Logique & Analyse **215** (2011), 359–377

THE PREDICATE APPROACH TO ONTOLOGICAL COMMITMENT

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Abstract
Azzouni draws a distinction between criteria for what exists and criteria for the ontological commitments of a discourse. The former is a set of necessary and sufficient conditions for what exists, the latter reads ontological commitments from statements. The most influential criterion for identifying the ontological commitments of a discourse is that of Quine: we look at what its bound variables range over. Azzouni (1998, 2004) proposes that ontological commitment be carried by a predicate instead. The authors believe that Azzouni's approach is an important alternative to Quine's. Unfortunately, Azzouni never develops the predicate approach any further in his own work. He provides some examples, but no actual applications of his approach. As we show, this is a missed opportunity. This paper takes the predicate approach beyond Azzouni's own brief remarks. The authors develop a strategy for applying the predicate approach, and they identify its more promising implications. The most important, and most useful, of these implications is that — in contrast to Quine's approach — it allows us to accept a theory as true without our having to be committed to the existence of something we don't actually believe exists.

I.

In his 1998 (and subsequently his 2004), Azzouni draws a distinction between criteria for what exists and criteria for recognizing the ontological commitments of a discourse. A criterion for what exists is a set of necessary and sufficient conditions for specifying what is real, e.g., an entity is real if and only if it has causal powers. A criterion for recognizing the commitments of a discourse, on the other hand, tells us how to read the ontological commitments off from a set of statements.

Famously, Quine proposed an influential version of the latter criterion in his 1948. Recall that for Quine, to read the commitments off a discourse, we

look at what the bound variables of that discourse range over.[1] Most naturally, these commitments are expressed by statements which, if regimented in first order logic, would employ the (objectual) existential quantifier. For instance, the statement, "Some dogs are white" is committed to the existence of both dogs and white things, though not to the concept of whiteness itself.[2]

In 1998, Azzouni suggested an alternative criterion for recognizing the ontological commitments of a discourse (or, more precisely, a family of such criteria). In his article, Azzouni proposed that ontological commitment be carried by a *predicate* rather than a *quantifier*.[3] In particular, one could take a discourse to be committed to the existence of all and only those entities that fall under a particular predicate. To distinguish this from Quine's quantifier approach, we shall call this the "predicate approach" to ontological commitment.

It is our contention that Azzouni's proposal constitutes an important alternative to Quine's criterion for determining the ontological commitments of a discourse. It is too bad, therefore, that Azzouni himself never developed his approach any further. Indeed, his remarks about the predicate in his 2004 boil down to little more than a footnote. While Azzouni has provided examples of the predicate approach, he never offered any actual applications of it. We think that the predicate approach deserves more attention than Azzouni has devoted to it. Our purpose in this paper, therefore, is to explore this new alternative by (1) comparing Azzouni's approach to Quine's, (2) developing strategies for applying the predicate approach, and (3) identifying some of its most promising implications.[4] [5] Furthermore, we argue that the predicate

[1] Quine, 1948, p. 13 ff.

[2] Azzouni, 1998, p. 2.

[3] Azzouni, 1998, p. 3.

[4] Azzouni himself does not endorse the predicate approach in his 1998, but only offers it as an alternative to Quine's criterion. In his 2004, however, he explicitly works out a detailed application of the predicate approach. This application does much to demonstrate the power and attraction of the predicate approach. Nevertheless, there is still a need to explore this approach more fully — which is our goal in this paper.

[5] Azzouni's work has drawn quite a bit of controversy. Interestingly, none of the criticisms seem to bear directly on the predicate approach to ontological commitment that he has proposed. This is true even of the criticisms raised by his harshest opponent, John Burgess (2004), because according to Burgess, "Quine's coinage "ontological commitment" has no meaning apart from Quine's stipulative definitions" (2004, p. 575) and is simply a "glorified taxonomy" (p. 575). If Burgess' assessment of Quine's criterion is correct, then one is of course at liberty to invest either the quantifiers *or* a predicate with "ontological significance" in this (mere) taxonomical sense. In other words, one is perfectly free to explore alternative "stipulations".

approach can be used to *ascribe* ontological commitments to a discourse when such commitments are not explicit (or even implicit) in that discourse.

II.

Let us start by getting clearer about the general idea that underlies the predicate approach. In his 1998, Azzouni describes the approach in this way:

> one can provide a special predicate, "susceptible to observation" say, or "causally efficacious", or, and so on, and recognize the ontological commitments of a discourse to be solely those objects falling under the extension of *that* predicate, to treat only *those* objects as existing (or real).[6]

Calling this special predicate an "existence predicate," E, let us characterize this approach more formally. Consider the set of all entities lying within the domain that the quantifiers range over in some discourse — the universe U of that discourse. U would comprise the ontological commitments of that discourse on the Quinean approach. On the predicate approach, however, we are committed only to a *subset* of U — namely the subset that *falls under the existence predicate* E. Azzouni's suggestion is that an implication of the form: $(\exists \mathsf{x})\mathsf{Sx}$, would not by itself indicate ontological commitment to Ss. Only an implication of the sort: $(\exists \mathsf{x})(\mathsf{Sx}\&\mathsf{Ex})$, where E is the "existence" predicate, would indicate such commitment.[7]

Thus, the predicate approach takes a discourse to be committed to the existence of Ss if and only if the statement, $(\exists \mathsf{x})(\mathsf{Sx}\&\mathsf{Ex})$, is implied by the discourse. Suppose, for instance, that the predicate "x is causally efficacious", or Cx, is our existence predicate. On the predicate approach, a discourse (e.g. a physical theory) is committed to all and only those Ss to which Cx applies — to which the discourse attributes causal efficacy. While this will normally be a proper subset of U, it doesn't *have* to be. For instance, it would be possible to employ some purely logical predicate, say, "Lx", where $\mathsf{Lx} = (\mathsf{Cx} \vee \sim\mathsf{Cx})$, as an existence predicate. Then the ontological commitments of the discourse would revert to Quine's recommendation

[6] Azzouni, 1998, p. 3.

[7] Azzouni, 2004, p. 52, footnote 6. It should also be mentioned here that the predicate approach need not be taken as automatically ruling out an objectual interpretation of the existential quantifier — despite appearances to the contrary. We will take up this issue in section III.

— U. Thus, Quine's criterion can itself be treated as a special case of the predicate approach.[8]

What sorts of predicates might serve as candidates for the existence predicate? Some possibilities include "is spatially located", "is concrete", "is causally efficacious", and "is a material object". (We intend to defend no position in this paper on what *should* qualify as an existence predicate!) Of course, a wider range of alternatives is available beyond that of *singular* predicates. For instance, a spatio-temporal relationist might wish to avoid the substantivalist implication of the predicate "is spatially located" — namely, that there are spatial loci. Instead, she might prefer to employ a two-place relation such as "x is separated by some spatial interval from y" — where existence could be attributed to both objects x and y by virtue of their satisfying this relation. Those who take causal efficacy as the mark of existence, meanwhile, might consider the relation "x is a cause of y" as their preferred means of capturing this idea, given the rather uninformative nature of the singular predicate, "x is a cause". Even relations with three or more places might serve as relational existence predicates (to accommodate relativity, for instance, one might use, "x is separated from y by the spatial interval s, relative to inertial frame I"). Reflecting these possibilities, we will hereafter speak of both existence predicates and existence relations.

Further, it could turn out that no *simple* predicate or relation serves as *the* existence predicate. Perhaps a disjunction of predicates or relations is needed to do the job. For instance, perhaps we should include among a discourse's ontological commitments any object that is *either* material, observable, *or* causally efficacious. Alternately, the existence predicate might amount to a *conjunction* of terms — e.g., being *both* causally efficacious *and* observable. In principle, even more complex terms might serve as candidates for the existence predicate.

Although we have so far spoken as though there is to be just *one* existence predicate or existence relation (intending these terms to encompass all the possibilities just discussed) for all domains, this is probably neither necessary nor even particularly realistic. For instance, as scientific theories are replaced or reduced by more comprehensive accounts, terminological changes may occur, and the existence predicate of the earlier theory may not even appear in the later theory.[9] More generally, one theory's conceptual framework can differ significantly from another. For instance, while Aristotle's

[8] We are indebted to Arnold Koslow for pointing this out.

[9] While we shall be discussing the predicate approach most commonly in terms of its application to a *discourse*, our illustrations will often involve specific theoretical discourses or *theories*. This will occasion our shifting back and forth between these two terms rather freely. Nothing of importance will depend upon these terminological shifts.

science embraced final causes, modern biology allows no place for these; while Newtonian physics appears committed to gravitational force and spatial points, general relativity apparently allows for neither. Thus, whatever functions as the existence predicate for one discourse might not function as the existence predicate for another, and multiple existence predicates may be needed to meet the demands of multiple discourses. Still, the existence predicates for different discourses (at least those falling within the same general conceptual domain — e.g., the physical sciences) presumably should not differ from each other *too* drastically. How then might the existence predicates of distinct discourses be related?

In the simplest case, one discourse might employ a predicate lacking in the other discourse, and *vice versa*, though the meanings of their respective existence predicates still coincide. Given such an equivalence, there should be little objection to having both terms function as existence predicates.

A more interesting case, certainly, would be where a *reducing* theory — e.g., statistical mechanics — provides replacements for many of the fundamental concepts of the reduced theory — e.g., classical thermodynamics. Imagine that the classical theory has the existence relation "x is a (deterministic) cause of y". Suppose as well that the gas law in classical thermodynamics entails the statement: "Doubling the volume of a gas at constant temperature is a (deterministic) *cause* of the pressure decreasing to one-half." On the predicate approach, then, the classical theory could be taken to imply the existence of events characterized as changes in pressure and volume. However, suppose that statistical mechanics replaces the notion of deterministic cause with that of high probability — asserting, say, that the doubling of a gas's volume decreases the pressure in the vast majority of cases, but not in all possible cases. If statistical mechanics, quite generally, replaces the reduced theory's deterministic causal claims with corresponding probabilistic claims, then, arguably, it would be most appropriate to employ some such predicate as "x brings about y with high probability" as the existence predicate for statistical mechanics. Obviously, this is neither synonymous with nor even particularly close in meaning to the notion of deterministic cause. Still, the use of this probabilistic existence relation in statistical mechanics would have the advantage of helping achieve a fairly good "match" between the ontological commitments of classical theory, and at least part of the ontology of statistical mechanics.[10] In fact, it is plausible to think that our choosing the reducing theory's existence predicate to help ensure

[10] The comment about ensuring a "match" between theories glosses over complex issues. One problem with the present illustration is that while many of the claims of classical thermodynamics are most naturally expressed in terms of events, statistical mechanics is best expressed in terms of states. A reductive analysis of events in terms of succeeding states over time may thus also be necessary to achieve an ontological "match" between these two theories The problems with showing that the reducing theory describes all or at least most of

a "match" between that theory's ontological commitments and those of the reduced theory may be essential to the notion of theory reduction. After all, a "reduction" in which the two theories differ significantly in their ontological commitments would seem to be more a case of one theory *supplanting* another than of it *reducing* the other.[11]

As the above example suggests, it is not hard to find motivation from the sciences for granting that distinct theoretical discourses may call for the use of distinct existence predicates or relations. Could the existence predicates of accepted theoretical discourses exhibit differences even greater than those involved in theory reduction? As has already been intimated, this seems likely, since our various theoretical discourses often differ significantly not only with respect to their specific terminology, but also their underlying conceptual frameworks.

Rather than pursue the above considerations further at this point, however, let us turn to a closely related issue. So far, we have explored both the possible *kinds* of existence predicates, and some possible *relationships* between these for distinct discourses. In light of our findings, we shall now address more fully the problem of *applying* the predicate approach to determine the ontological commitments of a given discourse.

Imagine that we have settled on some particular existence relation — e.g., the relation Cxy, "x is a sufficient (deterministic) cause of y" — and now wish to assess the ontological commitments of a given discourse using that relation. In the most straightforward case, the discourse will indeed imply statements which assert that the relation Cxy holds between various entities mentioned within the discourse. Under the predicate approach, that discourse would then be explicitly committed to the existence of those entities.

It might turn out, however, that the discourse assigns nothing to the extension of C — possibly because C does not explicitly appear anywhere within the discourse. Should we interpret that discourse as having no ontological commitments? We need to approach this question with care. As we have seen, there might be a discourse which incorporates essentially the same concept as that of C, but expresses it differently. For instance, Newton's three laws, taken by themselves, make no explicit mention of causes. Nevertheless, we know from our wider theoretical perspective that expressions

the phenomena encompassed by the reduced theory are notorious, and nothing said here is meant to imply otherwise.

[11] Let us avoid a misunderstanding. We are not suggesting that statistical mechanics, by virtue of being a statistical theory, is without *a* notion of cause. For it is possible for statistical mechanics to have one or another notion of probabilistic cause. Our point is different: even in this case, a deterministic cause is different from a probabilistic cause, and therefore, it may not be sensible to say that one notion of cause is being replaced by another notion rather than being reduced to another. (We thank the anoymouse referee for prompting us to clarify this.)

like "F = ma" may be interpreted as implying causal relations — i.e., that the application of force to a body *causes* a change in its velocity.

How might we deal with such cases on the predicate approach? One strategy might simply be to *add* C to the discourse itself. For instance, we could *stipulate* that the statement, "A is a sufficient cause of B" is directly implied by a certain combination of expressions such as, "The application (A) of a force f to a body accelerates (B) that body *or* The application (A) of a force f to a body alters (B) the momentum of a body..." etc. Employing such a stipulation, we could then proceed to attribute to the original discourse the explicit ontological commitments that can now be "read off" of the revised discourse.

But can we assume that the ontological commitments of such a *revised* discourse — obtained via this *stipulative* strategy — will typically be the *same* commitments as those of the *original* discourse (which makes no explicit mention of C)? It depends on exactly what we mean by "C". If we mean our newly added C to amount to nothing more nor less than a stipulated shorthand expression for certain expressions of the original discourse, then the revised discourse clearly *is* equivalent to the original discourse in content. This, however, raises the worry that our added "C" — as so defined within this (revised) discourse — might not actually have the same meaning as that which we intend for C in its role as an existence relation functioning across discourses. In fact, it seems fairly likely that C's *full* meaning as the existence relation would *not* typically be equivalent to the meaning captured by some merely finite set of expressions appearing within some particular discourse. If these meanings did *not* coincide (or if C's meaning as existence relation did not at least encompass that which this expression is being assigned in its role as a shorthand expression), then these two uses of "C" would be merely homonymic, and appearances of "C" within the revised discourse would not qualify as *actual* uses of the existence relation C. On the other hand, if we added C in its fullest "existence relation" sense to the original discourse — *and* if this sense happened to extend beyond its mere shorthand meaning within the discourse — then the revised discourse would differ in content from the original discourse. In either case, we would seem to have little justification for "reading off" the alleged ontological commitments of the original discourse from the revised discourse, as the stipulative strategy proposes.

As these considerations suggest, application of the predicate approach may turn out to be more complicated than one might have initially expected (and certainly more complicated than Azzouni's own brief remarks on the topic seem so suggest). To begin sorting out the various possibilities, let us first of all say — with regard to a discourse which, *taken in isolation*, lacks any mention of the existence predicate (like our Newtonian example) — that such a discourse simply has no *explicit* ontological commitments. This may

not even be particularly unusual — i.e., for a discourse, taken by itself, without the resources of any wider and more powerful background theory being brought to bear. Finding this to be true of a particular theoretical discourse, furthermore, would presumably be a matter of some philosophical interest.

Next, we may ask whether or not the stipulative strategy is likely to yield a revised discourse, for our Newtonian case, which is equivalent in content to that of the original discourse. This is no trivial question; our own inclination is to think that our *present* concept of causality is a bit richer than what can be captured merely in terms of Newton's laws. However, with respect to Newton's own time — and perhaps for some time thereafter — the concept of causality may well have been pretty much the same as the concept of causality captured by Newton's laws.

For the sake of our discussion, let us grant that this is so, and let us apply that perspective to this case. That is, let us assume that the original and revised discourses *are* equivalent in content, and that the C appearing in the revised discourse is indeed the existence relation. Thus, although our original Newtonian discourse lacks any *explicit* use of C, it still effectively incorporates the *concept* of the existence relation C. This in turn commits us (in keeping with the above) to saying that our Newtonian discourse has no *explicit* ontological commitments. However, it hardly seems right to suggest that this discourse thereby has *no* ontological commitments *in any sense* — for, once again, our wider theoretical perspective informs us that the original Newtonian discourse includes the *concept* of C. Distinguishing this from a case of *explicit* ontological commitment, therefore, let us say that the existence relation C is at least *implicit* in the original Newtonian discourse. This yields the conclusion that the Newtonian discourse has *implicit* ontological commitments — commitments which we recognize thanks to our wider theoretical perspective.

Summarizing, we shall thus say that when a discourse makes no *explicit* mention of the existence relation, but does, in effect, include its *concept* (as we are granting for our Newtonian example), then that discourse *does* have certain *implicit* commitments. These commitments are implicit in the understanding we have of this discourse — and the role it plays — given our wider theoretical perspective. Furthermore, since it is *not in fact possible* for us to understand and employ any discourse in complete isolation from any theoretical background, a discourse's *implicit* ontological commitments may be of greater philosophical importance than its *explicit* commitments.

We may now wonder just how far the notion of a discourse's ontological commitment may be extended when such commitment is not made explicitly by that discourse. In particular, can we reasonably extend commitment to discourses which do not even include the *concept* of the existence relation? Imagine that we have some macroscopic level theory — e.g., a theory of atmospheric dynamics for predicting the weather, where the *only* states

described by the theory are macroscopic states readily discernible by human beings — e.g., rain showers, clear skies, etc. Next, suppose that C — the existence relation "x is the deterministic cause of y" — does not appear anywhere in this theoretical discourse.[12] Instead, suppose that the theory expresses all relations between succeeding states exclusively in statistical terms — e.g., "There is a 20% chance of rain showers this afternoon given this morning's overcast conditions." Although the discourse thus implies no deterministic causal claims, we nevertheless might understand, from a wider background theory, that the original theory is meant to be interpreted *classically*. That is, all practitioners of this theory understand each possible atmospheric macrostate as in fact an instantiation of one or another of many physically distinct but humanly indiscernible microstates, where each microstate is held to be the deterministic effect of the immediately preceding microstate. In keeping with this, practitioners also interpret the original theory's probabilities as measures of partial knowledge rather than of any underlying indeterminism.[13]

Given such a situation, it again seems reasonable to maintain that our interpretation of the original macrolevel theory carries *some* sort of ontological commitment — even though, in this case as well, the discourse itself makes no explicit use of C. Specifically, our interpretation of this macrolevel theory seems to commit us to the existence of the macrostates instantiated by the underlying causally connected microstates. Such a commitment is again supported by a wider background theory, which in this case describes the microstates (and thus the macrostates which they instantiate) as causally determining successive microstates (along with the macrostates which *they* instantiate) — and thus as satisfying the existence relation C. Let us call this sort of commitment *ascribed* ontological commitment, to distinguish such a case from *implicit* commitment. Reasons for this choice of terms will appear below.

There still remains the question of how to go about accommodating any such non-explicit ontological commitments to the predicate approach. While the earlier *stipulative* strategy might serve for dealing with *implicit* ontological commitment, it is necessarily limited to this kind of commitment alone — where the original discourse already includes the *concept* of the existence

[12] To forestall any confusion, the reader should observe that the present illustration happens to assume a *state* ontology rather than the *event* ontology assumed in the previous two illustrations. In keeping with this shift, C is now to be understood as a relation between states rather than as a relation between events. This shift is made purely for the sake of accommodating a variety of convenient illustrations.

[13] Again, it should be emphasized that we are imagining this example to be *classical* — we are assuming no indeterminism for these microstates.

relation. In particular, the stipulative approach cannot be applied to accommodate *ascribed* ontological commitment such as that of our macrolevel theory of atmospheric dynamics.

The problem is that in cases of *ascribed* commitment (e.g., our atmospheric dynamics case), the revised discourse would *not* be equivalent to that of the original. For instance, in our atmospheric dynamics example, the revised discourse (thanks to its deterministic formulation) would entail claims about the *certainty* of particular kinds of effects — and the *impossibility* of other kinds of effects — where the original (thanks to its probabilistic formulation) entails neither. In view of this significant difference in content, it would be extremely *ad hoc* to attribute to the original discourse any ontological commitments which can be "read off" from the revised discourse. Worse still, the resulting revised discourse would — at least on the surface — appear to entail *inconsistencies* — e.g., the implication that several distinct effects are possible given a particular initial state (from the probabilistic claims of the original theory), but also that only one state can result from a given initial state (from the deterministic claims of the interpretive theory).[14]

What strategy, then, should be used to accommodate ascribed ontological commitment to the predicate approach? Perhaps an appropriate strategy can be drawn from our atmospheric dynamics illustration itself. In that example, we supposed, first of all, that the original theoretical discourse (the macrolevel theory) is *embedded* in or subsumed under the background theory, in the sense that at least some subset of the original theory's claims are interpreted and explained by the background theory.[15] For instance, the embedding background theory might make the assertion: "Any actual instantiation of some atmospheric macrostate (e.g., a given high pressure front) described by the original macrolevel theory is in fact identical to some particular microstate from among a set of microstates which all realize that same single *kind* of macrostate (e.g., the high pressure front)." This amounts to the background theory explicitly claiming to refer to at least some of the same events, states, etc. as those referred to by the original discourse. Second, we supposed that the embedding theory ascribes the existence relation to these states — for instance, by asserting that: "Every such atmospheric microstate is causally determined by the preceding atmospheric microstate, and itself determines the succeeding microstate." Under such conditions, we have said

[14] From the wider theoretical perspective, we could argue that these are not true inconsistencies, for we know the probabilistic claims express only epistemic probabilities, while the deterministic claims express objective certainties. However, within the revised discourse itself, a conflict between possibilities and impossibilities would still appear.

[15] This subset may have to include *all* of those claims from the original theory which the background theory still counts as meaningful.

that the original discourse has certain *ascribed* ontological commitments by virtue of the background theory's *interpretation* of the original theoretical discourse. More specifically, the interpretive background theory ascribes C to states referred to by the original theoretical discourse — which, in effect, amounts to it ascribing certain ontological commitments to the original theory (and thus, our choice of the term "*ascribed* commitment").[16]

The above illustrates an application of what we shall call the *interpretive* strategy. Formulating this strategy more precisely: Discourse D is committed to or has an *ascribed* ontology as long as the following two conditions are satisfied:

1. The *embedding condition:* There is some wider background theory or theoretical framework which explicitly claims to refer to some of the same events, states, or objects, etc. as those referred to in discourse D.

2. The *ascription condition:* That same background theory also ascribes the existence relation or existence predicate to some of those events, states, objects, etc. which the embedding condition claims are referred to by both theories.

There is much to commend this *interpretive* strategy for handling the *ascribed* ontological commitments of a discourse. First — and again — this *interpretive* strategy accommodates the intuition that a discourse (such as our macrolevel atmospheric dynamics example) may have ontological commitments in the ascribed sense, even if those commitments are neither explicit nor implicit. It does so, furthermore, without threatening the integrity of the original discourse. More importantly, it points us to an *explanation* of our intuitions regarding the ontological commitments of discourses like our atmospheric dynamics example. According to our analysis, the ascribed ontological commitments of a given discourse D arise from the claims made about D by the relevant embedding theory — specifically, by that background theoretical framework through which we interpret and/or explain D. Since our very understanding of D is dictated mainly by the interpretation this background theory gives of D, we naturally and appropriately attribute to D those ontological commitments which this interpretation ascribes to D.

In fact, however, use of this interpretive strategy need not be limited to just cases of *ascribed* ontological commitment; it is equally amenable to accommodating (and explaining) *implicit* commitment as well. Recall our Newtonian example, where the original theoretical discourse (Newton's laws) does not explicitly ascribe C to anything. We nonetheless recognize, thanks to our wider theoretical perspective, that the concept of C is represented by the

[16] To emphasize: the ascription of C is not to the *descriptions* of those states furnished by the original theoretical discourse, since the descriptions of these states differ for the two theoretical discourses. Instead, we speak here of C being ascribed to those states *referred* to by the original theoretical discourse.

claims of the original discourse. Note that we would not recognize this except by appeal to the wider discourse (since C itself appears nowhere in the original discourse); it is thus through this appeal that the notion of implicit commitment is explained and justified. This suggests that cases of implicit commitment also satisfy the conditions of the interpretive strategy. In the Newtonian example, for instance, the background theory ascribes C to the events referred to by the original theory (the ascriptive condition), and it explicitly claims to be about the events referred to by the original theory (the embedding condition).

Indeed, the usefulness of the interpretive strategy seems quite general. Returning to the case of theory reduction, for instance, the interpretive strategy's conditions should also be satisfied where the reduced theory is assigned the role of the original theory, and the reducing theory is assigned the role of the background theory. This allows us to speak of the reduced theory as having certain ontological commitments by virtue of the reducing theory. As previously discussed, this result, in turn, can go a long way towards insuring that the reduced and reducing theories always share important ontological commitments — that they can be seen as both being *about* roughly the same entities and phenomena — even when the reduced theory fails to incorporate any uses of the existence predicate.

To summarize, the predicate approach encompasses three distinct kinds of ontological commitment for a discourse. We have termed the simplest and most obvious of these "*explicit* commitment", since the existence predicate or relation appears explicitly in the discourse itself. But we have also argued that the predicate approach should be extended to include at least two additional non-explicit kinds of commitment — implicit and ascribed ontological commitment. To accommodate these within the predicate approach, we recommend the *interpretive* strategy, which may be applied as long as both the ascriptive and the embedding conditions are satisfied. When — by virtue of appeal to some wider background discourse — these two conditions are satisfied, we may attribute either implicit or ascribed ontological commitments to the original discourse. The difference between these two kinds of commitments, finally, lies in the fact that implicit commitments are further limited to cases in which the original discourse employs or represents the *concept* of the existence predicate or relation, while neither the *expression* C nor the *concept* is present in cases of ascribed ontological commitment. Two points need to be emphasized regarding the above analysis. First, we need to remember that all of the predicate approach's ontological commitments arise only *relative* to a particular existence predicate. A given discourse may have ontological commitments (whether explicit, implicit, or ascribed) relative to one existence predicate, but not to another. Secondly, the occurrence of either implicit or ascribed commitment is further *relativized* to a particular embedding theory. In principle, a discourse could have ascribed or even

implicit ontological commitments relative to one background theory while lacking such commitments relative to another.

III.

So far, we have focused largely on how discourses *may* have ontological commitments; but it should be emphasized that the predicate approach also can entail that certain discourses — even accepted theories — have *no* such commitments. For instance, as long as the existence relation is taken along the lines of C, it seems unlikely that Peano arithmetic could be viewed as having *any* ontological commitments. Of course, Peano arithmetic might well have ontological commitments if a *different* existence predicate is chosen. The point is simply that an important theoretical discourse *could* lack ontological commitment, relative to a given existence predicate.

Indeed, the predicate approach allows for a theory to lack any sort of ontological commitment even when it implies $(\exists x)Sx$ — i.e., even when the theory implies "there is at least one x that is S". Now this result seems rather perplexing. Just how much of a problem does this pose for the predicate approach?

One important concern would certainly be that acceptance of the predicate approach seems to rule out an objectual (as opposed to a substitutional) interpretation of the existential quantifier. After all, how can we have an objectual interpretation which at the same time denies ontological force to quantifiers? The semantic conditions for an objectual existential quantifier are (roughly): "There is an X which is P", is true iff *there is an X which is P*. Doesn't this *have* to be read as ontologically committing?

The answer to this question can be found in Azzouni's 1998. There, he maintains that the predicate approach does *not* foreclose on an objectual interpretation of the quantifier. Even when we take the ontological commitments of a discourse to be carried by an existence predicate rather than by quantifiers, we can still consistently treat those quantifiers objectually. According to Azzouni, our reading the ontological commitments off from a discourse by way of a predicate

> doesn't require avoidance of "objectual quantifiers": *our* regimented languages can employ good old fashioned Tarskian semantics. Of course, the quantifiers arising in the metalanguage where Tarskian semantics lives are no more to be understood as having ontic force than the quantifiers in the object language are; ontic force will be

> carried in the metalanguage by a predicate similar to the one carrying ontic force in the object language.[17]

The point is that our perplexity arises only because we *presuppose* that the *meta-language quantifier is ontologically committing*. Without this assumption, the objection *can't even get off the ground*. That is, the only way to *get* the objectual interpretation to be ontologically committing is to *read* the quantifier as ontologically committing (which is precisely what is at issue!). But such a reading is *not* required by an objectual interpretation — the semantics, in itself, doesn't force anything of the sort.[18]

The most obvious additional concern is that the predicate approach's treatment of existential claims appears to call for a fairly drastic shift from the way we commonly interpret language. The proposed interpretive shift, however, may not be as radical as it initially strikes the philosophical ear. First — to expand upon Azzouni's point — the awkwardness of denying ontological commitment to expressions such as "there is…" may arise more from a particular *philosophical* predilection for granting such commitment than from any necessity imposed by language. In fact, it is our contention (along with Azzouni) that ordinary speakers do *not* interpret "there is" claims as *automatically* committing. For instance, a physicist may say that "There is an entropy value for every system" without intending to commit himself to entropy values as an ontological category. Musicians likewise say that "There is a fifth between those notes" without thereby taking seriously the idea that fifth intervals are part of the world's furniture.

The same holds true for ordinary language. Consider, for instance, some of the nice examples collected by Varzi (2002):[19]

(1) There is a hole in this piece of cheese.
(2) The king of France does not exist.
(3) I can see nobody on the road.
(4) Sue was dancing a waltz.

Examples such as these clearly show that even the ordinary language devices most commonly associated with ontological commitment (including the use of "there is…", etc.) are not *automatically* taken by ordinary speakers as ontologically committing. It is in fact quite significant that ordinary speakers readily accept such statements as *true*, without thereby thinking that holes,

[17] Azzouni, 1998, p. 3.

[18] Azzouni, 2004, p. 54.

[19] Varzi, 2002, pp. 4–6.

nonexistent kings, etc. must exist.[20] This suggests that such linguistic devices may not even *be* the primary determinants of ontological commitment. Rather, the determinants of ontological commitment may well lie elsewhere (i.e., as described by the predicate approach), and it is through our *independent* knowledge of such commitments that we know how to interpret statements of the kinds illustrated above. For example, the reason we don't look for the person referred to as "nobody" after being told "I see nobody" or "There is nobody there" might be because we already understand that the kinds of states to which the expression "There is nobody there" applies fail to play the appropriate sorts of causal roles in the world.[21]

If these latter considerations are on the right track, then it is not the predicate approach which imposes a need for an interpretive shift in our use of language. Rather, these considerations strongly suggest that the way we *actually* interpret language with respect to ontological commitment *is already in accordance with* the predicate approach, rather than, say, the Quinean doctrine. It may thus be our philosophical account that needs shifting, not our use of language!

The field where these matters become strikingly important (and, naturally, most controversial) is mathematics. Mathematics furnishes us with countless claims of the sort: "There exists a limit to this sequence", "There are at least three numbers greater than seven", "There are several distinct solutions to this equation", etc. From the perspective of the Quinean approach, such statements seemingly commit us to a plethora of abstract entities — creating a veritable ontological nightmare for anti-platonists. For such who nevertheless wish to take mathematical claims as expressing truths, the only way out would appear to be through the wholesale regimentation of mathematics. For such drastic problems, aren't drastic solutions — such as Field's project — called for?[22] Perhaps not, for the predicate approach offers a far simpler

[20] Along with Azzouni, we deny the cogency of Meinongeanism, which is, roughly, the view that we can refer to an entity that does not exist and ascribe properties to it. If an entity does not exist, then *it* cannot have any properties because there's no "it" to have properties. For more discussion, see Azzouni, forthcoming, pp. 41–45. (We thank our anonymous referee for urging us to clarify this issue.) This is not to say, however, that anyone who says "there is a hole in this piece of cheese" is uttering nonsense, or gibberish. Our claim is merely that the speaker need not be asserting the existence of holes by uttering such a statement, even if the speaker takes the statement to be true.

[21] It is worth noting that the shift we are exploring here amounts to a shift away from syntactic and towards semantic determinants of ontological commitment.

[22] One might well view Field's strategy — which takes well-established mathematical statements and labels them as false — as too drastic. In addition, it is well known that Field's (1980, 1989) project of nominalizing mathematics has never been fully carried out.

and much more elegant alternative. Using the predicate approach with an existence relation such as C, for instance (conveniently, those who would probably incline towards using C as an existence relation often likewise incline against platonist views about numbers, etc.), would arguably yield no ontological commitments in mathematics.[23] [24]

This is not to imply that the usefulness of the predicate approach must be limited to those philosophical persuasions with an aversion to the reality of numbers, propositions, and other abstract entities. The predicate approach can surely accommodate platonic leanings as well. For instance, perhaps philosophers could reach some degree of agreement regarding one existence predicate or relation — x *being spatially located*, or x *being the cause of* y, or, etc. — which seems fairly suitable to all for reading off a discourse's concrete ontology. An abstract ontology might then be identified by means of an abstract existence predicate — generated, perhaps, by conjoining some predicate which plays an essential semantic role in abstract discourses with the negation of the concrete existence predicate or relation. As previously discussed, we need not limit ourselves to one existence predicate. As suggested here, we may even want to employ distinct existence predicates or relations to encompass distinct kinds of existents.

IV.

We opened this paper with the distinction between criteria for what exists and criteria for recognizing the ontological commitments of a discourse. Today, however, there is a considerable tension between what many philosophers take to be the criteria for a discourse, and what they take to be the criteria for what exists. Yet it is natural to expect these two kinds of criteria to match each other fairly closely. The predicate approach offers a way to achieve a better match between these criteria.

For instance, in much of our discussion, we have employed C ("is causally efficacious") as an example of a possible existence relation. Surely C, or something roughly like C, would be a natural choice (under the predicate

[23] This is in fact the view Azzouni takes in his 2004.

[24] Although the predicate approach seems to promise liberation from a great deal of regimenting in science, mathematics, and even ordinary language, we do not assume that the predicate approach will require no linguistic regimentation whatsoever. For an existence predicate such as C, there may be pitfalls lurking in the facile use of the word "cause" even in science. Yet it is our contention that we are likely to find fewer difficulties with most existence predicate candidates than with expressions from the vernacular like "There is" and "There exist," etc.

approach) for philosophers who take all and only those entities that can causally interact as real. Armstrong (1978) and Hacking (1983) may be mentioned as examples. Armstrong advocates what is known as the "Eleatic Principle", the view that an entity is real if and only if it has causal powers.[25] Hacking argues for a related position. In his view, "we shall count as real what we can use to intervene in the world to affect something else, or what the world can use to affect us".[26] For philosophers of similar persuasion, adopting the predicate approach together with an appropriate existence predicate or relation would allow them to read off the ontological commitments of a discourse in a way that naturally and directly conforms to what they take is *true* about reality. Seeing no particular attraction to having one's ontology *at odds* with how one interprets a discourse (as is possible on the Quinean approach), we take this to be an advantage of the predicate approach.

At the very least, the Quinean approach certainly seems an inconvenient choice for reading off the commitments of many discourses — especially when we also wish to take those discourses as *true*. In general, we presumably don't want to accept some theory as true, and then be forced to interpret (as the Quinean approach demands) that theory as committing us to the existence of something we don't believe actually exists. Yet this is what — short of paraphrasing that theory — the Quinean approach can force us to. As we have seen, the Quinean approach inclines towards committing us to the reality of entropy, musical intervals, holes, nobody seen on the road, and countless abstract entities.[27] While many of these are indeed viewed as real by many philosophers, we would hope that few philosophers, if any, feel moved to view any such things as real *simply because* a Quinean type approach tells us that they are real. Shouldn't there be more to the foundations of one's ontology than a merely syntactic criterion for reading off a discourse's ontological commitments?

In our attempt to get the right sorts of ontological commitments out of the theoretical discourses that most matter to us, what then are the alternatives? For those employing the Quinean approach — what might be called the *received* view — one option is to deny the very truth of these theories. But

[25] See his 1978, pp. 126–132.

[26] Hacking, 1983, p. 148.

[27] This is not to say that Quine would have accepted all of these entities as real. Most likely, he would have employed the aforementioned strategy of trying to paraphrase statements that quantify over abstract objects. We don't believe, however, that the paraphrase move is going to be successful with regard to all the entities the existence of which one may wish to deny (e.g. numbers, or fictional entities). This is yet another reason why the predicate approach to ontological commitment should be developed further. For more discussion on this, see Raley, 2007.

this is the choice of despair. Another option is to continue the daunting task of regimentation — and some progress has seemingly been made with certain parts of ordinary language. Overall, nevertheless, this choice affords, at best, an unpromising option. Furthermore, for many philosophers, there remains the important challenge of mathematics. As we see it, a Field style regimentation is not merely unpromising; it is probably an impossibility.

The remaining alternative is to reject the received view, and adopt the predicate approach in its stead. This option certainly appears defensible to us. When no clear alternative to the Quinean approach was available, it was not unreasonable to adopt that approach as a working standard. Now that there is an alternative, might it not be time for the Quinean standard to be reassessed? While much work on the predicate approach and potential existence predicates will need to be done, the above considerations strongly suggest that such work would unquestionably be worthwhile.

ACKNOWLEDGEMENT

We would like to thank Jody Azzouni for helpful comments.

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