Difference Between the Existential Quantifier and the Existence Predicate According to Mario Bunge

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Abstract—Most analytic philosophers believe that the existential quantifier, ∃, has ontological import. Mario Bunge was one of the first thinkers to challenge this view. He traces a distinction between the quantifier ∃ and a first-order existence predicate. Furthermore, he acknowledges two kinds of existence: real and conceptual. One of the reasons for accepting Bunge's proposal is that it can do justice to statements about fictional entities, which is something that rival proposals do not seem to be capable of doing. Additionally, I will also discuss the issue of the ontological argument, and the problem of material constitution.

Résumé — La plupart des philosophes analytiques croient que le quantificateur existentiel, ∃, a une portée ontologique. Mario Bunge a été l'un des premiers penseurs à contester ce point de vue. Il fait une distinction entre le quantificateur ∃ et un prédicat d'existence de premier ordre. De plus, il reconnaît deux types d'existence : réelle et conceptuelle. L'une des raisons d'accepter la position de Bunge est qu'elle peut rendre justice aux énoncées portant sur des entités fictives, ce que les positions rivales ne semblent pas capables de faire. Je discuterai également de la question de l'argument ontologique et du problème de la constitution matérielle.

Keywords— Existence; Existential quantifier; Existential predicate; Ontological argument; Material constitution.

Bunge claims that the quantifier ∃ doesn't have ontological import. He argues that ∃ only means "for some...", just as ∀ only means "for all...". For this reason, he suggest that ∃ should be called "the particularizing quantifier" instead of "the existential quantifier", and that in order to talk about existence, we

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need a first-order existence predicate.[2] Furthermore, he indicates that the standard view among philosophers leads to a problem if we consider the case of fictional entities:

> Surely most contemporary philosophers hold that ∃ formalizes both the logical concept "some" and the ontological concept of existence. I shall argue that this is a mistake. Consider the statement "Some sirens are beautiful", which can be symbolized "(∃x)(Sx & Bx)". So far so good. The trouble starts when the formula is read "There are beautiful sirens". The existential interpretation is misleading because it suggests belief in the real existence of sirens, while all we intended to say was "Some of the sirens existing in Greek mythology are beautiful". (Bunge, 1977: 155)

I would like to propose a different example in defense of Bunge's idea. It relies on the use of individual constants. Recall that in predicate logic, there are individual variables, which are usually symbolized with the letters "x", "y" and "z", and there are also individual constants, which are typically symbolized with other letters, like "a", "b", and "c". With this in mind, take a look at the following argument:

(1) ∀x(x = x) Principle of Identity.

(2) p = p From (1), by universal elimination.

(3) ∃x(x = p) From (2), by existential introduction.

The translation of that argument is this:

(1') Everything is identical to itself.

(2') So, Pegasus is identical to Pegasus.

(3') So, Pegasus exists.

If the quantifier ∃ has ontological import, as most logicians believe, then the statement that Pegasus is identical to itself leads to the conclusion that Pegasus exists in the real world. This is a problem because we know that Pegasus doesn't really exist.

But this is only a problem if we believe that ∃ has ontological import. If we agree with Bunge that it doesn't, then there is no

[2] Some other philosophers also trace this distinction. Meinongians usually use the symbol E! as the existence predicate, different from the quantifier ∃. See, for example, Parsons (1980), Zalta (1983), Linksy & Zalta (1991), and Jacquette (1996).

problem. It's true that (3) can be deduced from (2), but (3) should be read as "Some x is identical to Pegasus", instead of reading it as if it said "There exists some x in the real world that is identical to Pegasus".

On the other hand, if we say "Pegasus does not exist", that statement is also problematic. If we formalize it as $\neg\exists x(x = p)$, then it can be shown that this formula leads to a contradiction. The following argument indicates why this is the case:

(4) $\neg\exists x(x = p)$ Premise.

(5) $\forall x\neg(x = p)$ From (4), by change of quantifier.

(6) $\neg(p = p)$ From (5), by universal elimination.

Informally, here's what the argument says:

(4') Pegasus does not exist.

(5') So, nothing is identical to Pegasus.

(6') So, Pegasus is not identical to Pegasus.

And we know that from a contradiction, anything follows. This is the Principle of Explosion, also known as *ex falso sequitur quodlibet*, or the rule of EFSQ for short. So, if we say that Pegasus does not exist, we can end up saying that Pegasus *does* exist. In other words, it can be shown that $\neg(p = p)$ leads to $\exists x(x = p)$, which is what we were supposed to deny in the first place.

The upshot is that there are good reasons for rejecting the idea that $\exists$ has ontological import. From a purely logical point of view, the formula $\exists x(x = p)$ can't fail to be true, and its negation, $\neg\exists x(x = p)$, must be false. In other words, we have arrived a the wrong result: that the statement "Pegasus exists" is true, while its negation, "Pegasus does not exist", is false. The result should be exactly the opposite of this.

As we'll see later, from a Bungean perspective there's a simple and elegant solution to this problem. But before we examine it, we need to consider the possibility of avoiding individual constants.

1] Getting Rid of Individual Constants

Recall that the formulas $\exists x(x = p)$ and $\neg\exists x(x = p)$ both use an individual constant, a lower-case "p" that stands for Pegasus. If one believes that this is the root of the problem, then it seems that the

solution would be to avoid using an individual constant in the first place. This type of solution draws its support from the works of Frege, Russell and Quine, though the details differ in each case.

From a Fregean point of view, the statement "Pegasus exists" can be paraphrased as "The concept 'Pegasus' is instantiated", and it can be symbolized like this:

(7) $\exists x(Cx)$

Similarly, the statement "Pegasus does not exist" can be paraphrased as "The concept 'Pegasus' is not instantiated", and we can formalize it like this:

(8) $\neg\exists x(Cx)$

While (7) is false, (8) is true. What's interesting about these formulas is that they're contingent. In other words, they are not necessarily true nor necessarily false. Unlike $\exists x(x = p)$, the formula $\exists x(Cx)$ can't be deduced from $p = p$. And the formula $\neg\exists x(Cx)$, unlike $\neg\exists x(x = p)$, does not lead to $\neg(p = p)$. So, the Fregean proposal is quite sound, at least from a purely formal point of view.

But the solution is not entirely free from problems of its own. In particular, it does not seemed to be able to handle statements like the following one: "The concept 'Pegasus' is not instantiated in Aztec mythology but it is instantiated in Greek mythology", which can be symbolized like this:

(9) $\neg\exists x(Cx \wedge Ax) \wedge \exists x(Cx \wedge Gx)$

Is that statement true or false? From a Bungean point of view, that statement is true. But Fregeans will have a hard time with this example. Since they believe that $\exists$ has ontological import, they are forced into the awkward position of having to say that the statement in question is false. However, it seems reasonable to say that Pegasus does not belong to Aztec mythology, but that it does belong to Greek mythology.

Let's take a look at the Russellian solution. It's structurally similar to the Fregean one. The only difference is that the name "Pegasus" should be replaced by a definite description, like "the winged horse". In that case, the statement "Pegasus exists" can be paraphrased as "There exists an x, such that x has the property of being a winged horse". Formally:

(10) ∃x(Wx)

Contrary to ∃x(x = p), which is necessarily true, ∃x(Wx) is false. Likewise, the statement "Pegasus does not exist" can be paraphrased as "There does not exist an x, such that x has the property of being a winged horse". Formally:

(11) ¬∃x(Wx)

The Russellian solution[3] has the same advantages that the Fregean one has. But it also has the same problems. If we want to say that Pegasus is not among the list of fictional creatures of Aztec mythology, but that it is one of the fictional creatures of Greek mythology, then we would have to paraphrase it like this: "There are no winged horses in Aztec mythology but there is a winged horse in Greek mythology", which can be symbolized in the following way:

(12) ¬∃x(Wx ∧ Ax) ∧ ∃x(Wx ∧ Gx)

Russellians would have to claim that (12) is false. But, as I've mentioned a few paragraphs back, one can argue that it's true that Pegasus is not part of Aztec mythology but that it is indeed part of Greek mythology.

Lastly, there's Quine's solution, which is similar to the Fregean and the Russellian ones in terms of its structure. From a Quinean viewpoint, the statement "Pegasus does not exist" should instead be paraphrased as "There is no individual that has the property of being Pegasus", or more briefly, "Nothing pegasizes".[4]

The idea is that, unlike the Russellian proposal, we don't need to know anything about Pegasus in order to say that nothing has whatever properties that fictional creature might have. All that we need to do is to turn a proper name, like "Pegasus", into a predicate. Symbolically, instead of a lower-case "p", we use an uppercase "P". This being so, the statement "Nothing pegasizes" can be formalized like this:

(13) ¬∃xPx

[3] The formulas (10) and (11) are actually too simplistic. The former should be ∃x(Wx ∧ ∀y(Wy → (x = y))). Likewise, the latter should be ¬∃x(Wx ∧ ∀y(Wy → (x = y))). I will simply ignore these complications here. Similar considerations apply to the Fregean and Quinean formalizations.

[4] See Quine (1948). For an early critique, see Hochberg (1957).

And the statement "Pegasus exists" should be paraphrased as "Something pegasizes", which can be formalized like this:

(14) ∃xPx

Predictively, I believe that Quine's solution has the same advantages and the same drawbacks that its Fregean and Russellian equivalents have. So, we can ask if the following statement is true: "Nothing pegasizes in Aztec mythology, but something pegasizes in Greek mythology". Quineans would have to say that it's false, even though one can argue that the contrary is the case. In the next section, we'll examine the Bungean alternative to this problem.

2] Bunge and Pegasus

There are several things to note about Bunge's proposal. Firstly, unlike the ones we just saw, Bunge doesn't believe that the individual constants of predicate logic should be avoided. It's entirely legitimate, and useful, to use a lower-case "p" that stands for Pegasus. Secondly, as I've mentioned before, Bunge rejects the idea that the quantifier ∃ has ontological import. This symbol does not refer to existence in an ontological sense. All that it means is "for some…", just as the quantifier ∀ means "for all…". Thirdly, in order to talk about existence, Bunge says that we need a first-order existence predicate. In his own words:

> We need then an exact concept of existence different from ∃. Much to the dismay of most logicians we shall introduce one in the sequel. In fact we shall introduce an *existence predicate*, thus vindicating the age-old intuition that existence is the most important property anything can possess. (Bunge, 1977: 155)

This not only goes against Frege, Russell and Quine, it also goes against Kant, who famously claimed that existence is not a predicate. At this point, one may wonder if Bunge's idea means that the ontological argument should be accepted. The answer is negative. But we'll discuss this point later. For now, it's necessary to indicate that Bunge traces a distinction between two types of existence: real and conceptual. Accordingly, he uses two types of existence predicates: E_R stands for real existence, while E_C stands for conceptual existence. From this point of view, if the statement "Pegasus exists" means "Pegasus really exists", it can be formalized like this:

(15) E_Rp

(15) is false, because Pegasus doesn't really exist. The negation of that statement is "Pegasus does not really exist", and it can be symbolized like this:

(16) $\neg E_R p$

(16) is true. Pegasus does not exist in the real world. Let's take a look now at conceptual existence. If we say "Pegasus exists in a conceptual sense", then this can be formalized in the following way:

(17) $E_C p$

From a Bungean point of view, (17) is true. Pegasus does exist conceptually, because it's a fictional creature from Greek mythology. The negation of (17) is this:

(18) $\neg E_C p$

Which means "Pegasus does not exist conceptually". This last statement is false, at least from a Bungean perspective, because in Greek mythology there is indeed a fictional creature called "Pegasus".

With this in mind, the Bungean proposal manages to achieve something that the Fregean, Russellian and Quinean ones don't: it can handle the statement "Pegasus does not exist conceptually in Aztec mythology, but it does exist conceptually in Greek mythology". The three proposals that we saw before must claim that the statement in question is false. By contrast, from a Bungean perspective, that statement is true, and it can be formalized like this:

(19) $\neg E_A p \wedge E_G p$

As (19) shows, whenever we need to distinguish different conceptual contexts, like the difference between Aztec mythology and Greek mythology, we can replace the subscript "C" in E_C with another letter. So, in (19), the subscript "A" in E_A stands for "Aztec mythology", and the subscript "G" in E_G stands for "Greek mythology".

The upshot is that the Bungean proposal is preferable to the Fregean, Russellian and Quinean ones, if only because the former does justice to fictional discourse in a way that the other three can't. But there's an objection that can be raised against the Bungean account, which we need to address.

3] An Objection and a Reply

Opponents of the existence predicate usually raise an objection here. The objection is that the acceptance of an existence predicate commits us to non-existing objects. More precisely, to claim that a certain entity doesn't exist entails, by existential introduction, that there is some entity that does not exist. Here's the argument:

(20) $\neg E_R p$ Premise.

(21) $\exists x(\neg E_R x)$ From (20), by existential introduction.

Informally, (20) and (21) can be translated like this:

(20') Pegasus does not really exist.

(21') So, there is something that does not really exist.

This is an objection that is usually raised against Meinongians. The charge is that the idea that there are non-existing entities is not intelligible. Where are these entities located? They would seem to float around in fantastical place, which is usually called "Meinong's jungle", a sort of parallel dimension filled with unicorns, square circles, and wooden iron. So, one could raise a similar objection against Bunge. If Pegasus doesn't really exist, then -by the rule of existential introduction-, there is a non-existing entity. Where is it located? Presumably, it would be floating around in what could be called "Bunge's jungle", the Bungean version of Meinong's jungle.

Bungeans can meet this objection quite easily. Firstly, a statement like (21) poses no problem to the Bungean, because that statement simply says "Some particular x does not have the property E_R". It doesn't say "There exists an x such that x does not exist", because the quantifier ∃ does not have ontological import to begin with. It's true that there is some x, such that x doesn't really exist, and this claim is not contradictory. Secondly, fictional entities, like Pegasus, are not located in some parallel dimension or otherworldly jungle, instead they are brain processes. As he explains:

> Ideas, then, do not exist by themselves any more than pleasures and pains, memories and flashes of insight. All these are brain processes. However, nothing prevents us from *feigning* that there are ideas, that they are "there" up for grabs - which is what we do when saying that someone "discovered" such and such an idea. We pretend that there are infinitely many integers even though we can

> think of only finitely many of them - and this because we assign the set of all integers definite properties, such as that of being included in the set of rational numbers. (Bunge, V4: 169)

Real existence is the property of being somewhere in the world. Conceptual existence is the property of belonging to a conceptual context, such as Greek mythology. For a Bungean, the statement "Pegasus exists in the context of Greek mythology" is true, because Pegasus does indeed belong to that context. Likewise, the statement "Pegasus does not exist in reality" is also true, because Pegasus is not a living creature located somewhere in the real world.

We turn now to the issue of the ontological argument, and how it can be refuted even if one claims that existence can be conceptualized as a first-order predicate.

4] The Refutation of the Ontological Argument

Kant famously claimed that existence is not a predicate. One of the upsides of that idea is that it allows us to reject the ontological argument. But here's the question: if we claim, following Bunge, that it makes sense to use an existence predicate, different from the existential quantifier, does this mean that we should accept the ontological argument? In other words, does the ontological argument prove that God exists?

Of course not. But the reason why the ontological argument fails is not because existence is not a predicate, as Kant claims. Here's what Bunge has to say on this issue:

> Let us now use the existential predicate introduced above to revisit the most famous of all the arguments for God's existence. Anselm of Canterbury argued that God exists because He is perfect, and existence is a property of perfection. Some mathematical logicians have claimed that Anselm was wrong because existence is not a predicate but the ∃ quantifier. I suggest that this objection is sophistic because in all the fields of knowledge we tacitly use an existential predicate that has nothing to do with the "existential" quantifier, as when it is asserted or denied that there are living beings in Mars or perpetual motion machines. (Bunge, 2012: 174-175)

One possible way to formulate the ontological argument using Bunge's real existence predicate, E_R, is this:

(22) $\forall x(Px \rightarrow E_Rx)$ Premise.

(23) Pg Premise

(24) ERg From (22) and (23), by implication elimination.

Informally, here's what the argument says:

(22') For all x, if x is perfect, then x really exists.

(23') God is perfect.

(24') So, God really exists.

Of course, Bunge rejects that argument. After all, he was an atheist. However, what he argues is that the argument shouldn't be rejected in the way that Kant and some modern logicians do:

> Hence the atheist will have to propose serious arguments against it instead of the sophistry of the logical imperialist. An alternative is to admit the existence of God for the sake of argument, and add the ontological postulate that everything real is imperfect: that if something is perfect then it is ideal, like Pythagoras' theorem or a Beethoven sonata. But the conjunction of both postulates implies the unreality of God. In short, Anselm was far less wrong than his modern critics would have it. (Bunge, 2012: 175)

In other words, Bunge rejects premise (22). It's not true that if something is perfect, then it must really exist. On the contrary, it's possible to say that if something is perfect, then it exists only in a conceptual sense. In other words, one could say that God doesn't exist in reality, but He, or She, or They, exist in the context of a certain religion, just as Pegasus exists conceptually in the context of Greek mythology. This being so, the ontological argument fails.

5] Existence and the Problem of Material Constitution

Bunge's distinction between the existential quantifier and the existence predicate is also useful for tackling some other philosophical topics, such as the problem of material constitution. Here's the gist of this problem. Imagine that on Monday, there exists a piece of clay in Jane's atelier. On Tuesday, she sculpts it, turning it into a statue of the Greek goddess of wisdom. Intuitively, there seems to be only one object where the sculpture is located. But a moment's reflection indicates that this claim is problematic, since the statue has different properties from the piece of clay. For example, if the statue is flattened, then it ceases to exist, but the piece of clay

doesn't. The statue didn't exist on Monday, but the piece of clay did. The statue is Romanesque, but the piece of clay isn't. And so forth. So, contrary to our intuitions, we have to say that on Tuesday there are two distinct material objects where there seems to be only one. In other words, there are two numerically distinct objects that coincide with each other. This is the problem of material constitution.

A popular solution to this problem is to claim that the piece of clay exists, but that the statue doesn't. There's no such thing as a statue, -the idea goes-, there's only a piece of clay arranged statue-wise. Korman provides one of the best reconstructions of this argument:

> Here is an argument from material constitution for the elimination of clay statues. Let Athena be a clay statue, and let Piece be the piece of clay of which it's made.
>
> (MC1) Athena (if it exists) has different properties from Piece.
>
> (MC2) If so, then Athena ≠ Piece.
>
> (MC3) If so, then there exist distinct coincident objects.
>
> (MC4) There cannot exist distinct coincident objects.
>
> (MC5) So, Athena does not exist. (Korman, 2016: 9-10)

Korman believes that statues do exist. So, in order to reject the preceding argument, at least one of the premises must be denied. After reviewing the available options, he decides to reject MC4. As he suggests, this solution is not optimal, but for anyone who accepts a realist account of artifacts, the denial of MC4 is the least of the available evils.

I won't attempt to provide a solution to the problem of material constitution here. I leave that for another article. This is an incredibly difficult problem, which is why I think that any small step that can be taken towards its resolution should be counted as a victory. And I believe that the small step that can be taken here is the following one. Focus on the statements "Athena exists" (which is the antecedent in MC1) and "Athena does not exist (which is what MC5 says). What would be the best way to formalize them? At first glance, it might seem that we should translate them as $\exists x(x = a)$ and $\neg\exists x(x = a)$. But this can't be the case. Because if it was, then how could $\exists x(x = a)$ fail to be true given that it can be deduced from

a = a, by the rule of existential introduction? It's the same problem that we saw at the beginning of the article in regards to Pegasus. If we replace the name "Pegasus" with "Athena", then the argument looks like this:

(25) ∀x(x = x) Principle of Identity.

(26) a = a From (25), by universal elimination.

(27) ∃x(x = a) From (26), by existential introduction.

Which can be translated like this:

(25') Everything is identical to itself.

(26') So, Athena is identical to Athena.

(27') So, Athena exists.

The only case in which ∃x(x = a) could be false is in the context of some non-classical logic, such as free logic. So, if we want to formalize the statement "Athena exists" using classical predicate logic, then ∃x(x = a) is not an option. Otherwise, the argument for the elimination of clay statues has no bite.

Likewise, the statement "Athena does not exist", which is what MC5 says, shouldn't be formalized as ¬∃x(x = a), because that formula leads to ¬(a = a):

(28) ¬∃x(x = a) Premise.

(29) ∀x¬(x = a) From (28), by change of quantifier.

(30) ¬(a = a) From (29), by universal elimination.

Informally, the argument says this:

(28') Athena does not exist.

(29') So, nothing is identical to Athena.

(30') So, Athena is not identical to Athena.

And, since anything follows from a contradiction, if we start with ¬∃x(x = a), then we could end up deducing ∃x(x = a). In other words, if we say that Athena does not exist, we can conclude that Athena *does* exist. Once again, if this is acceptable, then the argument for the elimination of clay statues has no bite.

One possible option would be to avoid the use of the individual constant "a", and to formalize the statement "Athena exists" as ∃xAx. It's open to debate what that formula means, exactly. From a Fregean perspective, it means that the concept 'Athena' is instantiated. From a Russellian point of view, it would mean "There is an x, such that x is the statue created by Jane on Tuesday". And from a Quinean viewpoint, it would mean "Something has the property of being Athena", or "Something athenizes". Similar considerations apply to the statement "Athena does not exist", which would have to be formalized as ¬∃xAx. But I have argued that these viewpoints are questionable. Even if they can account for real entities, they can't do justice to fictional discourse.

A second option is to simply refuse to formalize the argument for the elimination of clay statues. The idea here is that the argument doesn't need to be translated into the language of predicate logic to have bite. Granted, but it can be shown that it *lacks* bite if the statements "Athena exists" and "Athena does not exist" are translated respectively as ∃x(x = a) and ¬∃x(x = a).

The remaining option is to translate those statements using an existence predicate, and to claim, as Bunge does, that the quantifier ∃ does not have ontological import. This being so, the statements "Athena exists" and "Athena does not exist" can be formalized, respectively, as E_Ra and ¬E_Ra.

There might be reasons for *not* accepting those Bungean formulas. But, in any case, I hope to have shown that the formulas ∃x(x = a) and ¬∃x(x = a) should not be accepted either. And, when one deals with an issue as difficult as the problem of material constitution, I believe that what I have shown is no small victory.

6] Concluding Remarks

I have show that there are good reasons for accepting Bunge's idea that the existential quantifier should be distinguished from a first-order existence predicate. This is because if ∃ has ontological import, then existence claims about fictional entities, like Pegasus, become problematic. Specifically, from the claim that Pegasus is identical to Pegasus, we can conclude -by the rule of existential introduction- that Pegasus exists. And the statement that Pegasus does not exist, if it's formalized as ¬∃x(x = p), leads to the contradictory claim that Pegasus is not identical to Pegasus.

One possible solution would be to avoid individual constants, such as "p". In that case, the statements "Pegasus exists" and "Pegasus does not exist" can be formalized as ∃xPx and ¬∃xPx, respectively. The philosophies of Frege, Russell and Quine support this idea. However, those proposals don't seem to do justice to fictional discourse. In particular, they would have to claim that the following statement is false: "Pegasus does not exist conceptually in Aztec mythology but it does exist conceptually in Greek mythology". By contrast, from a Bungean point of view, that statement is true, and it does not commit us to the claim that Pegasus exists in the real world.

I have also answered a possible objection against the Bungean proposal, which is the same objection that is usually raised against Meinongians. The charge is that the use of an existence predicate commits us to the claim that there are entities that do not exist. Where are they located? In Meinong's (or Bunge's) jungle? I have argued that Bungeans can meet this objection by arguing that fictional objects exist conceptually, and that what this means is that they are just brain processes. So, there is no otherworldly "jungle" where fictional entities dwell.

Next, I addressed the problem of the ontological argument. The acceptance of an existence predicate does not mean that the ontological argument manages to prove that God exists. This argument can be resisted by saying that God exists conceptually in the context of some religions, in the same way that Pegasus exists conceptually in the context of Greek mythology, but that neither of them exists in the real world.

Lastly, I have indicated that the Bungean proposal is useful for clarifying some aspects of the problem of material constitution. Specifically, the statements "Athena exists" and "Athena does not exist" should not be formalized as ∃x(x = a) and ¬∃x(x = a), respectively. This is because the former can't fail to be true, while the latter leads to a contradiction.

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