Rejecting World-Language Connections as a Constraint on Truth Conditional Semantic Theories

Jody Azzouni
Tufts University

I start with some data. Imagine a child pointing at a cartoon figure while watching television. *That's Santa Claus*, the child shouts gleefully. One day in the near future she will revise this ontological commitment: She will learn to her dismay that there is no Santa Claus. We adults—most of us adults, anyway—already know that there is no Santa Claus. What then was she referring to when she said, *That's Santa Claus*? It seems the answer should be this: She was referring to Santa Claus. And it should be added that Santa Claus is nothing at all—that is, it should be added that Santa Claus doesn't exist. One purpose of this paper is to indicate why these statements don't contradict one another.

The child's demonstrative utterance is truth-apt. If she instead points at Daniel C. Dennett and gleefully says, *That's Santa Claus*, she will be corrected. Indeed, she will be corrected by an audience that knows there is no Santa Claus. The conclusion that follows—one that closely conforms to a straightforward understanding of the data of ordinary usage—is that our use of names and demonstratives to *refer* within the context of truth-apt utterances of sentences are all entirely numb to ontological distinctions. In particular, these idioms are insensitive to the question of whether what is named, designated, demonstrated, and so on, is real or not; they are insensitive to the question of whether such exists or not.

Another illustration. If I recognize that I regularly hallucinate elves, I can certainly and cogently gesture towards an armchair in the room and point out to my audience that I'm hallucinating elves again, and that the particular elf that I'm hallucinating at the moment is

sitting over there. I can also correctly describe *that* elf as wearing pointy red shoes if in fact what I'm hallucinating is an elf sitting in that armchair wearing red pointy shoes.

It's worth noting that the truth or falsity of my utterance is not entirely a response-dependent matter, it's not (entirely) dependent on how I conceptualize my hallucinatory experience. In particular, if I describe a particular hallucination as of a pony, my description of further details may enable my audience to recognize that in fact I'm hallucinating a donkey, not a pony—that I'm simply wrong about what I'm hallucinating. The truth or falsity of my utterance, that is, does not depend on how I conceptualize what I'm hallucinating.

Similarly, I may hallucinate several men in the room, and I may hallucinate one in particular *who strikes me* as an hallucination of a man drinking a martini, and I may further describe *that hallucinated object* over there as of a drunk man with a martini. I can later realize that in fact my hallucination of a drunk man drinking a martini is actually an hallucination of a sober man drinking mineral water, and that there is another man that I'm hallucinating the presence of who is being hallucinated as drinking a martini and as being drunk. The point of this allusion to Donnellan's attributive/referential distinction, of course, is not to illuminate it or attempt an analysis of it. It's only to make clear that the distinction is ontologically numb, that in describing (for example) referential side of Donnellan's distinction as involving object-dependence (if that's what one chooses to do), one should not endow the word "object," so used, with ontological weight.[1]

[1] This is part, but only part, of the evidence of the singularity of this class of utterances, ones that involve demonstrations of hallucinated objects, or even the naming of such. Because this is a sketch or more accurately an advertisement for other work, I must forgo a detailed discussion of the evidence of the singularity or "object"-dependence of these sorts of expressions. See my 2010.

I should add that the literature on Donnellan's distinction is large and tangled. See Ostertag 1998, 402-404 for references *circa* the publication date of that book.

I have long argued in other work that the generalized quantifiers of all sorts that appear in natural languages are *ontologically numb*: that they are insensitive to the ontological status of what they quantify over, that they are insensitive to whether what they quantify over is real or not.[2] The same, I claim, is true of singular idioms—at least it's true of the singular idioms of natural languages. Formal languages are always a different matter, of course, because we can always stipulate the ontological interpretation of the idioms of formal languages howsoever we wish. I note explicitly that in making this claim, I'm not individuating formal languages purely syntactically. I mean as an example of a formal language, for example, a first-order syntactic formalism *coupled with* a standard Tarskian semantics, with objectual quantifiers. Even such a package of paired formal languages can be interpreted as ontologically neutral because to describe a set of quantifiers as objectual is only to describe a semantic relation between the objectual object-language quantifiers so-called and the metalanguage quantifiers. It's only to say that the semantic relation between the two sets of quantifiers involves a particular sort of linkage, not a linkage via the intermediary of constant terms for example. But such a semantic linkage is ontologically indeterminate pending an ontological interpretation of the metalanguage quantifiers.[3]

These considerations force the following interpretation of the ordinary-language idiom, "refer." We can (and do) say that, "'Mickey Mouse' refers to Mickey Mouse," just as we say that "'Barack Obama' refers to Barack Obama. That is, the ordinary use of "refer" (to the extent that there is an ordinary, philosophically untainted, use of this word[4]) is ontologically numb as well.

---

[2] E.g., I do so in Azzouni 2004, chapter 4, and in Azzouni 2007. The argument is revisited in chapter 5 of Azzouni 2010.

[3] See Azzouni 2004, chapter 3, Azzouni 2010, chapter 5.

[4] Putnam (1981, 1, footnote 1) writes: "There is a sense of 'refer' in which I can 'refer' to what does not exist; this is not the sense in which 'refer' is used here."

We can distinguish, therefore, two uses of "refer," which I'll designate as *refer*^{e} and *refer*^{r}. Reference^{r} characterizes a relation, a metaphysically-genuine relation, between words and things. It's an ontologically weighted word. Reference^{e} by contrast isn't a relation at all. It has the appearance of a relation, of course, it has the logical form of a relation, because it's two-placed: if a word appears in its second place and a name of that word appears in its first place, then it truthfully relates the words in question if and only if the second word doesn't correspond to anything real (if and only if the second word doesn't refer^{r}). Thus although the syntactic form of *refer*^{e} is two-placed, it does not (metaphysically speaking) correspond to a relation. *Refer*^{r} is the idiom that philosophers often use when they speak of "reference"—as illustrated by the quotation in footnote 4. The ordinary language *refer*, however, is an ontologically numb idiom that's used in ordinary life, when for example someone explains that someone else is referring to Mickey Mouse. The ordinary language *refer* indifferently covers both of the ontologically sensitive usages of *refer*^{r} and *refer*^{e}.

What this interplay between *refer*, *refer*^{r}, and *refer*^{e} reveals is that just as ordinary language can use an ontologically-numb semantic expression, so can sophisticated semantic theories. This point has already been indicated by my pointing out that it's not obligatory that a classical Tarskian metalanguage be interpreted as ontologically committing. A great deal of the literature in the philosophy of logic during the later years of the last century was dedicated to the creation of formalisms that, contrary to how first-order objectual quantifiers were then perceived, would have first-order quantifiers—or something similar to such quantifiers—that nevertheless weren't ontologically committing.[5] We can now see how misguided these projects were, at least in relation to the project of taming the ontological commitments of quantifiers. For a set of

[5] There is a great deal of this literature. A taste: Quine 1973, Marcus 1978, 1993, Gottlieb 1980. For recent work attempting something similar, see Hofweber, e.g., his 2000.

objectual first-order quantifiers Q are only ontologically committing subject to an antecedent interpretation of the metalanguage quantifiers M that the semantics of the quantifiers Q are characterized in terms of.

The same point holds other sorts of idioms that are taken to be ontologically committing, as can be easily seen. I'll illustrate this briefly. One nontraditional approach to the semantics of demonstratives is relatively direct.[6] Motivated by the claim that a truth-conditional semantics is (often) to be supplied by an internal I-language of the speaker for herself, indexical expressions that appear on both sides of the biconditional can be treated as co-referring$^{(r \text{ or } e)}$. That is, utterances of

(1) "That vase is ugly," is true iff that vase is ugly,

(2) "She is an hallucinated object," is true iff she is an hallucinated object,

(3) "The hobbit over here isn't real," is true iff the hobbit over here isn't real,

(4) "I am hungry," is true iff I am hungry,

are various truth-conditions the theory is supposed to yield. A variant set of truth conditions, ones that take account of the context of the interpreter being different from that of the utterer of the utterances in question, is to appropriately shift the indexicals like so in utterances of:

(3*) "The hobbit over here isn't real," is true iff the hobbit over there isn't real.

(4*) "I am hungry," is true iff he is hungry.

[6] See Ludlow 1999, chapter 3.

Providing a truth-conditional interpretation of someone else's utterances (at the moment that person is making them) may acceptably include indexical uses on the right side of the biconditionals that are appropriated saturated by items in the interpreter's context. Truth-conditional clauses of either sort, however, allow empty singular terms to appear on both sides of the appropriate truth conditions. If one can be in a context where it makes sense to gesture towards one's (or someone else's) hallucinated object, and utter a truth-apt demonstrative sentence with terms that refer^{e} to that hallucinated object, then a truth-condition clause can be supplied that avails itself of exactly the same resources. In short, terms on the right side of a truth-condition clause that co-refer^{e} to terms on the left side of that clause may be used. And contexts—the background from which interpretations for context-hungry terms are supplied—needn't be restricted to only satisfying terms that refer^{r} (to what's real).

The above sketch of an approach to truth-condition clauses, one that utilizes context-hungry vocabulary isn't, however, the standard approach. The standard approach is one that—as Ludlow (1999, 57) puts it—the "character" or "role" of a context-hungry vocabulary item is excluded from the right side of the truth condition. More to the point, such context-hungry vocabulary doesn't occur at all on the right side of the truth condition. Instead, their content is expressed in a "conditionalization": a description of their referents. Instead of (1), (2), (3), and (4), we have:

(1**) An utterance *u*, at time *t*, by speaker *s*, of "That vase is ugly" is true iff there is an object (a vase) *o*, designated by *s* by her use of "That vase" at time *t*, and *o* is ugly.

(2**) An utterance *u*, at time *t*, by speaker *s*, of "She is an hallucinated object," is true iff there is an object *o* designated by *s* by her use of "She," at time *t*, and *o* is an hallucinated object.[7]

(3**) An utterance *u*, at time *t*, by speaker *s*, of "The hobbit over here isn't real," is true iff the object *o* indicated by *s* by her use of "over here," at time t, is (presents as) a hobbit, and isn't real.

(4**) An utterance *u*, at time *t*, by speaker *s*, of "I am hungry," is true iff if *s*, at time *t*, is hungry.[8]

(1**)-(4**) utilize quantifiers. Doing so, however, doesn't require that such quantifiers be ontologically committing (no more so than their appearance in the object language implies

[7] It may be that the content of "she"—being female—must be demoted to "presents as female." This will depend on what properties are to be attributed to hallucinated objects. This is not something I can discuss further now. See chapter 2 of Azzouni 2010.

[8] (1**)-(4**) are meant to be simple illustrations of a broadly characterized family of approaches. In particular, and among other things, in formulating it I'm not attending to issues about exactly how conditionalizations are supposed to be characterized, and in what detail; I'm skirting over issues about exactly how content that appears in the utterance (e.g., "vase," "he," etc.) is supposed to contribute to the truth conditions of the utterance; I'm skirting over mismatch issues between demonstrative expressions being vacuous—not because a hallucinated object is demonstrated, but because (say) the object someone intended to demonstrate was moved elsewhere—and the definite description on the right hand side being false as a result. The data is complicated, and the options are numerous, debated, and debatable. See Lepore and Ludwig 2000, 230-238 for discussion and criticism of various approaches to the conditionalizations of complex demonstratives. It should be clear already, however, that my points about the ontological neutrality of the resulting truth-condition clauses will be unaffected by the replacement of my (1**)-(4**) with appropriately complicated alternatives.

"Designated," incidentally, is my stand-in (or cover-up) for a fuller explication of reference$^{(r \text{ or } e)}$ in terms of gestures, intentions, speech acts, etc. I say a little more about this shortly.

such). Nothing, therefore, prevents such quantifiers from "ranging over" various kinds of hallucinated objects.

For purposes of discussion, I'm assuming the cogency of the standard epistemic nightmare of hallucinations that are indistinguishable from waking experience. That is, an hallucinated object can, as it were, blend in indistinguishably among real objects. It can exhibit the sort of continuity over time that real objects exhibit. It can appear to be over there at that moment, it can seem to stride across the room. I'm assuming, that is, that we are capable of experiencing hallucinations that can successfully imitate waking experience in every way.[9] This means that all the contextual resources that are relevant to the semantic characterization of demonstrative utterances are available in this case as well. It's this that makes (2**) and (3**) cogent truth conditions.

One may still have doubts that the standard (and nonstandard) approaches to singular utterances and expressions are ontologically neutral in the way that I've been arguing that they are—even if one accepts what I've claimed so far. After all, central to many approaches of this sort is the notion of a structured proposition, or a Russellian proposition. In asserting that Bertrand Russell is tall, I assert a proposition that not only contains Bertrand Russell but also contains the property *Tallness*. Furthermore it doesn't contain these helter-skelter, the way that an unordered set that contains Bertrand Russell and the property *Tallness* might be thought to contain these things. Rather, the proposition is structured in an appropriate fashion that enables it

[9] This assumption may be false. For the record, my suspicion is that it is indeed false. As a matter of neurophysiology, we are I think, incapable of sustained hallucinations of this sort, we are I think incapable of experiencing hallucinations that are entirely indistinguishable—as it's often put—from veridical experience. This empirical refutation of the assumption may be important for epistemology but it isn't important for philosophy of language. This is because our linguistic practices, and the appropriate semantics for various demonstratives and other expressions, so I claim, are designed to handle the possibility of veridically-indistinguishable hallucination.

to have truth-apt properties, and that reveals how those truth-apt properties are due to the ways that its constituents are structured within that proposition; I'm here speaking both of subpropositional constituents as well (of course) of items such as Bertrand Russell himself and the property *Tallness*. We may designate the proposition that Bertrand Russell is tall like so: <<Russell>, <*Tallness*>>.

Such a view of structured propositions, it may seem obvious, cannot similarly handle my assertion that Frodo is short. For the proposition that Frodo is short must be distinguished from the proposition that Gandalf is short, since one is (presumably) true and the other is false. But the structured propositions, so it seems, seem identical: << >, <*Shortness*>>, << >, <*Shortness*>>, blanks, that is, located where Gandalf and Frodo would be, if there only were a Gandalf and a Frodo. In short, the needed distinctions between these prima facie distinct propositions vanish.

Not so. For the semantic theory of propositions that is appropriately used here is one that is housed (by assumption) in a background set theory. And the quantifiers of such a background set theory range over not only actual objects but, needfully, more than that. Frodo and Gandalf are urelements of such a set theory. And so, relative to that background set theory, we have the needed distinguishable propositions <<Frodo>, <*Shortness*>> and <<Gandalf>, <*Shortness*>>.

It's not uncommon to describe us as *grasping* certain propositions, or of *entertaining* such propositions. And if these are Russellian propositions that we so entertain, we must do so by grasping their constituents in a nonconceptual manner. That is, in grasping the Russellian proposition that Bertrand Russell is tall, I grasp it not via a conceptualization of Russell, as, for example, as the younger author of *Principia Mathematica*, but instead as—as it were—*that*. In so grasping the Russellian proposition that Bertrand Russell is tall, let us say (as many philosophers do) that I'm "acquainted" with Bertrand Russell.

The polemical line of thought is this: One cannot be acquainted with what doesn't exist. One can conceptualize it, of course: *Pegasus doesn't exist*, for example, must be conceptualized as *The flying horse of Greek mythology doesn't exist* (or something similar). But the possibility of veridically-indistinguishable hallucinations shows that this polemical line of thought isn't mandatory. As already noted, I may hallucinate a figure that I spy on. At first I think that he's drinking a martini. Later, to my surprise, I discover he's drinking soda water. Or that he has three arms. Or, that I was wrong, that he's not an hallucination of mine, instead he's real! In attempting to track such an hallucinated figure through space and time, my conceptualizations of him no more dictate whether I am right or wrong about him than they do with any real figure. In both cases, I'm equally acquainted with the figure in question. If I can be acquainted with real items that I experience in perception, then I can be acquainted with unreal items that are perceptually indistinguishable in their behavior from such real items.

Some philosophers may be tempted to reconceptualize the examples I've been giving, by redescribing them as ones in which the hallucinated object changes in the properties it has, or that it changes in the properties attributed to it, rather than our discovering such. In some cases that will certainly be the correct way to conceive the matter. But not always: if the hallucinations are consistent enough in their object-directed qualities, it may be a mistake to treat each reappearance of an hallucinated character as a reappearance of a new hallucinated object. Indeed, this may be inappropriate neurophysiologically simply because those parts of the brain that are enable the recognition and re-recognition of familiar objects may be involved during such hallucinations. How hallucinatory content should be described, how in particular the individuation of hallucinated objects should go is not something that a philosopher should be allowed to stipulate for his or her own theoretical convenience.

A related point (for the foregoing has been a brief discussion of the terminological borders between special sciences—in particular that of semantics and that of various branches of psychology) is that the strictly technical notion of "acquaintance" raised in the course of this discussion must be treated specifically as a notion of the science of semantics, it must be proprietary to semantics. It is not, that is, necessarily a notion of epistemology, and it's certainly *not* a notion of subpersonal psychology. It's not a notion of subpersonal psychology because whatever underlying subpersonal story emerges that explains how we are acquainted with Bertrand Russell through an act of perception, it's a story that definitely involves *subpersonal* conceptualizations of Bertrand Russell, or what would clearly be conceptualizations of Bertrand Russell if we were capable of being conscious of the machinations of the subpersonal visual system. What's become quite clear from vision science, for example, is that if we were conscious of the visualization mechanisms by which we see Bertrand Russell, and by which we recognize him as Bertrand Russell, we would indeed, richly conceptualize him in terms, for example, of his contours, motion processes, and by sensitivity to other cues. What makes this perceptual process one that's nevertheless appropriately described as acquaintance from the point of view of semantics, what makes this perceptual process of identifying Bertrand Russell—*that* object—as the referent of *that* appropriately described as acquaintance in the semantically proprietary sense, what does this is precisely the necessarily subpersonal nature of these visual mechanisms, the necessarily subpersonal nature of these subpersonal conceptualizations that are otherwise essential to the process. I'll note quickly that acquaintance *may* (by contrast to cognitive psychology) turn out to be a notion of epistemology if only because central to epistemology is

the notion of knowledge, and knowledge, in turn, may be restricted to what we are conscious of.[10]

There may seem to be an elephant in the room that I've failed to acknowledge. This is that I earlier offered truth conditions for utterances containing instances of terms that refer to nothing at all (terms that refer[e]), truth conditions such as (2**) and (3**), here repeated:

(2**) An utterance *u*, at time *t*, by speaker *s*, of "She is an hallucinated object," is true iff there is an object *o* designated by *s* by her use of "She," at time *t*, and *o* is an hallucinated object.

(3**) An utterance *u*, at time *t*, by speaker *s*, of "The hobbit over here isn't real," is true iff the object *o* indicated by *s* by her use of "over here," at time t, is (presents as) a hobbit and isn't real.

But these seem not to supply necessary and sufficient truth conditions, at least in one way that necessary and sufficient truth conditions are understood. The left-hand side of each of these clauses relates the utterance *u* to an object that doesn't exist, and the right-hand side of each clause describes the truth condition of the utterance *u* in terms of a condition on that object. But there are no such objects (by assumption) and so they have no properties. How then, can (2**) and (3**) and their ilk supply truth *conditions*? How can they reveal the circumstances under which the utterances thus given truth conditions are true or not?

[10] For the record, I doubt this: we have knowledge we're not conscious of, although we are conscious *that* we have it. This, however, isn't a topic to be taken up now.

For purposes of further illustration, consider an utterance of the sentence, "Zeus was worshipped by the ancient Greeks." Presumably this utterance of this sentence is true, and presumably the semantics of the utterance provides it with truth conditions. Consider the following truth condition:

(5) An utterance of "Zeus was worshipped by the ancient Greeks" is true if and only if ZEUS WAS WORSHIPPED BY THE ANCIENT GREEKS,

where the capitalized words are the appropriate co-referring$^{(e \text{ or } r)}$ metalanguage constants, predicates and logical particles that correspond to their uncapitalized object-language brethren. How is this truth condition for an utterance of "Zeus was worshipped by the ancient Greeks," supposed to be connected to the actual truth of that utterance? How can such a condition *determine* that the utterance of the statement within quotations on the left-hand side of (5) is true?

It can't. And here I must delicately take the bull by the horns: "Truth conditions," is unfortunate terminology that was originally used to describe a certain (Tarskian) style of semantic theory because of the false impression that such semantic theories must yield (i.e., provide determining conditions for) the truth values of (the utterances of) the sentences the semantic theories are of. On the ontologically-neutral view of semantics, as noted, a "truth-conditional" semantics (e.g., a Tarskian theory utilizing objectual quantifiers) can be given to a set of expressions exactly as it's done in the various semantic traditions. Furthermore, these truth-conditions are *compatible* with the truth values that these expressions actually have. For example, on a Tarskian approach, the truth of an utterance of "Zeus was worshipped by the

ancient Greeks" is correlated with the truth of a (meta)language expression, perhaps of the form, "ZEUS WAS WORSHIPPED BY THE ANCIENT GREEKS," where "Zeus" and "ZEUS" are both vacuous terms, and where the two expressions in question are to have the same truth value (true, in this case). Traditional truth conditional theories thus don't give truth conditions that *determine* the truth values of those expressions under all circumstances. Or rather, they do so in pretty much the same fashion that the following clause provides truth conditions:

(6) An utterance of "Napoleon was worshipped by the ancient Greeks" is true if and only if NAPOLEON WAS WORSHIPPED BY THE ANCIENT GREEKS.

An utterance of the sentence within quotations on the left-hand side of (6) is true if and only the right-hand side of (6) is true. The right-hand side isn't true, and thus neither is any utterance of the expression within quotations on the left-hand side. Exactly the same thing can be said with respect to (5)—except for the fact that the right-hand side *is* true.

A question persists in slightly mutated form, namely, exactly what is it that determines the actual truth values of sentences with vacuous terms? To enable an illuminating description of how the truth values of utterances of sentences with vacuous terms relate to the truth conditions of those expressions supplied by a semantic theory, one should separate talk of *truth conditions* from talk of *truth-value inducers*. The truth conditions of the utterance of a sentence are the clauses governing that utterance given by a semantic theory. The truth-value inducers are the objects in the world that the truth value of that utterance is in virtue of. In the *specific* case where *all* the instances of the terms in the utterance of a sentence refer to objects that exist, the truth-

value inducers of a sentence can be identified with the objects the instances of the terms in that utterance of the sentence refer^{r} to (or with those objects and how they are, etc.).[11]

But when an expression has instances of vacuous terms in it, this isn't so. Consider mathematical statements. On the nominalist view (on my view, in particular), the truth-value inducers for "2 + 2 = 4" aren't the numbers and their relationships because there are no such numbers. Rather, the truth-value inducers are a blend of (relevant) objects that exist—us, our language, and our scientific practices included—and that jointly yield the indispensability of the truth of "2 + 2 = 4," to our assertoric practices in ordinary life and in our sciences. Included among the truth-value inducers, of course, are physical objects; but nothing exists that corresponds to the terms "2" or "4," and so nothing corresponding to "2" or "4" are among these truth-value inducers. "2" and "4" refer^{e} but they don't refer^{r}.

One last point should be stressed to round out this very brief summary of, and advertisement for, what's admittedly a pretty complex package of views. The conception of truth that I prefer isn't one that's meant to replace "correspondence truth" by, say, "permanently-indispensable truth." One might think this is the case because one might think that what has to be on offer is a "pluralist notion" of truth that allows a role for correspondence in determining the truth values of utterances and other expressions when all the terms involved are nonvacuous, but that instead utilizes indispensability considerations to determine truth values when some of the terms involved are vacuous. No, I urge instead a single deflationist nonpluralistic notion of truth, one where the only characterization of the meaning of "true" is (as a logical device) in terms of a

[11] The objects, in other words, the constants in the sentence refer^{r} to, and that the quantifiers in the sentence range over (that are real), and so on. In this case, and only in this case, the "truth-value inducers" can be called truth makers" without it being misleading.

(generalization of) Tarski-biconditionals, statements of the form, "'Snow is white' is true if and only if snow is white."[12]

Some may think that the science of semantics should encompass truth conditions in a substantial determinate sense, that the truth conditions it provides for expressions should be ones that really do characterize the possible circumstances of the truth and falsity of expressions in a way similar to how a description of a triangle as being an enclosed three-sided figure composed of straight line segments provides necessary and sufficient conditions for a figure being a triangle. They should not do so in the way that being a triangle provides necessary and sufficient conditions for being a triangle. I have other reasons, however, to doubt that semantics should be so conceived. But that is not the topic of this paper.

Acknowledgments. My thanks to Gary Ostertag for conversation on and around the topics discussed and alluded to in this paper.

Bibliography

Azzouni, Jody. 2004. *Deflating existential consequence: A case for nominalism*. Oxford: Oxford University Press.

Azzouni, Jody. 2006. *Tracking reason: Proof, consequence and truth*. Oxford: Oxford University Press.

Azzouni, Jody. 2007. *Ontological commitment in the vernacular*. *Noûs* 41: 204-226.

Azzouni, Jody. 2010. *Talking about Nothing: Numbers, Hallucinations and Fictions*. Oxford: Oxford University Press.

Azzouni, Jody. Forthcoming. Deflationist truth. In (Michael Glanzberg, ed.) *Handbook on truth*. Oxford: Blackwell Publishing.

Gottlieb, Dale 1980. Ontological economy: Substitutional quantification and mathematics. Oxford: Oxford University Press.

Hofweber, Thomas 2000. Quantification and non-existent objects. In *Empty names, fiction and the puzzles of non-existence*, ed. Anthony Everett and Thomas Hofweber, 249-73. Stanford, Calif.: CSLI Publications.

Lepore, Ernest, and Kirk Ludwig. 2000. The semantics and pragmatics of complex demonstratives. *Mind* 109,434: 199-240.

[12] For further details on this see Azzouni 2006 and Azzouni forthcoming.

Ludlow, Peter. *Semantics, tense, and time: An essay in the metaphysics of natural language*. Cambridge, Mass.: The MIT Press.
Marcus, Ruth Barcan 1978. Nominalism and the substitutional quantifier. In *Modalities: Philosophical essays*, 111-124. Oxford: Oxford University Press.
Marcus, Ruth Barcan 1993. Quantification and ontology. In *Modalities: Philosophical essays*, 75-109. Oxford: Oxford University Press.
Ostertag, Gary. 1998. *Definite descriptions: A reader*. Cambridge, Massachusetts: The MIT Press.
Parsons, Charles 1971. A plea for substitutional quantification. *Journal of Philosophy* 68, 231 -237.
Putnam, Hilary 1981. *Reason, truth and history*. Cambridge: Cambridge University Press.
Quine, W.V. 1973. *The roots of reference*. La Salle, Illinois: Open Court.