' simpliciter, in terms of what must feature as the values of our variables for a sentence or theory to be true? Insofar as the existence of *a* is part of what's required for '*b* exists' to be true, we might choose to say that *b* is *grounded in a*. And so forth.

In this way, a simulacra of the sort of talk that the friends of stratified metaphysics engage in might be built up. But before we hastily conclude that the view I've been outlining is stratified metaphysics in disguise, it's worth noting that the more traditional representational approaches can give similar speeches. A fan of Quinean paraphrase may say that "there are numbers" is true—because it is paraphrased to some dtruth (involving fictional operators and the like). Quine identifies "ontological commitments" with the values of variables of total theory once it is properly paraphrased. But why not let the ontological commitments be the values of the variables of total true theory? Even if one demands nominalistic paraphrases before conceding that mathematical talk is true, the Quinean may admit that numbers are ontological

¹¹Just to be clear: the basic commitment here is that the radical interpretation story be run to pick a theory of requirements that specifies semantic values. That already gives us a story about what the semantic properties of natural language expressions are. It's then an open question about whether we defend the 'unloaded' textbook versions of the semantic clauses by running radical interpretation a *second* time, on the revised understanding of the metalinguistic modals, or just see it as a true and far more convenient way of communicating information about what the semantic values and truth-conditions of sentences are. I'm presently agnostic about how this is to be best thought of—it probably depends very much on one's conception of what the explanatory ambition of textbook semantic theory is to be.

commitments *in the sense just defined*. We'd then need some alternative terminology for the traditional focus of Quinean metaphysics—so to coin a phrase we call the values of the variables of the properly paraphrased version of the theory, “fundamental ontological commitments”.

In describing the Quinean view, a terminological stipulation tying ‘ontological commitment’ closely to the true existential sentences would be highly misleading. And I’m inclined to say the same about the analogous stipulation in the context of the theory I favour. Ultimately, however, the terminology isn’t important—what is significant is the theoretical setting in which the terminology is explained. Schaffer includes a primitive relation of grounding, and explains other distinctions in terms of it. However, my working primitive is broadly linguistic—the reality-requirements of a sentence—and I think that we can and should explain what in non-linguistic reality makes it the case that sentences have the reality-requirements that they do. I say this not to claim any superiority over Schaffer’s proposals, but just to emphasize that they are different enterprises. I’m happy to allow that in Schaffer’s theoretical setting, a tie between ‘ontological commitments’ and true existentials is natural; I don’t think to insist on such a tie in the setting I favour would be to obscure the differing conceptions we have about the relationship between words and the world. (In any case, whatever verbal agreement we might achieve will I think quickly dissolve when we get down to details—I doubt that I can have a sense of “grounding” that doesn’t relate entities immediately down to the fundamental, for example, whereas theorists like Schaffer and Fine can posit whole chains of grounding. I suspect in many respects, my views will end up more like those of a fictionalist, rather than someone in the Fine/Schaffer camp—and my disagreements with extant fictionalists will be fought over the correct way to theorize about language, rather than over metaphysics).¹²

4 Conclusion

We started by supposing we had some ‘first order’ reasons to favour a radically minimal metaphysics—and a candidate description of reality that we supposed to be at least internally coherent (Field’s nominalistic metaphysics can be taken as representative here). It is natural to think that this sort of metaphysics is going to lead to revisionism—to a mathematical error theory. That’s only bad if the error theory itself is a bad thing—and I sketched one ‘Moorean’ way of running interference on this front. Of course, *any* way of reconciling the tension between radical metaphysics and common sense/science is likely to involve taking a stand on some contentious issues. But we have a choice about where to take that stand. One option (that Field himself advocates) is to engage with the epistemology of theory change that lay behind the Moorean objection I outlined. A philosophy of language of the Quinean translate-and-deflate kind might do the job. But I favour addressing the issue in the most direct way—giving a theory of ‘reality requirements’ directly. I hope in this way to minimize the hostages to fortune given to best theory in epistemology or semantics.

But we cannot avoid issues of theoretical integration altogether. My own view is that such theories owe a two-fold explanatory debt. If they’re at all interesting (i.e. if they’re not merely

¹²Just as a matter of autobiography—my thinking on these matters was initially prompted as a possible interpretation of Fine (2001) and his advocacy of the use of an distinction between what is true ‘in reality’ and what is merely true. I’ve since come to think that Fine should be read in a more inflationary way.

disquotational) then it'll be unattractive to treat the theories as *brutely true*—we'll need to say something about what *makes them correct*. And we also need to make intelligible the relation between requirements on reality and meaning.

The best way I know to achieve these desiderata is to build requirements directly into the specification of semantic theory. We can do this in a way that does not effect what semantic values are assigned to expressions; nor does it cast doubt on the cogency of the more standard ways of specifying the semantic values that we find in philosophy of language and linguistics. So the proposal is semantically and syntactically non-revisionary. A metasemantic theory I find independently attractive—radical interpretation—then completes the package by grounding the *choice* of the reality-requirement-specifying semantic theory.

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