



## Fictionalism versus deflationism: a new look

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**Abstract** In the recent literature there has been some debate between advocates of deflationist and fictionalist positions in metaontology. The purpose of this paper is to advance the debate by reconsidering one objection presented by Amie Thomasson against fictionalist strategies in metaontology. The objection can be reconstructed in the following way. Fictionalists need to distinguish between the literal and the real content of sentences belonging to certain areas of discourse. In order to make that distinction, they need to assign different truth-conditions to the real and the literal content. But it is hard to see what more is required for the literal content to be true than for the real content to be true. So, fictionalism is an unsatisfactory position. Here I offer a novel reply to Thomasson's challenge. I argue that the literal and the real content need not be distinguished in terms of their truth-conditions; rather, they can be distinguished in terms of their different subject-matters, leaving it open whether their truth-conditions coincide or not. I explain how replying to Thomasson's objection is crucial for deepening our understanding of fictionalist strategies in metaontology.

**Keywords** Fictionalism · Ontological deflationism · Stephen Yablo · Amie Thomasson

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## 1 Introduction

The debate between platonists and nominalists in the philosophy of mathematics concerns the existence of abstract mathematical objects such as numbers and sets. Platonists argue that they exist, nominalists argue that they don't exist.

One could wonder why the existence of numbers is subject to debate. Consider the argument:

- (1) The number of dragons = 0, therefore:
- (2) there are numbers (there is at least one number, namely 0).

The premise of the argument (1) looks like an uncontroversial claim and the conclusion (2) follows by existential generalization from (1). So, why can't we settle the debate about the existence of numbers by appealing to such a simple argument?

The version of *hermeneutic fictionalism* developed by Yablo (2001, 2002, 2005, 2010) is an answer to the question why the felt-truth of claims like (1) does not settle the issue of the existence of numbers.<sup>1</sup> The real content of a typical utterance of a sentence like (1) is, according to hermeneutic fictionalists, different from its literal content (also called the “full” content of the sentence). The literal content of (1) is that there are no dragons and there is a number, the number 0, that counts how many dragons there are. The real content of (1) is that there are no dragons. The literal content of (1) entails the existence of the number 0, whereas its real content does not: the real content of (1) is that there are no dragons and that is what ordinary speakers assert when uttering (1). (1) sounds uncontroversial because its real content is uncontroversial; but the real content of (1) does not entail (2)—only the literal content does.

Recently, Amie Thomasson has challenged the hermeneutic fictionalist's distinction between real and literal content. Thomasson contends that fictionalists incur a certain “argumentative debt”: they ought to make sense of the idea that “*there is something more* it would take for the ontological claim [i.e. the literal content] to be *literally* true than for the undisputed claim [i.e. the real content] to be true” (Thomasson 2013, p. 1039).

The objection is put forward in the context of a defense of ontological deflationism, a meta-ontological account alternative to fictionalism, which accepts ‘easy’ arguments for the existence of numbers. Easy arguments for the existence of numbers add one step to our argument 1–2.

- (0) There are no dragons, therefore
- (1) the number of dragons = 0, therefore
- (2) there are numbers (i.e. there is at least one number, namely 0).

The passage from (0) to (1) is justified by appeal to a rule that allows us to transform claims of the form “there are  $n$  Fs” into claims of the form “the number of the Fs is

<sup>1</sup> Here I will focus on fictionalist accounts of number-talk. Fictionalist strategies can also be applied to other areas of discourse, like property-talk, proposition-talk, etc. Similarly, deflationists have proposed ‘easy’ arguments for the existence of those allegedly problematic entities.

N". Rules of this kind are called transformation rules. They should be accepted by competent speakers of English because they are "rules of use that introduce the new terms to our vocabulary, just as legal definitions may introduce technical terms for (legal) marriage" (Thomasson 2013, p. 1036). According to the deflationist, someone accepting 0 but rejecting 1 displays a lack of competence in the use of the expression 'the number of' (see Contessa 2016, p. 764).

In this paper I reply to Thomasson's objection, showing how the fictionalist can distinguish between literal and real content without committing herself to the view that the literal content is a stronger proposition than the real content. I also argue that my discussion of Thomasson's objection helps us deepening our understanding of fictionalist accounts of mathematical discourse.

I proceed as follows: Sect. 1 introduces fictionalist accounts of mathematical discourse; Sects. 2 and 3 review Thomasson's objection and some of the existing proposals for answering her challenge; in Sect. 4 I develop my novel reply to Thomasson's challenge. In Sect. 5 I consider a possible worry about my strategy and reply to it and in Sect. 6 I explain how my reply to Thomasson's objection helps to deepen our understanding of fictionalist accounts of mathematics.

## 2 Hermeneutic fictionalism

Hermeneutic fictionalism is presented by Yablo (2010, p. 3) as a thesis about the content of typical utterances of applied mathematical sentences:

(HF) In a typical utterance of a mathematical sentence  $S$ , speakers do not assert the full content of  $S$ ,  $|S|$ , but only its concrete content  $\|S\|$ .

The concrete content of  $\|S\|$  is defined in this way (Yablo 2010, p. 6):

(Concrete-Content)  $\|S\|$  is the proposition true in a world  $w$  iff  $S$  is true in a world  $w^*$  that is concretely indiscernible from  $w$ .

In the case where  $S = \text{"#dragons} = 0\text{"}$  the full content of  $S$  is that there is a number numbering how many dragons there are and that number is 0. If  $w$  is a world in which there are no dragons and no numbers, the full content of  $S$ ,  $|S|$ , is not true in  $w$ , given that there are no numbers in  $w$ . Still,  $\|S\|$  is arguably true in  $w$ : on reasonable assumptions, there is a possible world  $w^*$  that is concretely indiscernible from  $w$  and has numbers in it. In  $w^*$  there are no dragons and there is a number counting how many dragons are present in  $w^*$ : hence, in  $w^*$ ,  $\text{"#dragons} = 0\text{"}$  is true in  $w^*$ . Given that  $S$  is true in  $w^*$  and that  $w^*$  is concretely indiscernible from  $w$ ,  $\|S\|$  is true in  $w$ .

(HF) vindicates the feeling that what is asserted by an ordinary utterance of a sentence like "The number of dragons = 0" is uncontroversially true. The content of an ordinary utterance of "#dragons = 0" is, according to hermeneutic fictionalism, that there are no dragons, which is indeed an undisputed claim. (HF) also vindicates the feeling that the question whether there are numbers is not settled by our recognition that in ordinary circumstances speakers make a true claim when uttering a sentence like "#dragons = 0". What is recognized as undisputed is that

there are no dragons. The hermeneutic fictionalist maintains that from the fact that there are no dragons it does not follow that numbers exist. The hermeneutic fictionalist admits that the existence of numbers would follow from the truth of the full content of a sentence like “#dragons = 0”. But whether the full content of a sentence like that is true is as controversial as the existence of numbers.

Summing up: according to hermeneutic fictionalism, the felt truth of ordinary assertive utterances of applied mathematical sentences is due to the fact that their real content is indeed uncontroversially true. This content, though, does not entail that numbers exist. Hence, it is not inconsistent to assert that “#dragons = 0” but refuse to assert that there are numbers.

### 3 Thomasson’s critique

The heart of (HF) is the distinction between literal and real content of applied mathematical sentences. There is a sense in which it can be said that according to (HF) speakers are committed only to the real content of typical utterances of mathematical sentences: according to (HF) the real content is what is really asserted whereas the literal content is what is quasi-asserted or, to use an older terminology, “put forward in a make-believe spirit” (Yablo 2001). In this sense, Thomasson is right in claiming that, for (HF) to make sense:

there must be a difference between what we are committed to in merely pretending that P, and what we would be committed to in really asserting that P (p. 1034)

I presented the real and the literal content of S as propositions, conceived as sets of possible worlds. For the two sets of worlds to be different, there must be one world belonging to one set but not to the other. Indeed, in the example discussed in the previous section, I claimed that there are worlds in which  $\|S\|$  is true but  $\|S\|$  is not—worlds in which there are no dragons and no numbers, “nominalistic worlds”, as I am going to call them.

This invites an objection: which guarantee do we have that nominalistic worlds are really acceptable? Perhaps, as a matter of metaphysical necessity, for the number of dragons to be zero *just is* for there to be no dragons (Rayo 2013). If this were the case, nominalistic worlds would be metaphysically impossible. Another reason why nominalistic worlds could turn out to be impossible is the one advocated by Thomasson: perhaps “there are no dragons” analytically entails “the number of dragons is zero”, in the same way as “there is an unmarried man” entails “there is a bachelor”.

If the possibility of distinguishing between real and literal content hinges upon the legitimacy of assuming nominalistic worlds (worlds in which  $\|S\|$  is true but  $\|S\|$  is not) it seems that the fictionalist incurs a

daunting argumentative debt [...] he must hold that there is *something more it would take* for the ontological claim to be *literally* true than for the undisputed claim to be true, or else we cannot make sense of the idea that one can be

committed to the real content without being committed to the literal content. (Thomasson 2013, p. 1039)

Thomasson's challenge to fictionalism is composed of two demands, which are better presented as separate challenges:

- (CH1) the fictionalist should explain what is the difference between the real and the literal content of S;
- (CH2) the fictionalist should explain the difference between a world in which the literal content of S is true and a world in which the real content of S is true but its literal content is not.

I am going to argue that fictionalists can answer CH1 without answering CH2, but before coming to that it is worth examining attempts to answer both challenges at once.

#### 4 Standard replies to Thomasson's critique

One reply to Thomasson's critique is that the fictionalist *can* point out what more is required for the truth of the literal content beyond the truth of the real content: the existence of numbers. According to this line of response, in order for "The number of dragons is zero" to be true in a world *w* two conditions must be met: (i) there must be no dragons in *w*; (ii) there must be numbers in *w*. Worlds in which  $\|S\|$  is true, but  $|S|$  is not, satisfy the first requirement, but not the second.

The fictionalist can simply reply that what it would take for there to *really* be numbers is simply for there to be numbers—mind-independent, non-spatiotemporally located, causally inert abstract objects that make arithmetical truths true. (Contessa 2016, p. 771)

In a similar vein, Yablo (2014b) notes that there might well be no other way to specify the extra condition that a world must meet in order to make the full content of S true than to simply say that it has to contain numbers.

Contessa also mentions one reason to hold that (i) cannot entail (ii): "Hume's Dictum—i.e. the widely accepted metaphysical principle according to which there are no necessary connections between distinct existences" (Contessa (2016), fn. 4).<sup>2</sup>

Thomasson (2016) replies that according to her favourite account (ontological deflationism), the existence of numbers is not an extra condition, given that the rule for the use of number terms allows us to transform the claim "there are *n* Fs" into the claim "the number of the Fs is *N*", which in turn entails the existence of numbers. So, on the deflationist account, every world satisfying condition (i) also satisfies (ii). True, (ii) might not be a logical consequence of (i), but still it follows

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<sup>2</sup> Contessa is considering the case where  $S =$  "There are three apples on the table", but a similar point can be applied also to our example.

analytically from it. A world without dragons and without numbers is absurd for the same reason why a world with an unmarried man but without a bachelor is absurd.

It is difficult to adjudicate the dialectic here. Thomasson challenges the fictionalist to distinguish worlds in which only  $\|S\|$ , but not  $|S|$ , is true; if the fictionalist gives the obvious reply, that what makes a difference is the existence of numbers, the reply is rejected for being incompatible with the deflationist account. But this only shows that the fictionalist's reply is unacceptable for the deflationist. It does not show that it is unacceptable for somebody unpersuaded by the deflationist account. In other words, it is difficult to say who is begging the question here: in order to answer the challenge posed by the deflationist, the fictionalist seems to presuppose the incorrectness of the deflationist account and in order to reject the fictionalist reply the deflationist seems to presuppose the correctness of her account.<sup>3</sup>

I want to propose a way out of this argumentative *impasse*. What is important for the fictionalist is to distinguish the literal and the real content; this need not be done by specifying worlds in which one is true but the other is not. In Sect. 2 I distinguished two elements in Thomasson's challenge to fictionalism:

(CH1) the fictionalist should explain what is the difference between the real and the literal content of  $S$ ;

(CH2) the fictionalist should explain the difference between a world in which the literal content of  $S$  is true and a world in which the real content of  $S$  is true but its literal content is not.

CH1 is a reasonable demand: if fictionalists want to appeal to a distinction between real and literal content, they should make that distinction intelligible. But fictionalists do not need to answer CH2 in order to answer CH1. It seems that sentences can have different contents even if they are true at the same worlds: "Water =  $H_2O$ " and " $7 + 5 = 12$ " are both true at the same worlds (all the worlds), yet their content is different; so there seems to be room for making distinctions between contents that are truth-conditionally equivalent.

Of course, this requires a conception of contents in which contents are not propositions, i.e. sets of possible worlds. In the following, I will present a way of conceiving the literal and the real content as *directed* propositions, i.e. propositions coupled with a subject matter. This allows us to distinguish the literal and the real content in terms of their subject matter rather than in terms of their truth conditions.

<sup>3</sup> For the complaint that the deflationist is begging the question here, see Contessa (2016, pp. 768–769): "if anyone is begging the question here, it seems to be the deflationist, who claims that [...] [sentences like "there are three apples on the table"] already carry a commitment to numbers despite the fact that all other parties to this debate, including heavy-duty realists, see it otherwise and despite the fact that the deflationist herself has not given us any plausible, non-circular reason to think so."

## 5 A different reply

I am going to propose a different reply to Thomasson's critique. The chief virtue of this reply is that it does not beg the question against the deflationist: this reply to Thomasson's challenge would work even if the deflationist account of mathematical discourse were correct.

Let me illustrate the general idea before getting into the details. Suppose I am interested in three issues:

- (1) Whether there are any dragons.
- (2) Whether there are numbers.
- (3) Whether 'easy' arguments for the existence of numbers work.

The core of my reply to Thomasson is that (1), (2) and (3) are different issues, different questions, which can be addressed independently. The difference between asserting the literal and the real content of a sentence like "the number of dragons is zero" is that when we assert the real content of that sentence we only address issue (1), leaving issues (2) and (3) open, whereas when we assert the literal content we also address issue (2) (and perhaps 3). *The difference between the literal and the real content is a difference in the issues they address or target.*

This reply does not prejudicate the possibility of a positive answer to issue (3) and hence (2), and in this sense it is deflationist-friendly. The reply just distinguishes the topics, or subject matters, of our assertive utterances.

To see the point, consider the situation in which you want to remain neutral about the existence of numbers or the deflationist–fictionalist dispute about what follows analytically from what, but are willing to commit yourself to the claim that there are no dragons. It should be possible to say something that addresses only issue (1) and not issue (2) and (3).

Similarly, it should be possible to discuss whether a male individual is married or not without thereby discussing the tougher question of which inferences are allowed by *our* linguistic rules.

The latter question *is* tough, because sometimes it can be difficult to determine which language we are actually speaking: whether the Thomassonian language in which there is an analytic entailment between "there are  $n$  Fs" and "the number of Fs is  $N$ " or the Fieldian language (Field 1984) in which there is no such entailment (see Yablo 2014b, fn. 36).

True, analytical entailments are "*supposed* to reflect rules of use that introduce the new terms to our vocabulary" (Thomasson 2013, p. 1037, italics mine), but this does not mean that they make "the move from the uncontroversial claim to the transformed claim truly trivial" (Thomasson 2013, p. 1037). Analytical implications should not be billed as trivial implications, because even though analytical implications are "*supposed* to reflect rules of use that introduce the new terms to our vocabulary" whether they *do* "reflect the rules of use of *our* vocabulary" might be disputed for many reasons. One was mentioned before: to the extent that it is unclear what language we are speaking, it might be unclear which are the correct rules of use of *our* vocabulary.

Another reason might be the possibility of internal conflict between different rules for the use of the word “number”.<sup>4</sup> Let me illustrate one way this could happen. Numbers are taken by Thomasson as the referents of singular terms introduced by a transformation rule that allow us to infer “the number of the Fs is N” from “there are n Fs”. Some follow Hilbert in taking consistency as the criterion for truth and existence in mathematics. According to this account, one rule for the use of the word “number” is that “numbers exist” is true if and only if our standard arithmetical theory (say, Peano Arithmetic) is consistent. Suppose that this rule is adopted together with the transformation rules endorsed by Thomasson. Suppose PA turns out to be inconsistent. On the one hand, ‘easy’ arguments for the existence of numbers would still lead us to the conclusion that numbers exist; on the other hand, the Hilbertian criterion would lead us to reject the claim that numbers exist. Of course, even in this situation we could reject the Hilbertian criterion and retain the usual transformation rules, or we could replace PA with a different, hopefully consistent, theory. But I don’t see why this choice would be mandatory. The inconsistency of PA could equally well be taken to indicate that there is no standard model of arithmetic and hence no numbers (perhaps there are “schnumbers”, number-like objects; but that’s a different question).

So here are the reasons why I am reluctant to claim that numbers exist: for all I know, our standard arithmetical theory might be inconsistent; for all I know, the language I am speaking might not be governed by the kind of transformation rules employed in the easy arguments for the existence of numbers; for all I know, there might not be infinitely many objects.<sup>5</sup> In order to claim that there are numbers, or that there really is a number numbering the dragons, I should be in a position to reply to all these challenges, and I am not. On the other hand, I am in a position to claim that there are no dragons, because I can rule out that there are some dragons.

I am not saying that the challenges to the truth of “there are numbers” that I mentioned are genuine. If PA is consistent, arguably the consistency of PA is a necessary truth, so there is no possible world in which it is false that PA is consistent. Similarly, it might be metaphysically necessary that there exist infinitely many objects. The undisputed claim might analytically entail the ontological one.

The deflationist story might indeed be fully correct. Easy arguments might really provide an answer to the question whether numbers exist. But I am not endorsing this answer when I utter the sentence “there are no dragons”. Similarly, when I focus only on the real content of a typical number sentence, I simply do not address the *issue* of whether numbers exist. The literal and the real content are different because they concern different subject matters.

<sup>4</sup> That a word might be associated with a cluster of rules, rather than just one rule, is a point stressed by Putnam (1965). Evinine (2016) calls this point ‘the problem of too much content’ and uses it to raise a challenge to easy arguments for the existence of mereological fusions. See also Button (2016).

<sup>5</sup> The kind of transformation rules endorsed by Thomasson allow us to prove that, for every N, there must be objects Fs such that the number of the Fs is N. 0 is the number of non-self-identical things (given that there are no such things) and if N is a number of some Fs, N + 1 is the number of the numbers that are smaller or equal to N, given that there are n + 1 numbers between 0 and N.



Thomasson might protest that it begs the question against her to assume that it is possible to address issue (1) without addressing issue (2). She says:

a speaker who is committed to the uncontroversial claim (the real content) is thereby committed to the transformed claim (and to the ontological claim that follows from it), even if she does not yet possess the new terms and concepts employed in the transformed claim. (Just as a speaker who says ‘Hey, John is an (eligible) unmarried man’ is committed to John’s being a bachelor, even if she does not possess the term ‘bachelor’) (Thomasson 2013, pp. 1036–1037)

I sense an ambiguity in the meaning of “commitment” here. If P entails Q and I assert P, what I said cannot be true unless Q is true. In this sense, if P (analytically) entails Q and one asserts P, then one is committed to Q.

But there is also a sense in which commitment is connected to content: contents can be taken to be the objects of commitment and speakers commit themselves to a certain content by uttering a certain sentence only if they assert that content by uttering the relevant sentence. This is the sense of commitment relevant to the question at hand here. Thomasson challenged the fictionalist to distinguish the real and the literal content of typical utterances of mathematical sentences. The distinction the fictionalist is after is a distinction between contents. The fictionalist needs to draw a distinction between the commitments a speaker incurs in asserting the literal/real content only if there is a connection between content and commitment.

If commitment is connected to content and if, as I am going to suggest, the content of a sentence uttered in a certain context is connected to the topic or subject matter the speaker is addressing in uttering such a sentence, then commitment is not closed under (logical or metaphysical) consequence, even when we are dealing with obvious consequences of what the speaker asserts. P obviously entails  $P \vee Q$ , but asserting P one does not assert also  $P \vee Q$  (Yablo 2014a), because Q might be about a topic upon which P is silent:  $P \vee Q$  is not *part* of what we say when say that P. In any case, some entailment-relations are highly non-trivial. If Q is the Goldbach conjecture and Q is true, then Q is necessarily true and hence any P entails Q. Still, even in this case, a speaker asserting that there are no dragons should not be interpreted as talking sides on the issue of the truth of the Goldbach conjecture.

In sum: an account of content that sees subject matter as a component of content is able to distinguish two contents purely in terms of the topic they address, leaving open whether the two contents are true in the same worlds or not. In order to make my reply more precise, in the following I am going to provide an account of what the subject matters or topics of a certain assertive utterance are and how two claims can be distinguished not in terms of their truth-conditions, but in terms of the topics they address.

## 5.1 Subject matters

I am going to explore the possibility for the hermeneutic fictionalist to hold that the real and the literal content are true in the same situations, yet differ because they are about *different subject matters*. I will say in a minute what subject matters are, what

I mean by ‘content’ here and how to match a content with its subject matter, but let me first give an informal illustration of the idea I want to propose here.

Consider the two sentences “Socrates exists” and “{Socrates} exists”. On standard assumptions, they are true in the same worlds. Yet, intuitively, they don’t have the same meaning. One way in which they differ is this: the former is not about sets in any way, whereas the latter is.

If the intensional content of a sentence (in a context) is identified with its truth conditions (i.e. the sets of worlds in which it is true), the proposal here is to look at the subject matter of a sentence as an additional component of its meaning beyond its intentional content. The account developed by Yablo (2014a) can be presented as an account of hyperintensionality based on the notion of aboutness, the relation between a sentence and its subject matter.

Simplifying a bit, this is the account. Each sentence  $S$  is associated with a content  $\langle |S| \rangle$  which is a *directed* proposition. A directed proposition is the result of two factors: a proposition  $|S|$ , conceived as a set of worlds, and a subject matter  $\langle S \rangle$ , conceived as the sum of two sets of propositions.  $|S|$  represents the truth conditions of  $S$ , whereas  $\langle S \rangle$  is used to represent the reasons why  $S$  is true or false, also called the truthmakers and falsemakers of  $S$ , which are conceived as propositions. So  $|S|$  is the set of worlds where  $S$  is true and  $\langle S \rangle$ , the overall subject matter of  $S$ , is composed of two sets of propositions:  $\langle S+ \rangle$ , the subject matter of  $S$ , i.e. the set of truthmakers of  $S$  and  $\langle S- \rangle$ , the anti-subject matter of  $S$ , i.e. the set of its falsemakers.

This account allows for the possibility of a difference in content that is not due to a difference in truth-conditions. This is easily seen from a set-theoretical point of view.  $\langle S+ \rangle$  is a covering of  $|S|$ , i.e. a family of sets such that the union of the sets in the family is equal to  $|S|$ . But, in general, there can be different ways to cover a region of logical space: two families of sets (of worlds) need not be identical in order for their union to be identical. This amounts to the following:

$$\langle |S_1| \rangle \neq \langle |S_2| \rangle \nRightarrow |S_1| \neq |S_2|$$

If we take  $S_1 =$  “I am either tall or not tall” and  $S_2 =$  “I am either rich or not rich”, we have two sentences which are true in the same worlds, but for different reasons. In particular, the proposition I am rich belongs to the subject matter of  $S_2$ , but not to that of  $S_1$ , in agreement with the intuition that the two sentences are about different issues.

The account also allows us to define the notion of subject-matter-inclusion. To simplify things I will consider only the case where  $S_1$  entails  $S_2$ . In this case,  $\langle S_1 \rangle$  includes  $\langle S_2 \rangle$  if and only if each truthmaker of  $S_2$  is entailed by a truthmaker of  $S_1$  and each falsemaker of  $S_2$  is also a falsemaker of  $S_1$ .

## 5.2 Ampliative inferences

The ontological deflationist holds that the existence of numbers can be established via the following inference:

( $\alpha$ ) There are no dragons

- ∴
- (β) The number of dragons = 0
- ∴
- (ω) There are numbers

Contessa has recently argued that:

The fictionalist's objection takes the form of a dilemma. Either the inference from (a) [There are three apples on the table] to (b) [The number of apples on the table is three] is ampliative or it is not. (Note that, here, I am using 'ampliative' in the sense in which it is used when, for example, we say that deduction is a non-ampliative form of inference while induction is ampliative. Informally, non-ampliative inferences are inferences '[whose] conclusions do not contain any information that was not already contained in the premises' (Swoyer 2014, 'Arguments and Inferences' Supplement, Section 2), while ampliative inferences are inferences whose conclusion contains information that was not already contained in the premisses.) If the inference from (a) to (b) is indeed ampliative, then (b) contains some information that was not already contained in (a), which means that the inference from (a) to (b) is not trivial, after all—its conclusion contains more information than its premise. If, on the other hand, the inference from (a) to (b) is non-ampliative, then (b) cannot be used in settling the dispute between realists and antirealists about numbers, for (b) cannot contain any information that was not already contained in (a) and, if (a) is indeed uncontroversial (as the deflationist claims), then it does not contain any information about the existence of numbers. (Contessa 2016, pp. 766–767)

Thomasson has replied:

On the easy ontologist's view, what's really going on in the move from (a) to (b) is not the introduction of new information, but the introduction of new terms, in a new conceptual scheme, useful for new purposes. Number terms may be introduced not to carry new 'information' about the world, but to enable us to express and process the information we have in new, more economical or efficient ways. Seen in this light, what (b) adds is not new 'information' but an addition to our conceptual scheme—a new sortal. That new sortal, along with its rules of use, then *entitles* us to infer that there are numbers. (Thomasson 2016, p. 6)

The distinction between subject matter and truth conditions opens up the possibility of holding that the inference  $\alpha$  *therefore*  $\omega$  (via  $\beta$ ) can be ampliative in one sense and not ampliative in another.

Assuming the correctness of the deflationist account, the inference from  $\alpha$  to  $\omega$  is not ampliative in the sense that all the worlds in which  $\alpha$  is true are also worlds in which  $\omega$  is true; if we measure the strength of an information in terms of the worlds that are ruled out by it,  $\alpha$  turns out to be stronger than  $\omega$ , given that it rules out more worlds.

The inference from  $\alpha$  to  $\omega$  is ampliative in the sense that the transition from  $\alpha$  to  $\omega$  brings in a new *issue*, with a corresponding change in subject matter. The subject matter of a sentence is tied to the reasons why that sentence is true or false. One way in which the subject matter of  $S_2$  can fail to be contained in that of  $S_1$  is that  $S_2$  can be false for a reason that is different from the reasons why  $S_1$  can be false.

$S_2$  brings in a new falsemaker, not contemplated by  $S_1$ . This is compatible with  $S_2$  expressing a weaker proposition than  $S_1$ .

Yablo (2014a, b, Ch. 7) has discussed something similar in connection with anti-skeptical arguments. Consider an inference like:

- ( $\alpha$ ) I have two hands  
 $\vdots$   
 ( $\omega$ ) I am not a BIV (brain in a vat)

“I have two hands” is the kind of sentence we utter in ordinary contexts. In this context, the falsemakers for “I have two hands” are: I have 0 hands, I have 1 hand, I have 3 hands,...

“I am not a BIV”, however, is the kind of sentence that is uttered in skeptical contexts. The falsemaker for this sentence is: I am a BIV. This proposition is not among the falsemakers of “I have two hands”. The subject matter of “I am not a BIV”, then, is not contained in that of “I have two hands”. This does not mean that the proposition expressed by “I have two hands” does not entail that I am not a BIV. Even though the subject matter of  $\alpha$  does not contain that of  $\omega$ , the proposition expressed by  $\alpha$  cannot be true unless  $\omega$  is also true.

The inference from  $\alpha$  to  $\omega$  brings in a new falsemaker for  $\alpha$ : this does not mean that we are now considering additional scenarios where “I have two hands” is false. BIV worlds are some of the 0-hands worlds. The shift from ordinary to skeptical contexts does not affect the truth conditions of “I have two hands”: the proposition is true (false) in the same worlds in both kinds of contexts. What changes are the reasons why the proposition might be false: skeptical contexts pose a new challenge to the truth of “I have two hands”: the false maker I am a brain in a vat.

The hermeneutic fictionalist could maintain that something similar goes on with respect to the inference ( $\alpha$ ) *There are no dragons, therefore* ( $\beta$ ) *the number of dragons is zero, therefore* ( $\omega$ ) *there are numbers*.

$\alpha$  is about dragons: whether it is false or true depends on facts about the dragons. Accordingly, the falsemakers for “there are no dragons” are: there is one dragon, there are two dragons, there are three dragons and so on.

The falsemaker for  $\omega$ , i.e. “there are numbers” is the proposition there are no numbers. This is not listed among  $\alpha$ ’s falsemakers, which means that the inference  $\alpha$  *therefore*  $\omega$  brings in a shift in subject matter. The proposition there are no numbers exists even if it is necessarily true that numbers exist: in that case, the proposition is simply the empty set. Even in this case, the set of the falsemakers of “there are no numbers” (call it  $\langle\omega\rangle$ ) would not be a subset of the set of the falsemakers of “there are no dragons” ( $\langle\alpha\rangle$ ).  $\langle\omega\rangle = \{\emptyset\}$ , but the empty set is not a member of  $\langle\alpha\rangle = \{\text{there is one dragon, there are two dragons, there are three dragons}\}$ . This

shows that in order to distinguish between the subject matters of  $\alpha$  and  $\omega$  we need not assume that nominalistic worlds are possible. Even if nominalistic worlds did not exist, their set (i.e. the empty set) could be used to represent the proposition that there are no numbers, which would count as a false-maker of  $\omega$ , but not of  $\alpha$ .

This is not to say that the absence of nominalistic worlds does not pose any problem. The claim, rather, is that such problems do not affect the substance of what I am saying here, namely that it is possible to maintain that there are no numbers belongs to the anti-subject matter of a directed proposition but not to the subject matter of another directed proposition, while leaving it open whether there are nominalistic worlds or not.<sup>6</sup>

The notion of subject matter helps also to elucidate the relation between  $\alpha$  and  $\beta$ . The full content of  $\beta$  includes among its false-makers the proposition that there are no numbers. The real content does not. So, as far as the inference from  $\alpha$  to  $\beta$  is perceived as unproblematic, this is because we focus not on the full content of  $\beta$ , but only on the part of the content of  $\beta$  that is about the subject matter **the concrete world**. This part is defined in such a way as to be identical to the content of  $\alpha$ , in the sense that the two contents not only have the same truth conditions, but also the same subject matter. What “the number of dragons is zero” says about the concrete world is that there are no dragons.

So the difference between committing oneself to the full content of  $\alpha$  rather than merely to its real content is a difference between the issues we address when uttering a certain sentence.

## 6 Change of subject and believability

I have argued that the content of “there are no dragons” and “#dragons = 0” might differ even if the two sentences were, as a matter of metaphysical necessity, true in the same worlds. The two sentences would still differ in content because they address different subject matters. This invites the following objection<sup>7</sup>:

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<sup>6</sup> Here is one problem. Yablo (2014a, b, Ch. 3) provides a method for constructing, given a sentence  $S$  and a subject matter  $m$ , the part of  $S$  about  $m$ ,  $S_m$ . One step in the construction says that the false-makers of  $S_m$  are those, among the false-makers of  $S$ , that do not contain any world in which  $S$  is true about  $m$ . Now, if there are no numbers is a false-maker of  $S$  and there are no numbers is empty (a possibility I am allowing), then it does not contain any world in which  $S$  is true about  $m$ , so it should count as a false-maker for  $S_m$ . But we do not want to count there are no numbers as a false-maker for the part of  $S$  about the concrete world. This can be fixed in various ways. Just to mention one, one can define the false-makers of  $S_m$  as the states that exclude the truth-makers of  $S_m$ , as in Fine (2015). If the absence of numbers is an impossible state, then it is incompatible with every state, including the truth-makers of  $S_m$ . Still, the absence of numbers arguably does not exclude any of the truth-makers of  $S_m$ , given that “two states may be incompatible without either excluding the other, since it is also required that the excluding state should be wholly relevant to the exclusion of the state that it excludes” (Fine 2015). The absence of numbers is arguably not relevant for the exclusion of the truth-makers of  $S_m$ : if  $S =$  “the number of dragons = 0”, then the truth-maker of  $S_m$  is something like: the absence of dragons. The absence of numbers is not wholly relevant to the exclusion of the absence of dragons: the presence of dragons is.

<sup>7</sup> Thanks to an anonymous referee here.

Granted that “there are no dragons” and “#dragons = 0” are about different subject matters, why should we care? As long as we know that the two sentences are true in the same worlds, believing one but not the other would be irrational. And if the deflationist is right, we know that the two sentences are true in the same worlds. So, even admitting that the contents of “there are no dragons” and “#dragons = 0” are different, if the deflationist is right it would be irrational to believe one content and only quasi-believe the other, as the fictionalist recommends.

This is a natural objection. I have two replies to it.

First reply: I never said that we know that “there are no dragons” and “#dragons = 0” are true in the same worlds. I said that might be the case, but I also mentioned some reasons to doubt that this is the case. As long as one doesn’t know whether “there are no dragons” and “#dragons = 0” are true in the same worlds, it might not be irrational for her to take different attitudes towards the contents of the two sentences. True, I said that my account is deflationist-friendly, in the sense that the way I propose to distinguish the literal and the real content is compatible with the correctness of Thomasson’s account. But I never said we know that Thomasson is right. On the contrary, I gave reasons to hold that, even if Thomasson is right, she is not obviously right (Yablo 2014b, footnote 36). So the first reply is: the objection presupposes that we know that “there are no dragons” and “#dragons = 0” are true in the same worlds, but we don’t know that.

Second reply: sometimes we find harder to believe Q rather than to believe P even though we recognize that P and Q are equivalent (true in the same worlds). For instance it seems easier to believe that I have two hands rather than to believe that I have two hands and I am not a BIV. The reason why believing that I have two hands seems easier than believing that I have two hands and I am not a BIV might be that (i) belief aims to knowledge and (ii) knowing that I have two hands is easier than knowing that I have two hands and I am not a BIV. How can it be easier to know that P than to know that Q if we recognize that P and Q are true in the same worlds? One explanation is that when Q has a falsemaker not included among those of P, this new falsemaker is “one more thing to be on the top of, in whatever sense of “on the top of” you like” (Yablo 2014a, p. 119): we don’t know that Q because we are not on the top of all its falsemakers.<sup>8</sup> In sum: a change of subject matter might affect the believability of a directed proposition because sometimes when the subject matter of a proposition changes, its falsemakers change and we might no more be on top of all of the falsemakers of the directed proposition.

## 7 Conclusions

Hermeneutic fictionalism is first and foremost an account of the content of typical utterances of applied arithmetical sentences. I argued that HF can distinguish the literal and real content in terms of the different subject matters associated to those contents.

<sup>8</sup> See Yablo (2014a, p. 119 fn. 6) for a list of possible definitions of “being on the top of”.

Of course, the account of content I sketched here is debatable, but Thomasson's challenge was to find an intelligible distinction between literal and real content, not an unobjectionable distinction.

Moreover, let me make clear that the aim of this paper is to submit a new answer to Thomasson's challenge against fictionalism, not to argue that easy arguments are incorrect. According to the account of content defended here, easy arguments involve a shift in subject matter between the uncontroversial premise and the ontological conclusion: this does not make them incorrect, but, *contra* Thomasson, makes it intelligible how one can accept the premise of the argument while not accepting its conclusion.

Let me also mention how viewing HF as a semantic theory based on the notion of subject matter can illuminate other virtues of HF.

According to HF, in a typical utterance of an applied mathematical sentence like S, speakers are not talking about the existence of numbers. This can be further elaborated by saying that in ordinary uses of number-talk the existence of numbers is presupposed rather than asserted. This seems to be confirmed by various linguistic tests. One such test

is that presuppositions are preserved under denial. [...] To deny *The number of Martian moons is two*, one says *The number of Martian moons is not two*, not *The number of Martian moons is not two, or else Mars doesn't exist, or there is no such thing as the number of its moons*.

(Yablo 2014a, pp. 195–196)

Interpreting HF in the way proposed here also shows how the fictionalist can account for the fact that in English it sounds redundant to say “there are no dragons and the number of dragons is zero” (see Thomasson 2013, p. 1036). The reason why it is so is that: ““new information” should not in most cases be presupposed” (Yablo 2014a, p. 196)

If typical utterances of applied arithmetical statements presuppose the existence of numbers, this explains why “there are no dragons and moreover the number of dragons is zero” sounds bad: the only ‘new information’ that “the number of dragons is zero” adds to “there are no dragons” is presupposed rather than asserted. Another way to put the same point is to say that the only content that “the number of dragons is zero” adds to “there are no dragons” is actually not asserted in typical utterances of “the number of dragons is zero”.<sup>9</sup>

To recap. I proposed a reply to Thomasson's objection to HF that has two virtues: (a) it is deflationist-friendly, (b) it helps us seeing HF for what it really is: an account, based on the notion of subject matter, of the meaning of typical utterances of sentences belonging to certain areas of discourse.<sup>10</sup>

<sup>9</sup> Contessa (2016, p. 768) makes a similar point.

<sup>10</sup> I did not address this issue here, but I also think that understanding HF as a semantic thesis allows us to tolerate nominalistic worlds more easily, at least when discussing semantic notions like that of subject matter. Nominalistic worlds might not be metaphysically possible, but they are concretely possible, possible relative to how the concrete world is (Yablo 2014a, Appendix to Chapter 5). Relatively possible worlds have their place in semantics: “If a philosopher could find arguments that in the best metaphysical

**Acknowledgements** Thanks to Francesco Berto, Concha Martinez Vidal, Valentina Braido, an anonymous referee and audiences in Padova and Oviedo.

**Funding** This work has been financed by the Spanish Ministry Of Economy and Competitivy and FEDER through the project: The explanatory function of abstract objects: their nature and cognoscibility, FFI2013-41415-P and through a Juan de la Cierva-formation fellowship (IJCI-2014-19943).

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Footnote 10 continued

theory there is indeed a maximal set [of possible worlds], I suspect that would for the linguist be further confirmation that his enterprise is not metaphysics, and I would doubt that such a maximal set would ever figure in a natural language semantics” (Partee 1988, 118 quoted in the first manuscript of *Aboutness*). Accepting nominalistic worlds as relatively possible worlds also provides another way to fix the problem discussed in footnote 6.