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Deflationary Nominalism's Commitment to Meinongianism

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Abstract

Deflationary nominalism is a novel view in the philosophy of mathematics on which there are mathematical statements, such as 'There are prime numbers' that are literally true despite the nonexistence of any mathematical objects. In this paper, I outline the deflationary nominalism of Azzouni, the most prominent contemporary defender of deflationary nominalism. I then object that it is committed to some form of Meinongianism. Because I believe that any view's commitment to Meinongianism constitutes a strong reason in favor of rejecting that view, I suggest that deflationary nominalism should be rejected. Finally, I conclude that realism about mathematical objects must be accepted if we are to understand true mathematical statements as being literally true.

0. Introduction

Where I understand a statement to be literally true if it is true without any need to appeal to a paraphrase of that statement, deflationary nominalism is the position that there are mathematical statements—such as 'There are prime numbers'—that are literally true, that truth is deflationary, and that mathematical objects do not exist. This view straightforwardly implies the paradoxical result that 'There are prime numbers' is literally true, but that prime numbers do not exist. Yet, the official stance of deflationary nominalists is that there are not, in any ontologically serious way, nonexistent objects. After outlining what deflationary nominalism is in further depth, I will object that it is committed to some form of Meinongianism. I then conclude that realism about mathematical objects must be accepted if we are to understand true mathematical statements as being literally true.

1. What is Deflationary Nominalism?

Azzouni, a prominent deflationary nominalist, states that, "the deflationary nominalist rejects Quine's criterion [of ontological commitment] and correspondence truth. The deflationary nominalist, thus, uses Platonic language freely; reference to and quantification over Platonic objects don't commit her to existence of them."[1] I will examine what deflationary nominalism is in a piecemeal manner.

1.1 Ontological Commitment

By denying that 'there is' is ontologically committing, deflationary nominalists are committed to the following: it could be literally true that

> ⌜ There are Fs ⌝ and yet *nothing* with any ontologically serious status is an F. For example, 'There are prime numbers' is literally true but yet no prime numbers exist.

On the Quinean view of ontological commitment, the qualification that there is no available paraphrase is important, as we often seem to say true statements like "There is a detective named 'Sherlock Holmes'" despite believing that Sherlock Holmes does not really exist; I take it that we believe some paraphrase that does not commit the speaker to the existence of Sherlock Holmes is available. And since this paraphrase does not commit us to the existence of Sherlock Holmes, someone who said, "There is a detective named 'Sherlock Holmes'" is not committed to the existence of Sherlock Holmes on the Quinean criterion of ontological commitment.

By rejecting this criterion of ontological commitment, deflationary nominalists can consistently claim that mathematical statements are literally true and yet there is no need to be ontologically committed to the being of mathematical objects in any sense at all. But why think it is false that "uses of 'there is' in the vernacular carry ontological commitment"?[2] Azzouni claims that the existence of true statements that quantify over nonexistent fictional characters entails that the Quinean criterion is mistaken. Consider, for example, the following apparently true statement: "Sherlock Holmes is a fictional detective." At least some such statements are, according to Azzouni, literally true—no adequate paraphrase is available for some statements that quantify over fictional characters.[3]

[1] Jody Azzouni. "Why Deflationary Nominalists Shouldn't Be Agnostics." *Philosophical Studies*, (2014): 1148.

[2] Jody Azzouni. *Deflating Existential Consequence: A Case for Nominalism*. New York: Oxford University Press, (2004): 62.

[3] Azzouni, "Deflating Existential Consequence," 67-71.

I may accept Azzouni's assumption that fictional objects do not exist, but I believe that there are adequate paraphrases for all apparently true statements that quantify over fictional characters. I, however, will not discuss this concern further in this paper.

Azzouni, realizing that one is bound to wonder what the correct criterion of ontological commitment is if Quine's is rejected, contends that we should accept mind and language independence as the criterion; this proposal amounts to holding that only things that we believe are psychologically and linguistically independent of us exist.[4] But fictional characters and mathematical objects, according to Azzouni, are ontologically dependent on our linguistic practices and so do not exist.[5]

According to Azzouni, mathematical objects are dependent on us because

> in pure mathematics…sheer postulation reigns: A mathematical subject with its accompanying posits can be created ex nihilo by simply writing down a set of axioms…[Furthermore,] sheer postulation (*in practice*) is restricted by one other factor: Mathematicians must find the resulting mathematics "interesting." But nothing else seems required of posits as they arise in pure mathematics; they're not even required to pay their way via applications to already established mathematical theories or to one or another branch of empirical science.[6]

These claims are certainly striking. According to Azzouni, mathematics is, in an important sense, made up by our linguistic practices like fiction is. He concludes that no mathematical objects exist. Discourse about mathematical objects becomes akin to talk about fictional entities; it turns out that "we can (and do) say true (and false) things about nonexistent beings of [both] sorts."[7] I myself am of the opinion that it is absurd for mathematical objects to be in any way ontologically dependent on human activity, but I shall not develop this concern further in this paper.

1.2 Deflationary Truth

A deflationary theory of truth is one that claims that the instances of either of the following two equivalence schemas yield everything there is to know about truth:

> (ES-sent) The statement 's' is true iff s.
> (ES-prop) The proposition that p is true iff p.

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[4] Azzouni. "Why Deflationary Nominalists Shouldn't Be Agnostics," 1149.
[5] Azzouni, "Deflating Existential Consequence," 112.
[6] Azzouni, "Deflating Existential Consequence," 127-128, his emphasis.
[7] Jody Azzouni. "Mathematical Fictions." In *Fiction and Art*, edited by Ananta Sukla, 63-78. Bloomsbury Publishing, (2015): 65.

Different deflationary theorists will also give different answers to the question as to whether the truth of the instances of the equivalence schema of choice—either (ES-sent) or (ES-prop)—are necessary or merely material equivalences.[8] I propose that the instances are necessary equivalences, as this position seems more plausible to me.

A deflationary notion of truth seems to cohere well with the claim that there are literally true statements such that the objects these statements quantify over do not exist. To see why, let us see how things stand for the deflationary nominalist if a correspondence theory of truth is correct.

Under the correspondence theory of truth, a truthbearer (statement or proposition) is true if it corresponds in some appropriate way to reality. A truthbearer T corresponds to reality just in case T accurately describes the way reality really is. So, the proposition that snow is white corresponds to reality but the proposition that the snow is fuchsia does not. I think we can assume, without loss of generalization, that correspondence is some relation between a truthbearer and a fact, where facts are somehow constituted of objects and properties; for example, the fact that snow is white is somehow constituted of snow and the property of whiteness.[9]

We are now in a position to see why, given her stance on mathematical truth and mathematical objects, it would be unwise for a deflationary nominalist to accept a correspondence theory of truth. Since we create a mathematical subject by merely positing some axioms, *all* mathematical doctrine, applied or unapplied, can be seen as true. This is the case even if mathematical systems are considered that contain…incompatible (e.g. the axiom of choice vs. the axiom of determinacy), simply because such systems can be isolated from one another by segregating them within different languages or at least using different terminology (e.g. "set" and "set*," where sets obey the axiom of choice and sets* obey the axiom of determinacy.)[10]

One problem that a correspondence theory of truth poses is that it seems that true mathematical statements must correspond to facts containing mathematical objects, which implies that mathematical objects exist. The deflationary nominalist might be able to get out this problem by insisting that the facts corresponding to true mathematical statements instead contain the linguistic acts involved in positing the relevant set of axioms; such facts do not contain mathematical objects.

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[8] Stoljar, Daniel. "The Deflationary Theory of Truth." Stanford Encyclopedia of Philosophy. August 28, 1997. Accessed November 25, 2015.
[9] Marian David. "The Correspondence Theory of Truth." Stanford Encyclopedia of Philosophy. May 10, 2002. Accessed November 25, 2015.
[10] Azzouni, "Deflating Existential Consequence," 48, his emphasis.

But it is unclear that the linguistic acts involved in positing the axioms of incompatible systems, in fact, use different languages or terminology; were we really *talking* about entirely different objects—sets and sets*—when positing the axioms of ZFC and ZFD (ZF plus the axiom of determinacy)? I do not find it plausible to think that, in actual practice, mathematicians distinguish between sets and sets*. In other words, I do not find it credible that the actual linguistic acts involved in positing axioms of incompatible systems used different languages or terminology. If such linguistic acts did not use different languages or terminology, then it would—for the deflationary nominalist—be both the case that the axioms of ZFC and ZFD are true; but this result implies a contradiction, since the axiom of choice and the axiom of determinacy are inconsistent. For the deflationary nominalist, incompatible systems must be separated from one another using different languages or terminology; deflationary theories of truth do not "prevent[ ] such a construal of mathematical doctrine."[11] So it seems that, as the name of their position seems to suggest, deflationary nominalists are committed to some deflationary theory of truth.

In any case, even if, perhaps by appealing to some form semantic externalism, the deflationary nominalist can motivate the claim that mathematicians mean something different by the word 'set' when working with ZFC than when working with ZFD, I will be content to observe that deflationary nominalism and deflationary theories of truth are natural allies.

1.3 Literal Truth

A purportedly distinctive advantage of deflationary nominalism, in comparison to other nominalist positions, is its taking true mathematical statements to be *literally* true.[12] The statements '2+2=4', 'There are infinitely many prime numbers', and 'ZFC does not entail the Continuum Hypothesis or its negation' are literally true. It may seem that some mathematical objects, such as the number 2 or the theory ZFC, must exist for these statements to be true. Recall, however, that according to Azzouni, these statements are not committed to the existence of any mathematical objects.

2. Meinongianism and Deflationary Nominalism

I shall now proceed to develop my objection to this new and interesting position. My main objection is that deflationary nominalism is committed to Meinongianism; Meinongianism is the position that there *really* are objects—of serious ontological status—that do not exist. I will say that an object "subsists" if it has being but does not exist. Hence, Meinongianism is the view that the set of subsisting objects is nonempty. It is hard to not suspect that the deflationary nominalist is a Meinongian of some sort

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[11] Azzouni, "Deflating Existential Consequence," 48.
[12] Azzouni, "Deflating Existential Consequence," 4.

when she claims that there are infinitely many prime numbers but no prime numbers exist.

Azzouni, however, rejects Meinongianism because he describes, "mathematical terms as referring to *nothing at all*."[13]   He denies there are nonexistent objects with any serious ontological status; that is, he believes that the set of subsisting objects is empty. 'There are prime numbers' is true despite the nonexistence and "non-subsistence" of prime numbers, according to Azzouni, because 'there is' is *completely* ontologically neutral. The issue, however, is whether or not the deflationary nominalist, given his other commitments, can consistently deny commitment to Meinongianism. I do not think that he can.

I think that a dilemma posed by Bueno and Zalta suggests that the deflationary nominalism entails Meinongianism.[14]   Either the numeral '2' refers or it does not. Assume '2' does refer. But reference is such that if any expression *e* refers at all, then *e* refers to something. Then there is some object, the number 2, referred to by the numeral '2'. Now, either 2 exists or it does not. The deflationary nominalist cannot accept that 2 exists; if 2 exists, then some mathematical object exists and nominalism is false. If 2 does not exist, then nominalism is saved, at least "in letter." However, '2' must refer to *something*—namely, 2. Therefore, 2 must have some being. However, 2, we are supposing, does not exist. So, 2 subsists. Hence, Meinongianism is true.

Perhaps, however, the deflationary nominalist will deny that '2' refers and instead maintain that '2' does not refer to *anything*—existing or subsisting—at all. If '2' does not refer to anything at all, however, then $\exists y(y=2)$ is false.[15]   This result contradicts the deflationary nominalist's claim to accept mathematical claims that are considered true as literally true. "After all, a mathematician could correctly infer that $\exists y(y=2)$ from the true premises that $\exists! y(1 < y < 3)$, $1 < 2$, and $2 < 3$."[16]   The deflationary nominalist, if she denies that '2' refers at all, seems committed to the absurd result that some apparently obviously true mathematical statements are, in fact, false.

Azzouni himself would deny that '2' refers. He claims that, "*no* mathematical terms refer."[17]   His suggested way out of the problem of how '$\exists y(y=2)$' could be true if '2' did not refer is to deny that "a statement that's true or false has to be about something

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[13] Azzouni, "Deflating Existential Consequence," 4-5.

[14] Otávio Bueno and Edward Zalta. "A Nominalist's Dilemma and Its Solution." *Philosophia Mathematica*, (2005): 297.

[15] If the deflationary nominalist claims that '$\exists y(y=2)$' is true because 2 subsists, then she thereby grants that I am right in believing that she is a Meinongian.

[16] Bueno and Zalta, "A Nominalist's Dilemma," 299.

[17] Azzouni, "Mathematical Fictions," 70.

that exists."[18] This proposal, however, seems to be nothing more than a restatement of a rejection of the Quinean criterion of ontological commitment; this is no explanation of how '∃y(y=2)' can be true without having '2' refer to any (existing or subsisting) object.

Bueno and Zalta themselves suggest that a deflationary nominalist could accept that '2' refers but that 2 has no being whatsoever by accepting a form of their object theory in which ordinary, concrete objects "exemplify," or instantiate, properties and abstract objects "encode" (and sometimes exemplify) properties. According to Bueno and Zalta's friendly amendment, "the number 2 (of PNT, say) becomes identified as nothing more than a reified pattern of talk (*i.e.*, Azzouni's posits) within the larger context of mathematical practice."[19] Bueno and Zalta suggest that the deflationary nominalist can take "mathematical objects [to be] no longer 'self-subsistent' and 'transcendental', but rather objectified patterns the existence of which depends on the activities of mathematicians."[20] So the idea is that '2' refers to something that is not ontologically dubious like the abstract numbers favored by platonists.

Azzouni himself might worry that, on this amendment of Bueno and Zalta's, numbers really will have mathematical properties.[21] According to Bueno and Zalta, however, we avoid being committed to the claim that 2 *really* has substantive properties by saying that 2 merely encodes mathematical properties such as being even and being greater than 1. On the other hand, the only properties that 2 exemplifies are ones that should be acceptable to the deflationary nominalist; such properties are exemplified by 2 in virtue of its being posits within the larger context of mathematical practice. The properties that 2 exemplifies include "not being a number, not being a mathematical object, not being concrete...[and] being an artifact of such-and-such linguistic practice."[22]

I, however, have three objections to a version of deflationary nominalism that accepts Bueno and Zalta's friendly amendment.

First, it seems that the deflationary nominalist is now forced to accept either the existence or subsistence of mathematical objects. '2' still refers to 2, even if there is a sense in which we "made up" the number 2. So, it seems the deflationary nominalist is forced to claim, for example, that all of the natural numbers have being of some sort.

Either she accepts that the numbers exist or she does not. If she accepts that they exist, she is not a nominalist; even if numbers are not as platonists conceive of them, a

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[18] Azzouni, "Mathematical Fictions," 71.
[19] Bueno and Zalta, "A Nominalist's Dilemma," 305.
[20] Bueno and Zalta, "A Nominalist's Dilemma," 304.
[21] Bueno and Zalta, "A Nominalist's Dilemma," 304.
[22] Bueno and Zalta, "A Nominalist's Dilemma," 305.

number is a number. If she refuses to accept their existence, then I do not see how she avoids commitment to the being—the subsistence—of nonexistent objects like 2. After all, '2' has to refer to something according to Bueno and Zalta's friendly amendment. So, this path seems to lead the deflationary nominalist into accepting Meinongianism. Hence, if she accepts Bueno and Zalta's friendly amendment, the deflationary nominalist either gives up her nominalism or is stuck with Meinongianism.

My second objection concerns the implications of a comprehension principle for abstract objects that is part of the object theory that Bueno and Zalta suggest that the deflationary nominalist accept. The comprehension principle for abstract objects, where any object y is abstract if $\ulcorner A!y \urcorner$ is true and Φ contains no free x's, is as follows:
(A) $\exists x(A!x \wedge \forall F(xF \Leftrightarrow \Phi))$

"Intuitively, given any expressible condition on properties Φ, (A) asserts that there is an abstract object that encodes just the properties satisfying the condition."[23]

I have two critical remarks to make on such abstract objects. First, (A) implies that there are uncountably many abstract objects; for example, for any real number r, there some abstract object that encodes the property of having the mass of exactly r kilograms. I suspect that the deflationary *nominalist* would not be a fan of such a profligate ontology of abstract objects. Second, as Bueno himself observes, "if we consider the subsisting objects as those that are abstract, and if we take only concrete objects as existing, the resulting picture ideologically is not significantly different from the one favored by the deflationary nominalist."[24] Accepting Bueno and Zalta's object theory just seems to lead naturally to some form of Meinongianism.

My third objection is perhaps an obvious one: the notion of an object's encoding properties, as opposed to exemplifying or instantiating them, seems mysterious. I just do not really know what to make of encoding properties as opposed to exemplifying them. So it is unsatisfying that, as Berto observes, "the distinction between exemplification and encoding is taken as primitive."[25] Allow me to summarize the dialectic of this section. Following Bueno and Zalta, I argue that deflationary nominalism faces some serious problem whether or not '2' refers to anything at all. I then consider Azzouni's reasons for denying that '2' refers at all and then remark that he has provided no answer to the problem posed by the horn of the dilemma on which '2' does not refer. I then engage in a lengthy discussion of Bueno and Zalta's friendly amendment, on which '2' does refer, to deflationary nominalism and why I believe that

[23] Bueno and Zalta, "A Nominalist's Dilemma," 300-01.
[24] Otávio Bueno. "Nominalism in the Philosophy of Mathematics." Stanford Encyclopedia of Philosophy. September 16, 2013. Accessed November 25, 2015.
[25] Francesco Berto. *Existence as a Real Property: the Ontology of Meinongianism.* Dordrecht: Springer (2012): 129.

it is a rather costly amendment to accept. My overall worry is that it seems dubious that a deflationary nominalist can consistently deny the existence of mathematical objects like numbers without accepting Meinongianism. And I consider a view's commitment to Meinongianism to constitute a strong reason to reject that view.

3. Conclusion

I have objected to deflationary nominalism on the grounds that it is committed to Meinongianism. One significant upshot of rejecting deflationary nominalism is that realism about mathematical objects becomes more appealing. Realists about mathematical objects can take mathematical statements to be literally true. As deflationary nominalism seems to be what you get when you combine nominalism with the thesis that true mathematical statements are literally true, it seems dubious that nominalists can take mathematical discourse literally. As a result, it seems that a distinctive theoretical advantage of realism over nominalism is its ability to take mathematical discourse literally. Some philosophers will consider this to be a small advantage and others will consider this to be a substantial advantage. But any advantage is still an advantage.

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