

## Rayo's Metametaphysics

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Agustín Rayo's *The Construction of Logical Space* is an exhilarating read. The book is if anything on the short side, and yet Rayo not only lays out his own distinctive metametaphysical view but also applies it fruitfully to disputes concerning ontology and concerning modality. One thing that makes the book especially interesting for me personally is that I find myself very much in sympathy with the kind of metametaphysical view that Rayo defends. What follows is focused on criticism. But the criticism is largely focused on execution. I am myself unsure how serious the criticism is, even should everything I say be justified.

### 1. Metaphysicalism and compositionism

Rayo characterizes his own metaontological view by first describing what a certain kind of opponent, the *metaphysicist*, would say, and indicating how he thinks the metaphysicist goes wrong. The metaphysicist holds that for an atomic sentence of the form to be true, there needs to be the right "kind of correspondence" between "the logical form of a sentence and the metaphysical structure of reality".<sup>1</sup> More specifically, for an atomic sentence to be true, the singular terms and the predicate must refer to objects and a property such that these objects and this property are carved up by the world's metaphysical structure. (I will later problematize what exactly this talk of metaphysical structure might come to.)

One way to reject this metaphysicalism might be to just reject the claim that there is 'metaphysical structure' of the kind postulated.<sup>2</sup> However, while Rayo himself is skeptical of metaphysical structure, he rejects metaphysicalism for a different reason. He says that whether or not there is metaphysical structure, metaphysicalism incorporates *bad philosophy of language*: the truth of an atomic sentence does not require what the metaphysicist holds that it requires. Rayo focuses on certain 'just is'-statements, like

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<sup>1</sup>Rayo, 6. All references to Rayo are to *Construction of Logical Space*, except where specified.

<sup>2</sup>Metaphysicalism as I have stated it in the text here is actually consistent with there being no metaphysical structure: the metaphysicist can just say that if there is no metaphysical structure, then no atomic sentences are true. That is certainly very radical, but not *impossible* to hold. However, Rayo's official characterization of metaphysicalism includes the extra clause that there is metaphysical structure.

(NUMBER) For the number of dinosaurs to be *Zero just is* for there to be no dinosaurs.  
(TABLE) For there to be a table *just is* for there to be some things arranged tablewise.  
(DIRECTION) For the direction of line a to be identical to the direction of line b *just is* for lines a and b to be parallel.<sup>3</sup>

What flank the ‘just is’-statements impose the same requirement on the world, in Rayo’s terminology, and the ‘just is’-statement as a whole does not impose any requirement on the world. (Rayo has a longer list of ‘just is’ statements. But I will refer only to these ones in my discussion. What makes them more interesting, and controversial, than e.g. the statement that for something to be water just is for it to be H<sub>2</sub>O—to mention just one other of Rayo’s examples—is that what flank the ‘just is’ in the statements I will focus on have importantly different forms.)

The metaphysicist cannot accept any ‘just is’-statements like the ones mentioned, Rayo says, for she must say that what flank the ‘just is’ differ in structure, they demand different things of reality. So if some such ‘just is’-statements are true, metaphysicalism is false. But Rayo thinks ordinary speakers just do not care about metaphysical structure, and if they do not, then the meanings of what flank the ‘just is’ are such as to in principle allow for the truth of ‘just is’-statements like the ones mentioned.<sup>4</sup>

Having dismissed metaphysicalism, Rayo introduces his favored alternative view, what he calls *compositionalism*. Compositionalism is the conjunction of two theses, *singulartermhood* and *reference*.

*Singulartermhood*. It is sufficient for an expression *t* to count as a singular term that (i) *t* behaves *syntactically* like a singular term: it generates grammatical strings when placed in the right sorts of syntactic contexts, (ii) truth-conditions have been assigned to every sentence involving *t* that one wishes to make available to use, (iii) this assignment of truth-conditions is such as to respect any inferential connections that are guaranteed by the *logical forms* of the sentences.

*Reference*. A singular term *t* satisfies conditions 1-3 above has a *referent* if: the world is such as to satisfy the truth-conditions that have been associated with the sentence ‘ $\exists x(x=t)$ ’ (or an inferential analogue thereof).<sup>5</sup>

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<sup>3</sup>The first two examples are from Rayo, 1; the third example in effect comes up in discussion in the book, e.g. around 15-8.

<sup>4</sup>What flank ‘just is’-statements are not strictly sentences, but I think it would be pedantic to worry about that. I might also add that an obvious possible strategy for a metaphysicist is to deny that “the number of dinosaurs is Zero”, etc., are atomic. But even if that might be plausible in some cases I set that aside: it would not address the general worry.

<sup>5</sup>Rayo, 14f. I have shortened the characterizations somewhat.

The seeming action is in *Reference*. For surely a metaphysicist needn't disagree with Rayo's claims about what it takes to be a singular term: any disagreement will more likely arise over what it takes for a singular term to refer. However, an immediate reaction to the *Reference* clause is that it is rather uninformative: on very many views what the *Reference* clauses says is sufficient for reference can be held to be sufficient for reference. More specifically, it is hard to see why metaphysicalism would have to be inconsistent with compositionism as defined. Metaphysicalism is only a thesis about what it takes for atomic sentences to be true, and compositionism does not directly relate to that. The metaphysicist could agree on *Reference*, but say that when there is nothing that carves at the joints for  $t$  to refer to, the world does not satisfy the truth-conditions associated with the sentence ' $\exists x(x=t)$ '.

But Rayo goes on to give an example (familiar from, e.g., Rosen 'Refutation of Nominalism (?)'):

...imagine the introduction of a new family of singular terms "the direction\* of  $a$ ", where  $a$  names a line. The only atomic sentences involving direction\*-terms one treats as well-formed are those of the form 'the direction\* of  $a =$  the direction\* of  $b$ ', but well-formed formulas are closed under negation, conjunction and existential quantification. A sentence  $\phi$  is said to have the same truth-conditions as its nominalization  $[\phi]^N$ , where nominalizations are defined as follows:

$[\text{"the direction* of } a = \text{the direction* of } b\text{"}]^N = \text{"}a \text{ is parallel to } b\text{"}$

$[\text{"}x_i \text{ is the direction* of } a\text{"}]^N = \text{"}z_i \text{ is parallel to } a\text{"}$

$[\text{"}x_i = x_j\text{"}]^N = \text{"}z_i \text{ is parallel to } z_j\text{"}$

$[\text{"}\exists x_i(\phi)\text{"}]^N = \text{"}\exists z_i([\phi]^N)\text{"}$ .

$[\text{"}\phi \wedge \psi\text{"}]^N = \text{the conjunction of } [\phi]^N \text{ and } [\psi]^N.$

$[\text{"}\neg \phi\text{"}]^N = \text{the negation of } [\phi]^N.$ <sup>6</sup>

Rayo's real point doesn't actually seem to be stated in the theses used to officially characterize compositionism. It rather has to do with how to understand the import of the *Reference* clause: what does it *take* for the world to satisfy the truth conditions associated with a sentence? Rayo thinks that once metaphysicalism is rejected, there is nothing that stands in the way of the world satisfying the truth conditions associated with direction\*-sentences: for once metaphysicalism is rejected, direction\*-sentences can share truth-conditions with sentences only about what is parallel with what. However, it still remains that to argue against metaphysicalism is only to argue against one possible source of resistance. I will return to this.

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<sup>6</sup>Rayo, 15f. Rayo uses corner quotes; I simplify and use ordinary quotes, for easier readability.

There are, I should add, potential problems regarding what Rayo’s compositionism says about the conditions for being a singular term. First, generally, there have been attempts at coming up with a syntactic criterion for being a singular term, but I think it is fair to say that the general verdict is that these attempts have not been successful.<sup>7</sup> Second, more specifically, consider the following passage from Turner (2010):

For any language with an existential quantifier  $\exists$ , we can define a new symbol that acts inferentially like a ‘bigger’ existential quantifier. Here’s how. First, pick a new symbol,  $\alpha$ . It will be a ‘quasi-name’: if we take a sentence with a name in it and replace that name with  $\alpha$ , we count the resulting expression as a sentence, too. Then, where R is any n-placed predicate of the language, apply the following definitions:

- (4) ‘ $R(\alpha, \dots, \alpha)$ ’ =<sub>df.</sub> ‘ $P \vee \sim P$ ’ where P is some sentence not containing  $\alpha$ ;
- (5) ‘ $R(t_1, \dots, t_n)$ ’ =<sub>df.</sub> ‘ $P \ \& \ \sim P$ ’, where P is some sentence not containing  $\alpha$  and some but not all of the  $t_i$ ’s are  $\alpha$ , and
- (6) ‘ $\exists^*F(x)$ ’ =<sub>df.</sub> ‘ $\exists xF(x) \vee F(\alpha)$ ’.

The first two definitions make  $\alpha$  act like a name assigned to a peculiar object — an object that satisfies all predicates, but (for polyadic ones) only in conjunction with itself. The third definition introduces a new expression ‘ $\exists^*$ ’ which acts like a quantifier that is substitutional with respect to  $\alpha$  but objectual otherwise.<sup>8</sup>

Focus on Turner’s purported name  $\alpha$ . On the face of it, at least, it satisfies a syntactic criterion for being a name. And on the face of it, Rayo will have to say that it refers—it satisfies (i)-(iii) above—and that there then is an object to which it refers. Does he, and should he, find this an acceptable consequence? If not, how does he get around having to accept that  $\alpha$  is a name, and one that refers?

## 2. Subtle platonism

Rayo’s ideas belong in a certain tradition within (meta)ontology. The tradition is that of defending, against opponents, the view that there are Fs, and doing so by—in some sense—deflating the issue of the existence of Fs. To present the general idea in terms like Rayo’s own: the theorist who says

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<sup>7</sup>Some of the relevant discussions are found in Dummett, *Frege: Philosophy of Language*; Wright, *Frege’s Conception*; Wetzel ‘Dummett’s Criteria’, Hale, ‘Singular Terms(1)’, ‘Singular Terms (2)’; and Brandom, *Making it Explicit*.

<sup>8</sup>Turner, ‘Ontological Pluralism’, 15. As Turner notes, the example he uses is similar to one used in Williamson ‘“Everything”’, 441-3.

there are no Fs thinks that there being Fs demands more of the world than it really does. Once we see (e.g.) that directions may just be directions\* and that the existence of parallel lines is sufficient for there to be directions\* given the characterization of directions\*, we see that there being directions need not demand of the world what those denying the existence of directions think it does, and it does not plausibly make this demand on the world. Ideas like these have been presented—with attention to different types of cases—by Michael Dummett, Crispin Wright and Bob Hale (who in turn attribute the idea to Frege), by positivists like Rudolf Carnap, and by quantifier variantists like Eli Hirsch. In the context of philosophy of mathematics, Rayo has himself introduced the apt label “subtle platonism” for ideas of this general kind.<sup>9</sup>

I wonder whether the differences between Rayo and other theorists who have defended similar views really are that significant. Or better: once one sets aside genuine differences on matters not strictly pertaining to metaontology, I don’t see significant differences. The metaontology—the view on the nature of metaphysical questions (as opposed to, e.g. views on epistemological matters)—is pretty much the same.

Carnap would have held that some positive ontological claims among the ones Rayo focuses on simply are analytic, and he deflated some questions about whether there are Fs by deeming some such claims as analytic. Rayo distances himself from Carnap by eschewing the notion of analyticity, and by eschewing the idea that the claims Carnap deemed analytic are properly classified as a priori. That is arguably a relevant difference. (Although I will later problematize some of what Rayo says in this connection.) However, it is by now a familiar point that one ought to distinguish between *metaphysical* and *epistemic* analyticity. (See primarily Boghossian, ‘Analyticity Reconsidered’, but also Tappenden ‘The Liar and Sorites Paradoxes’ and ‘Analytic Truth’.) The positivists offered both epistemic and metaphysical glosses on the notion of analyticity, but the glosses are hardly equivalent. For a sentence or proposition to be epistemically analytic is for it to be something one is justified in believing already on the basis of understanding it. For a sentence to be metaphysically analytic is for it to be true by virtue of meaning, and for a *proposition* to be analytic is for it to be vacuously true.<sup>10</sup> Boghossian rejects metaphysical analyticity and defends epistemic analyticity. Rayo wants nothing to do with the epistemological ideas associated with analyticity, and it is on this basis that he rejects the notion. But he can still be seen as picking up on the notion of metaphysical analyticity (for

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<sup>9</sup>The label is introduced Rayo, ‘Neo-Fregeanism Reconsidered’. For the neo-Fregean views, see e.g. Dummett, *Frege: Philosophy of Language*; Wright, *Frege’s Conception*; and Hale and Wright, *Reason’s Proper Study*. For Carnap’s views, see Carnap, ‘Empiricism, Semantics and Ontology’. For Hirsch’s views, see the essays collected in *Quantifier Variance and Realism*.

<sup>10</sup>Boghossian does not use the sentence/proposition distinction this way but it seems natural to do so in his framework: see Glüer, ‘Analyticity and Implicit Definition’, and Eklund, ‘Carnap’s Metaontology’.

propositions). A vacuously true proposition is one that, in Rayo's terminology, imposes no requirement on the world.

Turning to Hirsch, an argumentative strategy that Hirsch employs when considering skepticism of the claim that there are Fs is to (i) argue that there is a possible language where "there are Fs" comes out true, and then (ii) to argue—often by appeal to "charity"—that we speak a possible language like that. While Hirsch tends to focus on ordinary objects, the example of directions\* that Rayo relies on would serve Hirschean purposes in the case of philosophy of mathematics. Using this strategy, Hirsch could argue that there is a possible language where "there are directions" is true (perhaps a language where "there are directions" means what "there are directions\*" means in the example above) and then give a charity-based argument that we speak such a possible language. Rayo can be seen as mimicking Hirsch insofar as he relies on the direction\*-example.<sup>11</sup>

While there are similarities between Rayo's view and the views of Carnap and Hirsch, the most obvious connections are between Rayo's views and the views of neo-Fregean philosophers of mathematics. The neo-Fregeans centrally focus on abstraction principles, where the following are two famous examples:

The number of Fs = the number of Gs iff the Fs and the Gs are equinumerous

The direction of a = the direction of b iff a and b are parallel

The neo-Fregeans not only hold that these abstraction principles are (necessarily) true but also that the content of what flanks the left hand side is in some sense a recarving of the content of what flanks the right hand side. Saying that the sentences flanking the 'iff' require the same thing of the world – using the kind of terminology Rayo employs – does seem a natural gloss on the view. Rayo's direction\*-example is taken straight from Rosen, 'Refutation of Nominalism (?)', an article devoted to laying out and discussing neo-Fregeanism.

However, there are some differences worth noting. For example, the neo-Fregean's notion of content-recarving is such that for some but not all pairs of necessarily equivalent sentences S and S\*, S and S\* have the same content, but carved differently. If it is precisely when two sentences have the same content but it is carved differently that the sentences demand the same thing of the world, we have that not all necessarily equivalent sentences demand the same thing of the world. However, Rayo holds that "for the world to be such that P just is for the world to be such that Q" is true

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<sup>11</sup>Compare too Sider, 'Rayo's *The Construction of Logical Space*', fn13.

whenever P and Q are necessarily equivalent.<sup>12</sup> (Rayo's initial case for the view he defends relies on the intuitive plausibility of the 'just is' statements he focuses on. But then given that he develops his view some very unintuitive 'just is' statements are true as well. The tenor of the discussion is that the resulting view is to be defended by "theoretical" considerations. Maybe that works, but the initial argument pertaining to the "just is"-statements that Rayo focuses on turns out to have a different role than one might have expected.)

### 3. Straw man worries

One immediate concern with how Rayo sets things up is that his metaphysicalist may be a mere straw man.<sup>13</sup> Rayo provides no references to actual metaphysicalists, and one may think this is for the simple reason that there are not any. Rayo's discussion might have a point even if no one would cheerfully subscribe to metaphysicalism. It could in principle still be that metaphysicalism is the only real obstacle to subtle platonism: if those opposed to subtle platonism are not metaphysicalists they are just being unprincipled. I will return to this. But if there are no real metaphysicalists, that provides some reason to doubt Rayo's diagnosis.

A particular reason to worry that the metaphysicalist is just a straw man is provided if we consider what "metaphysical structure" might mean in the characterization of metaphysicalism. Compare two different ways of precisifying the notion. There's first the Lewis-Sider way: there are certain meanings which are natural or fundamental; 'carve at the joints'.<sup>14</sup> It is those meanings that carve at the joints that together constitute the world's metaphysical structure. Second, one can understand the talk of metaphysical structure just to mean that facts have constituents, and that facts with different constituents are distinct. Clearly these are different ideas. Which notion of metaphysical structure can be at play in the characterization of metaphysicalism? If we take it to be the Lewis-Sider notion, metaphysicalism seems *really* odd. *Of course* "The emerald is grue" can be *true* even if 'grue' fails to carve at the joints. Who would deny that? Turn then instead to the possibility that the notion of metaphysical structure at issue is the second. How then are we to understand metaphysicalism? As I now will argue, problems arise we try to work this through. Either there is fine-grained structure of the kind gestured toward or there is not. Rayo does not want to rely on denial of metaphysical structure, so he would not want to rely on there not being fine-grained structure. So suppose there is fine-grained structure. But then take an atomic sentence likely to be disputed; say, "0 is a number". Rayo wants to say it is true and that there is the number 0 and the property of being a number, while his opponent would want to say that since '0' fails to refer, it is

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<sup>12</sup>Rayo, 53.

<sup>13</sup>Compare here too the discussion of that worry in Sider, 'Rayo's *Construction*'.

<sup>14</sup>See e.g. Lewis, 'New Work', and Sider, 'Ontological Pluralism'.

not true. There are two ways in which the sentence could be true. Either there is a fact  $\langle 0, \text{number} \rangle$  with structure corresponding to that of “0 is a number” and this fact makes “0 is a number” true or there no such fact, and it is a fact with different ‘structure’ that makes “0 is a number” true.<sup>15</sup> In the former case, what Rayo says about this case doesn’t differ from what the metaphysicist (as we think of her when “metaphysical structure” is understood the second way) says. So focus on the latter case. What Rayo is conceived of as holding is that (i) there are fine-grained facts, (ii) 0 exists, (iii) the property of being a number exists, (iv) “0 is a number” is true, but (v) yet there is no fine-grained fact  $\langle 0, \text{number} \rangle$ . To me the combination of views (i)-(v) seems distinctly odd. One can affirm (i)-(v) if one holds that only fundamental entities can be constituents of facts. But it does seem antithetical to Rayo’s view to rely on something like that.<sup>16</sup>

While Rayo does not discuss in any detail what “metaphysical structure” might mean, he does address the general worry that his metaphysicist is a mere straw man.<sup>17</sup> He offers the argument that the anti-metaphysicist compositionist has a special reason to be doubtful of the possibility of absolutely unrestricted quantification. The thought is that on her view, the notion of singular term is plausibly semantically indeterminate, because of her other commitments this is linked to indeterminacy in what there is, and such indeterminacy is incompatible with the absolutely unrestricted quantification at issue.<sup>18</sup> I am skeptical of Rayo’s argument for a number of reasons. First, when giving the argument, he does not really argue that the notion of singular term for the anti-metaphysicist is indeterminate; rather, what he in effect argues is that it is *unconstrained* (in the sense that the anti-metaphysicist as Rayo conceives of her is *liberal* about what gets to count as a singular term).<sup>19</sup> Second, even if Rayo’s argument that the anti-metaphysicist ought to be skeptical of absolute generality were convincing, he hardly successfully rebuts the accusation that the metaphysicist is a straw man. Even if belief in absolute generality were only tenable given metaphysicalism, that doesn’t show that actual believers actually are metaphysicists. Even if Rayo’s arguments were successful, the connection between absolute generality and metaphysicalism he would have displayed is highly non-obvious. (Compare: Suppose that it were persuasively argued that normative realism requires theism. That would not show that all normative realists really are theists, only that they have good reason to be theists.)

Even if there is no good reason to think many philosophers are metaphysicists, Rayo can still be right that a denial that Fs exist is only justified given metaphysicalism – and that would, of

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<sup>15</sup>I’ll use ‘ $\langle \dots \rangle$ ’ to indicate a fact and the constituents thereof.

<sup>16</sup>Thanks to Ross Cameron for discussion. Sider, ‘Rayo’s *Construction*’, fn3, also discusses how best to understand Rayo’s talk of metaphysical structure, and presents a different suggestion on Rayo’s behalf.

<sup>17</sup>Rayo, 27-33; see especially 31-33.

<sup>18</sup>Rayo, 28.

<sup>19</sup>Rayo, 32.



course, be a highly significant point, especially when conjoined with considerations casting doubt on metaphysicalism. But consider someone who, when faced with what Rayo argues, says “I don’t think numbers exist. And it is not just that number talk does not line up with the world’s metaphysical structure, whatever that means. No, what I hold is that simply and plainly, numbers don’t exist”. Rayo can in response to this speech advert to his directions\*-example and the strategy behind it. He can argue that there is a notion of number\* such that the ‘just is’-statement for numbers is true given that number-talk means what number\*-talk means, and that facts about our use of language (that we cheerfully say things that appear to require for their truth that there are numbers) together with plausible principles of metasemantics yields that number-talk just amounts to number\*-talk.

On one way of developing something like Rayo’s view, it is crucial for the case for the existence of Fs that one can introduce a notion of being F\* by stipulations analogous to those for direction\* (and one then argues that Fs are F\*s, analogously to how one would argue that directions are directions\*). But on another way of developing a view in this ballpark, the appeal to examples like that of directions\* plays a much more modest role: the examples serve as illustrations and nothing more. It is, as we will see, absolutely clear that Rayo’s own line is the latter, but let me anyway discuss the two possibilities separately.

If Rayo were to take the first line, then the natural response is to ask about the relation between direction-talk and direction\*-talk. How plausible is it that directions are directions\*, even if there are directions\*? And there is some well-trodden ground here. For example, the Julius Caesar problem is potentially relevant.<sup>20</sup> The stipulations governing directions\* do not decide whether Julius Caesar is a direction\*. One might think that this immediately rules out that directions=directions\*: for surely Julius Caesar is no direction. Problems in this vicinity have been much discussed, and there are many possible strategies for Rayo to adopt. Rayo actually discusses this matter, and what he says is that it is only from a metaphysicalist point of view that it is reasonable to demand that identity sentences generally have well-defined truth-conditions. A compositionalist can happily say that some identity sentences, even ones where the identity sign is flanked by meaningful singular terms, lack well-defined truth-conditions. So where ‘d’ names a direction, the compositionalist can say that “Julius Caesar=d” does not have a well-defined truth-condition.<sup>21</sup> However, even if only the metaphysicalist has general reasons for demanding that all identity sentences have well-defined truth-conditions, it is compatible with compositionism to insist that *as a matter of fact* sentences like “Julius Caesar=d” have well-defined truth-conditions. And it does seem very natural to say that the meaning

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<sup>20</sup>What has come to be known as the Julius Caesar was introduced in Frege, *Grundlagen*. For some recent important discussions, see Hale and Wright “To Bury Caesar...” in Hale and Wright, *Reason’s Proper Study*, and MacBride, ‘Julius Caesar Objection’.

<sup>21</sup>Rayo, 80f.

of direction-talk is such that all those sentences are false. But then the problem stands: directions are not directions\*.

I said above that it is clear that Rayo adopts the second of the two strategies briefly described. The reason is that he advertises his reliance on the following general “result”:

If an axiomatic mathematical theory  $T$  is internally coherent...then there is an assignment of truth-conditions to sentences in the language of  $T$  such that: (1) the axioms of  $T$  are counted as trivially true, and (2) the compositionalist’s conditions of singulartermhood and reference are all satisfied.<sup>22</sup>

The proof of the result is as follows:

The reason internal coherence is sufficient for success is that it guarantees the availability of an assignment of truth-conditions with two properties: (a) it counts the axioms as necessarily true; and (b) it allows for genuine singular terms, by satisfying Condition 3 of [compositionism]. The assignment in question is as follows: Let  $L^{new}$  be the fragment of the language in which all the variables and non-logical constants are of the new sort. Then: (1) a sentence of  $L^{new}$  is taken to have trivial truth-conditions if it is a logical consequence of the axioms; (2) a sentence of  $L^{new}$  is taken to have trivially unsatisfiable truth-conditions if its negation is a logical consequence of the axioms; and (3) other sentences of  $L^{new}$  are taken to lack well-defined truth-conditions.<sup>23</sup>

Since Rayo relies on this sort of argument, he is not in fact heavily relying on stipulations like those for direction\*. But I have some worries about the argument. Rayo’s claim is that “the reason internal coherence is sufficient for success is that it guarantees the availability of” an assignment of truth-conditions with properties (a) and (b). And he goes on to describe what such an assignment is like. But what might availability come to, such that the “availability” of an assignment like this given internal coherence yields that internal coherence is sufficient for success? To see that there is a problem here, consider two different things that the talk of an assignment’s being available might mean. On one way of understanding this talk, what it means is roughly: such an assignment is a model of the theory. On another way of understanding it, it means: such an assignment is the correct assignment – the one that is faithful to what the theory means. No matter how we understand it, problems loom. Given the first understanding, Rayo is correct that such an assignment is available, but the claim does not entail what Rayo needs it to entail. Everyone agrees that consistent (coherent,

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<sup>22</sup>Rayo, 88.

<sup>23</sup>Rayo, 183.

conservative) theories have models; the question concerns whether a pure mathematical theory's satisfying the requirement suffices for it to be *true*. Turn then to the second understanding. Here my problem is different: with "available" understood this way, I don't see what Rayo's argument that the assignment is available is supposed to be. All he does is to outline a possible assignment of truth-conditions for sentences of the theory; I don't see any argument to the effect that this assignment is correct.

#### 4. Alternative concepts

Let me lastly turn to a different issue, relating to what Rayo says about the epistemology of 'just is'-statements:

How should one decide which 'just is'-statements to accept? ... [T]he decision should be the result of a cost-benefit analysis. By accepting a 'just is'-statement one reduces the size of logical space. The *cost* of such a reduction is a decrease in the range of theoretical resources one has at one's disposal. ... The *benefit* of the reduction is that one is relieved from the need to answer certain questions. ... And the relevant questions can be very awkward indeed: they don't lend themselves to satisfying answers from the perspective of one's current theorizing, and extensions of one's theorizing that might deliver better answers seem *ad hoc*.

The resulting picture is one according to which scientific inquiry involves three interrelated tasks. First, one must identify a language that is suitable for one's theoretical needs. Second, one must decide which of the 'just is'-statements that can be expressed in the language to accept, and thereby form a working hypothesis about the contours of logical space. Finally, one must work towards reducing the regions of logical space where one thinks that actualized possibility might be located.<sup>24</sup>

Part of what Rayo is insisting that the question of which 'just is'-statements to accept is one that is to be addressed on, so to speak, holistic grounds. Questions of global theoretical virtues are at issue. Understood the right way, I think the holism to which Rayo gives voice may be accepted. But he also says some more specific things. He talks about which theoretical gaps to leave open, about reducing the size of logical space, and about hypotheses about the contours of logical space. I am more skeptical of this talk. Return to (DIRECTION),

(DIRECTION) For the direction of a to be identical with the direction of b just is for a and b to

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<sup>24</sup>Rayo, 37f.

be parallel.

On my view, there are two importantly different questions that can be asked about (DIRECTION): (a) is the sentence (DIRECTION) a true sentence of English (with ‘just is’ understood as Rayo understands it); (b) whatever the answer is to (a), ought we to use a concept of direction in such a way that (DIRECTION) comes out true, or in such a way that it comes out false? One can answer one question in the affirmative and the other in the negative. ‘Direction’ of English might be such that (DIRECTION) is false, but it could be more theoretically expedient to use a concept of direction such that when ‘direction’ expresses this concept, (DIRECTION) is true (and vice versa). Underlying how these questions are framed is the idea that there are different possible concepts of direction. Some concepts of direction are such that if ‘direction’ expresses them (DIRECTION) is true and if ‘direction’ expresses them (DIRECTION) is false. Maybe considerations that can be brought up under the heading of charity justify holding that there is some reason to think that the correct answer to (b) is also the correct answer to (a). But however that may be, (a) and (b) are different questions, admitting of different answers, and one should expect in the case of some pairs of questions relating to each other as (a) and (b) do, the questions have different answers.

Underlying what I have just said is that there are different possible concepts of directions, some of which rendering (DIRECTION) true and some of which rendering it false. If there are these different concepts of direction, then a decision to use “direction” in such a way that (DIRECTION) comes out true importantly does *not* amount to reducing the size of logical space. At most, it means that the – potentially difficult and awkward – questions we would be asking if we used “direction” so that (DIRECTION) is false are ones we won’t have the conceptual means to express. A theoretical decision that amounts to a genuine restriction of logical space would be a decision to the effect that there is no alternative concept of direction rendering (DIRECTION) false. But that is a different issue altogether. (Note that the question isn’t whether this other concept of direction is *non-empty*. Already if there is this other thing for “direction” to mean one can ask the difficult questions that cannot be asked if (DIRECTION) is true.)

As earlier mentioned, Rayo’s specific view is that there is a tight link between true ‘just is’-statements and metaphysical possibility. If necessarily P if and only if Q, then for it to be the case that P just is for it to be the case that Q, and vice versa. This is apt to make the suggestion that there are some direction-like entities, call them directions+, that do not verify (DIRECTION) sound rather odd: it would be a contingent matter whether parallel lines have identical directions+. But even if there is an oddity here, it is due to what is on the face of it a peculiar feature of Rayo’s outlook, his specific proposal concerning metaphysical possibility – something Rayo does not argue for at any length but simply presents as, precisely, a proposal. Moreover, when making his proposal, Rayo even

remarks that he uses it to fix *in tandem* the concepts of metaphysical possibility and of ‘just is’-statements that he is using: (“Neither of the two notions is being defined in terms of the other, but getting clear about how they are related is a way of shedding light on both”.<sup>25</sup>) But this means that one should not uncritically assume that Rayo uses the same concept of metaphysical possibility as others do. (Though I do find the relevant remark of Rayo’s dialectically problematic. Where the ‘just is’-statements he focuses on are on the face of it controversial, the corresponding claims of metaphysical necessity are on the face of it much less so—even if some would deny them too, because of denying the existence of the entities at issue. Then to suggest that the link to metaphysical necessity helps explain what the ‘just is’ talk comes to threatens to take away something that seemed distinctive about the outlook.)

## 5. Concluding remarks

In my discussion I have been concerned with a number of disparate worries. It might be useful to close by recapitulating them. One general theme has had to do with Rayo’s characterizations of metaphysicalism and compositionism. I don’t see that Rayo has made a case that other philosophers are committed to metaphysicalism, or that the rejection of metaphysicalism is sufficient for what he wants to say—it does not clear the way for acceptance of the relevant ‘just is’-statements in the way he indicates. And I don’t see that compositionism as formulated captures Rayo’s positive outlook. In fact, as stated it is fully compatible with metaphysicalism. In the last section I raised a different kind of worry. Where Rayo says that two theories have a disagreement about the *contours* about logical space, I don’t see that (for all he has said) anything of the sort is going on. Instead the theorists just make a decision about which of different concepts to employ; that is different.

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<sup>25</sup>Rayo, 50.

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