Outscoping and Discourse Threat*

Theodore Sider *Inquiry* 57 (2014): 413–26

Agustín Rayo's exciting and bold new book can be viewed as continuing Carnap's debate with Quine over analyticity and mathematical truth.[1] Rayo is on Carnap's side, broadly speaking; but instead of saying that the statements of pure mathematics are analytic, Rayo says that they "demand nothing of the world". Rayo's defense of a "trivialist" form of Platonism is accompanied by treatments of surrounding metaphysical, logical, and linguistic issues. The book is an important one. It's also refreshingly direct and brisk, and honest in its assessment of the strength of the position it defends. It is sure to provoke much discussion, particularly given the recent interest in metaphysical questions about the relation between language and the world.

Rayo's core concept is "just-is", as in (p. 3):

Properties For Susan to instantiate the property of running *just is* for Susan to run

"For A to be the case just is for B to be the case"—for short, "$A \equiv B$"—means that "there is no difference between" A's being the case and B's being the case, that when either A or B is true then the other is "thereby" true (p. 4). There is no difference between Susan running and Susan instantiating the property of running, even though only the latter explicitly mentions properties.[2]

Rayo connects just-is statements to (metaphysical) possibility: the possible worlds are those descriptions of reality that are logically consistent with the totality of true just-is statements. The just-is statements determine which distinctions are genuine, and thus determine the extent of "logical space". Moreover, Rayo thinks of inquiry as the ruling out of possibilities (although see below). He says:

> To set forth a statement is to make a distinction amongst ways for the world to be, and to single out one side of this distinction; for the statement

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[1] See for instance Carnap (1950); Quine (1951).

[2] $A \equiv B$ does not imply that A and B *mean* the same thing, Rayo says; rather, they "make the same requirement on the world". Thus 'just is' is somewhat akin to the recently popular notion of ground (Fine, 2001, 2012; Schaffer, 2009), which is also a kind of "metaphysically boiling down to". But the differences are profound. For instance, $\Box(A \longleftrightarrow B)$ implies (and is implied by) $A \equiv B$.

to be true is for the region singled out to include the way the world actually is. (p. vi)

Thus just-is statements have a certain epistemic significance. If $A \equiv B$, then nowhere in logical space do A and B differ in truth value, and so there is no room in our investigations of reality for consideration of the possibility of one without the other. Rayo says:

> When one accepts a 'just is'-statement one closes a theoretical gap. Suppose you think that for a gas to be hot just is for it to have high mean kinetic energy. Then you should think there is no need to answer the following question. 'I can see that the gas is hot. But why does it also have high mean kinetic energy?' You should think, in particular, that the question rests on a false presupposition. It presupposes that there is a gap between the gas's being hot and its having high kinetic energy—a gap that should be plugged with a bit of theory. But to accept the 'just is'-statement is to think that the gap is illusory. There is no need to explain how the gas's being hot might be correlated with its having high mean kinetic energy because there is no difference between the two: for a gas to be hot just is for it to have high mean kinetic energy. (p. 18)

So, for instance, if one thinks that for Susan to instantiate the property of running just is for Susan to run, one will regard a nominalist's doubts about the existence of properties as being misguided. There is no difference, in what is claimed about the world, between the "Platonist" claim that Susan instantiates the property of running and the "Nominalist" claim that Susan runs.

Rayo imagines an objection from a character he calls the "Metaphysicalist". Metaphysicalism includes two components, one metaphysical and the other semantic. According to the metaphysical component, reality has a "distinguished structure", a distinguished "carving" into entities and properties. According to the semantic component, sentences must match this structure in order to be true. In particular, an atomic sentence 'a is F' is true only if 'a' and 'F' pick out an entity and property in reality's distinguished structure.[3] According to Rayo, metaphysicalism is incompatible with just-is statements like Properties. For, according to Rayo: Properties says that 'Susan runs' and 'Susan instantiates the

[3] Does the distinguished structure merely specify what counts as objects and properties, or does it also specify an elite subclass of objects and/or properties (as in, for example, Lewis (1983))? If the latter, then the linguistic component is surely not meant to imply that names and predicates in true atomic sentences must stand for elite objects and properties, but merely that they stand for objects and properties in the distinguished senses of 'object' and 'property'.

property of running' are about the same portion of reality; metaphysicalism requires those sentences to match the structure of that portion of reality in order to be true; but the sentences cannot both do this since they have different grammatical structures from each other (the former has a one-place predicate whereas the latter has a two-place predicate).

Rayo is officially neutral about (though certainly skeptical of) the metaphysical component of metaphysicalism, but he rejects its semantic component as "bad philosophy of language" (section 1.2.2); he says that "It is simply not the case that ordinary speakers are interested in conveying information about metaphysical structure" (p. 10). By rejecting metaphysicalism, Rayo says, he opens up space for accepting Properties and other just-is statements where the flanking sentences have different logical forms. One can say that for *A* to be the case just is for *B* to be the case, even when *A* and *B* have very different grammatical structures, because the grammatical structure of a sentence needn't match reality's structure (if there even is such a thing) in order to be true.

Although Rayo's objection to the semantic component is perhaps a bit quick (mightn't matching be a metasemantic requirement, constitutive of interpretation, that ordinary speakers know nothing about?), I suspect that he's right to reject it. I would, though, like to comment in passing on the question of who in fact accepts Metaphysicalism. Rayo assumes that many, perhaps most, contemporary metaphysicians do.[4] But many of those who accept the first component of metaphysicalism do so precisely to enable rejecting the second component: embracing metaphysical structure while rejecting matching allows one to defend conceptions of fundamental reality at odds with ordinary beliefs without needing to say that those ordinary beliefs are false. All those recent meta-

[4]He has an argument for this on p. 32:

> Many contemporary metaphysicians—perhaps even most—believe that there is a definite answer to the question of what objects exist [in the unrestricted sense]… But, as far as I can tell, there can be no good reason for thinking this in the absence of some version or other of metaphysicalism.

Rayo's reason for the latter claim is that if you are a metaphysicalist, you will regard the range of the unrestricted quantifier as being "settled by the world's metaphysical structure", but if you aren't, you will accept the neoFregean view that—to put it roughly—you have an object wherever you have a singular term, which leads to an indefinite unrestricted quantifier since our notion of a singular term is indefinite. But many opponents of metaphysicalism, even those who reject metaphysical structure altogether, don't accept the neoFregean view. Others (including myself) accept metaphysical structure, reject the linguistic component of metaphysicalism, are open to the neoFregean view for some sorts of quantification (ordinary language quantification over directions, say), but regard the sort of quantification at issue in debates over unrestricted quantification as being settled by the world's metaphysical structure.

physicians who have expressly embraced something like metaphysical structure reject matching.[5] Still, it may well be that metaphysicalist picture-thinking is widespread; and in any case it is certainly valuable to explicitly formulate and reject metaphysicalism, to clear the way for an adequate assessment of just-is claims.

Rayo's central application of his system is to the philosophy of mathematics. According to "neoFregeans", we are free to stipulate the following, as a definition of 'the number of':

Hume's Principle For any F and G, the number of the Fs = the number of the Gs if and only if the Fs are equinumerous with the Gs

Since Hume's Principle implies (in second-order logic) all of (second-order) Arithmetic, neoFregeans conclude that the claims of Arithmetic, including the claim that natural numbers exist, can be known solely on the basis of a stipulation (Wright, 1983; Hale and Wright, 2001). Rayo's view is somewhat similar. According to him, it is reasonable to accept claims like the following:

Numbers For the number of the Fs to be *n just is* for there to be exactly n Fs

According to Numbers, there is no difference between, for example, the mundane fact that there are no dinosaurs and the fact that the number of dinosaurs is Zero—a fact that implies the existence of numbers.

Why should we accept Numbers? This raises the question of the epistemology of just-is statements. According to Rayo, just-is statements have trivial truth conditions: either they are true in all worlds or true in none. Thus if his sole model of inquiry were the one mentioned above, the ruling out of possibilities, then there could be no sensible inquiry into which just-is statements are true: if Numbers is true then we would already know it, since knowing it would not require ruling out any possibilities. But the ruling out of possibilities is not Rayo's sole model of inquiry, and he does not regard inquiry into just-is statements as being trivial in this way. Rayo summarizes his position as follows:

> …one's conception of logical space is shaped by the 'just is'-statements one accepts. To accept a 'just is'-statement '$\phi \equiv \psi$' is to treat a scenario in which one of ϕ and ψ holds without the other as absurd, and therefore as unavailable for scientific or philosophical inquiry. Accordingly, in accepting a 'just is'-statement one moves to a conception of logical space

[5] See, for instance, Cameron (2010); Fine (2001); Schaffer (2009); Sider (2011, section 7.8).

> that makes room for fewer possibilities. Such a move comes with costs and benefits. The benefit is that there are less explanatory demands on one's theorizing because there are fewer possibilities to be ruled out in one's quest for truth; the cost is that one has fewer distinctions to work with, and therefore fewer theoretical resources. Because of these costs and benefits, different conceptions of logical space can be more or less hospitable to one's scientific and philosophical theorizing… the decision to accept a particular 'just is'-statement should be determined by the statement's ability to combine with the rest of one's theorizing to deliver a fruitful tool for scientific or philosophical inquiry. (p. 73)

For Rayo, then, inquiry into just-is statements is not the ruling out of possibilities, and one does not trivially know all true just-is statements. Inquiry into just-is statements requires theoretical cost-benefit analysis. Given this, there is something confusing about Rayo's rhetoric when he describes just-is statements and their significance. He says that accepting $A \equiv B$ "closes a theoretical gap", that there is no need to answer "why B?" when one has accepted A and $A \equiv B$, that one should regard scenarios in which A and B differ in truth value as being "absurd" if one accepts $A \equiv B$, and so on. This rhetoric would make perfect sense if Rayo's sole conception of inquiry were the ruling out of possibilities, for then the *truth* of $A \equiv B$ would render A and B epistemically equivalent. But that is not his sole conception of inquiry. Even when $A \equiv B$ is true, acceptance of this claim rests on non-trivial theoretical cost-benefit analysis, and so there is a good sense in which A and B remain epistemically inequivalent. The cost-benefit analysis that justifies accepting $A \equiv B$ would seem to be needed to close the theoretical gap between A and B and to answer "why B?"; and A differing from B in truth value is not absurd since the incorrectness of the cost-benefit reasoning justifying $A \equiv B$ is far from unthinkable.[6]

Here is a hypothesis about what is going on. Rayo is making a distinction between explanations and reasons when he speaks of closing theoretical gaps and the like, and is stressing the analogy between just-is statements and identity statements.[7] Believing that Mark Twain is identical to Samuel Clemens requires a reason; belief in this proposition is epistemically nontrivial. But if one does

[6] Relatedly, he says that his trivialist Platonism avoids Benacerraf's (1973) dilemma. But trivialists face the question of how they know their just-is statements to be true. Rayo's answer, namely theoretical cost-benefit analysis, is a reasonable one, but is available to non-trivialist Platonists as well. Indeed, it is perhaps the standard non-trivialist Platonist answer.

[7] Note his p. 18 citation of Block and Stalnaker (1999) and Block (2002).

have a reason to believe this proposition, the network of *explanations* one accepts need not include an explanation for this or any other identity proposition. This is a distinctive feature of identity-propositions: other propositions do need explanations even when we have good reasons to believe them. Relatedly, when one has reason to believe the identity between Twain and Clemens, one's explanatory network need not contain explanatory mechanisms connecting Clemens's doings to Twain's. Similarly for just-is statements. Some of the rhetoric—such as talk of statements incompatible with true just-is statements being "absurd", and of statements implied by true just-is statements being "trivial"—may have been misleading, Rayo might concede, since just-is statements (and hence, one's conception of logical space) are *epistemically* nontrivial. But much of the rhetoric remains correct, since a true just-is statement needs no explanation. And so if one does have a good reason for accepting $A \equiv B$, one's explanatory network does not need to include an explanation for $A \equiv B$, nor explanations of correlations between A and B.

On this picture, $\equiv$ is a connective which, like the identity predicate, plays a distinctive role in explanation.[8] This is a substantive claim, and one might wonder whether Rayo has adequately supported it.[9] Perhaps there simply is no binary sentential connective that brings immunity from explanatory demands in this way. The denial of Metaphysicalism on its own does not particularly support the existence of such a connective. Regardless, though, the thesis that $\equiv$ is indeed such a connective is an interesting one. The thesis is admittedly intuitive in certain cases, and it's worth seeing what one can do given its assumption.

For Carnap, Arithmetic is indubitable because it is analytic: guaranteed to be true by linguistic conventions that we were free to choose. Given Rayo's epistemology of just-is statements, one might have expected his position on mathematics to contrast sharply with Carnap's in this respect. Although the axioms of pure mathematics follow from just-is statements, and thus "demand nothing of the world" in a modal sense, one might have expected Rayo to regard those axioms as not being indubitable since our knowledge of them rests on our knowledge of the just-is statements, which in turn rests on nontrivial

[8] Is the relevant sense of explanation the same as in Block and Stalnaker (previous footnote), or does Rayo have in mind a more "metaphysical" notion of explanation?

[9] One might try to subsume the claim about $\equiv$ to the claim about identity by defining $A \equiv B$ as meaning that the fact that A is identical to the fact that B. But that would require a load-bearing notion of fact. Signs (e.g., p. 6) indicate that Rayo—rightly, by my lights—declines to go this route.

cost-benefit analysis.[10] But Rayo's position is actually closer to Carnap's than this.

First, I have been leaving out the fact that Rayo is open to there being no objectively correct set of just-is statements, and hence no objectively correct notion of logical space.[11] Given the resulting contextual, interest-relative notion of logical space that he goes on to entertain, the adoption of just-is statements becomes a practical rather than factual matter, in which case his position draws closer to Carnap's.[12]

Second (and more importantly), despite the advertising at the beginning of the book (p. ix) and again at the beginning of the chapter on mathematics (chapter 3), Rayo's account of mathematical truth does not, in fact, rely on a cost-benefit argument for the truth of Numbers. It rather relies on an argument that one can stipulate mathematical truth in a certain way. According to the argument, one can stipulate that one's use of mathematical language is to be understood as employing a new representational system, in which truth need not "match reality's structure" (if there even is such a thing).[13] Furthermore, one may stipulate what the truth conditions of sentences in this new representational system are to be. One may stipulate that '$2+2=4$' is to have the truth condition

[10]An argument not unlike Quine's own argument for the truth of mathematics, at a suitable level of abstraction.

[11]Section 2.3. The interest-relativity must surely be restricted; "For Twain to be an author just is for Clemens to be an author" and Rayo's own "For the glass to be filled with water just is for it to be filled with H_2O" (p. 3) must surely be true for all utterers.

[12]Rayo's concern about an objectively correct conception of logical space begins with the assumption of the modal conception of assertion. He then says (p. 58):

> So, against the background of which conception of logical space should one assess the question of whether a given 'just is'-statement is [objectively? –TS] true? One would like to respond: 'against the background of the objectively correct conception of logical space'. But the notion of objective correctness is precisely what we were trying to get a handle on.

But what is the problem? The quoted passage does not raise a problem for the notion of the objectively correct logical space. It's unproblematic that a just-is statement is objectively true if and only if it is true in every world in the objectively correct logical space. The final sentence suggests that the preceding sentences were an attempt to define 'objectively correct logical space'; but they weren't; they were rather the drawing out of consequences of the idea that to assert a just-is claim is to put forward the set of worlds in which that just-is claim is true. (There are, of course, general concerns about the notion of objectivity; see, e.g., Rosen (1994).)

[13]The fact that the representational system is new implies, I take it, that quantifiers need not make the same contribution to truth conditions in the new system as in other systems/languages. Thus the view implies a sort of quantifier variance (Hirsch, 2011). There are parallels between Rayo's view and the form of neoFregeanism I recommend to its defenders in Sider (2007).

of being true in all worlds, for instance, or that 'The number of the planets is Zero' is to be true in all and only worlds in which there are no planets.

As far as I can tell, this argument does not rely on Rayo's cost-benefit-analysis epistemology for just-is statements. To be sure, since $\Box(A \longleftrightarrow B)$ implies $A \equiv B$, Rayo's stipulations do imply various just-is statements. For instance, stipulating that $2+2=4$ is to be true in all worlds implies that $2+2=4 \equiv (P \rightarrow P)$, for each sentence P. But no cost-benefit argument for these just-is statements is needed, since the stipulations make no demands on the nature of logical space; they can succeed against the backdrop of whatever conception of logical space one begins with (remember that the language of mathematics involved in the stipulation is taken to be a new representational system).

In fact, Rayo's view about stipulating mathematical truth would seem not to rely on the idea of just-is statements at all. What it relies on is rather the denial of metaphysicalism. Anyone who accepts the possibility of representational systems in which truth does not require matching reality's structure is free to accept something like Rayo's conception of stipulating mathematical truth.

Let me close with an extended comment about the details of Rayo's argument that one can stipulate truth conditions for mathematical languages. For certain mathematical languages, Rayo is able to give a recursive definition that assigns to each sentence in the language a set of possible worlds; and he then goes on to stipulate that each sentence is to have its assigned set as its truth condition. What is interesting is that his recursive definition quantifies over mathematical entities. For instance, in the case of applied arithmetic the definition tells us the following:[14]

(ZP) 'The number of the planets is zero' is assigned the set $\{w \mid \text{planet}_w = 0\}$, where "$\text{planet}_w$" abbreviates "the number, n, of entities z for which it is true at w that: $\underline{z \text{ is a planet}}$"

(I'll explain why I underlined in a moment.) How can his assignment of truth conditions be useful in a defense of trivialist Platonism if it presupposes the existence of numbers (and sets, for that matter)?

Rayo's answer is that his definitions do not presuppose that mathematical statements *are true at worlds*. For instance, the quantification over numbers

[14]The quantifier 'entities' here ranges over all possible objects (Rayo offers a more complex approach for actualists). Also: one could specify, in a one-off way, the very same set of worlds without using quantification over numbers: "$\{w \mid$ for no entity z is it true at w that z is a planet$\}$". But Rayo's definition is general: it specifies a set of worlds for each sentence in the language of applied arithmetic.

in ZP occurs outside the scope of 'it is true at w that'; the scope of that operator (the underlined part) concerns planethood, not numbers. To be sure, quantification over numbers is needed to generate the assignment of truth conditions—the definition of the function assigning to an arbitrary sentence its associated set of possible worlds needs to refer to numbers. But the definition is consistent with the worlds themselves being "nominalistic", since all mention of numbers (and sets) occurs outside the scope of the operator 'it is true at such-and-such world that'. Thus Rayo calls the approach "outscoping".

Of course, someone who did not believe in numbers could not accept the outscoping strategy. But, Rayo says, *he* believes in numbers. After all, he accepts that statements about numbers have true truth-conditions—the very conditions that he is laying out using outscoping! So what could be wrong with his quantifying over numbers to lay out those truth conditions?

Outscoping is an important idea. Its importance, in fact, transcends Rayo's particular framework. Rayo uses outscoping to assign nominalist truth conditions (conceived as sets of worlds) to mathematical statements; but one could apply the general idea to other sorts of "inter-discourse relations". Often in metaphysics we question the status of a discourse, and we investigate how that discourse may be related to allegedly more "secure" discourses. We ask how mathematical truth might be underwritten by nonmathematical truth, how mental language relates to physical language, how talk of medium-sized dry goods rests on physics, and so forth. When we ask these questions, the "relating to" ("underwriting", "resting on") can be conceptualized in different ways. One might say that mental statements are *translatable as*, *supervene on*, are *realized in*, are *made true by*, or are *grounded in* physical statements, to mention a few. And *has the same truth conditions as* (understood in Rayo's way[15]) may be added to the list (*viz.*: "mental statements have the same truth conditions as physical statements"). Viewing the assignment of truth conditions as just one example of an inter-discourse relation raises the possibility of applying outscoping to other inter-discourse relations. For instance, friends of grounding—the most popular inter-discourse relation, recently—face the question of whether it is legitimate to assign grounds to each sentence of a discourse by means of the vocabulary of that very discourse, provided the vocabulary does not enter into the grounds themselves. In the case of mathematics, for instance, the friends of ground must decide whether the following situation is acceptable: each

[15]Notice that one could even apply the outscoping strategy to the assignment of truth conditions thought of as structured propositions.

mathematical statement has a nonmathematical ground, but the only way to specify the general assignment of nonmathematical grounds to mathematical statements is by reference to numbers.

As I say, outscoping is an important idea, but I will conclude by raising a concern: an outscoping account of mathematical truth conditions does not address certain worries that foundational accounts of mathematics have traditionally sought to address.

Suppose we introduce an expression E, but do not succeed in rendering that expression semantically determinate. And suppose we then employ outscoping: we use that very expression E to lay down truth conditions for sentences containing E. In that case, laying down these truth conditions won't (in general) eliminate the indeterminacy. For the sentences we use to lay down the truth conditions will themselves be semantically indeterminate, and may not impose any additional constraints on E's interpretation beyond whatever initial constraints we laid down on E.

To illustrate, suppose a community introduces a "quantifier" 'blerg' by saying: "a sufficient condition for there being blerg Fs is that there are exactly 17,843 Fs, and a necessary condition is that there be at least one F". It's natural to claim that these stipulations leave the meaning of 'blerg' underspecified, and that there simply is no fact of the matter whether, for instance, there are blerg Fs whenever there are an odd number of Fs. For there are many candidate truth conditions for 'there are blerg Fs' that fit the stipulations (the condition that there are an odd number of Fs, the condition that there are at least 10,000 Fs, the condition that there are exactly 17,843 Fs, and so on). Now imagine someone giving an additional, outscoping stipulation:

> The sentence 'There are blerg Fs' is to have the following set of worlds as its truth condition: $\{w|$ there are blerg many entities x for which it is true at w that x is $F\}$

Given the pre-existing semantic indeterminacy of 'blerg' and the way in which this statement uses 'blerg' to give truth conditions for 'blerg'-statements, the statement places no additional constraint on the interpretation of 'blerg' and thus does not reduce its indeterminacy. (Similarly, if 'blerg' were put forward as an entirely new notion, introduced solely by the outscoping stipulation, then the outscoping stipulation would accomplish nothing (beyond making it clear what the syntax of 'blerg' is to be).)

Stating truth conditions using outscoping, then, needn't cut down on semantic indeterminacy. This matters because part of the point of looking for inter-discourse relations is to address concerns of indeterminacy. We wonder whether reality contains enough to tie down discourse about causation, morality, or mathematics; and to answer the question, we look for accounts of how these phenomena are related to putatively determinate (or more determinate, anyway) phenomena.

To be sure, concerns about indeterminacy aren't the sole reason for caring about inter-discourse relations. For example, we often care about the nature of the underwriting facts—we care, for instance, whether the facts that underwrite morality are mind-independent. Nevertheless, concerns about indeterminacy are often central.

Consider statements about physical chance, for instance. Ordinary and scientific usage presumably require 'chance' to pick out (if it picks out anything at all) a function from physical events and times to real numbers that satisfies the purely mathematical condition of being a probability function. Perhaps there are other constraints, such as that past events and laws of nature have chance 1. But there is a vast number of functions that obey such constraints, and unless there are primitive facts about chance we face the question of whether there is anything in the world that could single out a single function as being the one picked out by 'chance'.

Or better: a small enough set of functions. We might tolerate *some* indeterminacy. But if the only constraints on the notion of chance were that it must be a probability function that assigns 1 to past truths and laws of nature, then the notion would be massively indeterminate—so indeterminate that it would be useless.

In such a situation, stating inter-discourse relations using outscoping won't give us what we want: a guarantee that reality adequately ties down the discourse. Only a "noncircular" assignment of truth conditions, or grounds, or whatever—that is, an assignment that doesn't employ the term in question, not even in the outscoping way, but rather uses only expressions whose determinacy is not in question—guarantees that there is no massive indeterminacy. Of course, whether this is a problem for the outscoping approach will vary from case to case, depending on whether our reason for seeking inter-discourse relations is in part a concern about indeterminacy.

But in the case of mathematics, ruling out indeterminacy is a central motivation for seeking inter-discourse relations. The problem of mathematical truth is a particularly thorny one, and this isn't just because it's hard to accept a domain of mathematical objects. It's hard to accept a domain of shadows, but the problem of shadow-discourse is nowhere near as thorny as the problem of mathematical truth. The problem with mathematics is that it's hard to accept *any* of the facts that might underwrite mathematical discourse. None of the facts that have been proposed as underlying mathematical truth are wholly comfortable to accept: facts about "Platonic entities", infinitely many concrete objects, primitive modal facts, primitive facts about fictional truth, primitive higher-order facts, and so on. And it's natural to worry that in the absence of all such underwriting facts, there would be massive indeterminacy in mathematical statements.

What I have been saying is that one central reason for talking about inter-discourse relations is to answer a certain "discourse-threat", namely, the threat of indeterminacy. But indeterminacy is just one sort of discourse-threat, and the point I'm making isn't tied to it. One might instead be concerned with the threat that discourse about chance, mathematics, or morality is nonobjective, or merely expressive or "nonfactualist" in some other way, or massively false, or even meaningless; and my point is that outscoping assignments of inter-discourse relations won't address any of these discourse-threats.

Concerns about discourse-threats aren't confined to those who believe in metaphysical structure; even a skeptic like Rayo faces the concerns. Consider, for instance, discourse about metaphysical structure itself. Since Rayo is inclined to reject talk of metaphysical structure (because of the apparently unanswerable questions it raises), he doesn't indulge in such talk. But some of us do; and Rayo presumably suspects that our discourse about metaphysical structure is massively indeterminate, or projective of our emotions, or is in some other way a failure. However exactly he conceptualizes this failure, he will want to deny that mathematical discourse fails in the same way. He therefore has as much reason as anyone to want an answer to discourse-threat in mathematics.

I close with one final point. Rayo emphasizes a certain dialectical feature of his outscoping assignment of mathematical truth conditions: anyone who believes in the existence of numbers must accept that his definitions assign nominalistic truth conditions to mathematical statements. He concludes from this, though, that "the resulting assignment of truth conditions can be recognized as delivering trivialism regardless of whether one happens to be a trivialist" (p. 85). His view, I take it, is that the definitions put pressure on anyone who accepts the existence of mathematical entities, even someone otherwise drawn to non-trivialism, to become a trivialist, since any such person must accept that the definitions are adequate but will surely acknowledge that a trivialist account of mathematics is superior to a nontrivialist one if it is workable. But someone who believes in mathematical entities might think that the status of mathematical discourse rests on a non-trivialist account of that discourse, and so would regard the availability of the outscoping definition as providing no reason to accept trivialism.

Imagine that I'm a non-trivialist Platonist who believes in metaphysical structure, and in particular that reality's distinguished structure includes a domain of natural numbers. For short: I believe that numbers fundamentally exist. However, I didn't come to this conclusion lightly, or happily. I don't, for instance, believe in the linguistic component of metaphysicalism, and so I was open to the idea that arithemetic statements can be true even if they don't match reality's distinguished structure. But except for facts about the fundamental existence of natural numbers themselves, I couldn't bring myself to believe in any of the other facts that have been suggested as "underwriting" arithmetic truth, such as facts about infinitely many concrete objects, primitive modal facts, or anything like that. What, then, should I make of Rayo's outscoping assignment of truth conditions? I must agree that it assigns sets of nominalistic worlds to arithmetic statements. But I regard the adequacy of the assignment of those truth conditions as resting on the fundamental existence of numbers. For given my rejection of infinitely many concrete objects, facts about primitive modality, and the like, I think that if there didn't fundamentally exist natural numbers then arithmetic discourse would be wildly indeterminate. And if it were wildly indeterminate, laying down the outscoping truth conditions would not eliminate that indeterminacy. So the mere existence of the outscoping conditions does not draw me to trivialism. Even though I'm open in general to discourses that don't match reality's structure, I'm not open to it in this case, for lack of an adequate set of facts for arithmetic discourse to pick out.

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