

Remarks on *only*

Michela Ippolito
University of Toronto

1. Introduction

The *only* sentence in (1) conveys two propositions: the exclusive proposition that nobody other than the Red Sox can beat the Yankees and the prejacent proposition that the Red Sox can beat the Yankees.

- (1) Only [the Red Sox]_F can beat the Yankees.

Several theories of the meaning of *only* have been suggested in the literature: these theories, while agreeing on the analysis of the exclusive proposition, disagree on the status of the prejacent. The objective of this paper is to assess the merits and problems of these theories and to sketch an alternative proposal that I will argue solves some of the problems raised by the previous theories. A more extensive discussion of the issues presented in this paper can be found in Ippolito (2007).

2. The Problem of the Entailment Analysis

According to the entailment analysis, proposed by Atlas (1993) among others, the sentence in (1) asserts both the exclusive and the prejacent propositions. This analysis does account for the fact that neither proposition can be straightforwardly denied, as shown in (2).

- (2) a. #Only [the Red Sox]_F can beat the Yankees, and/but the Blue Jays can too.
b. #Only [the Red Sox]_F can beat the Yankees, and/but they can't either.

However, the parallelism breaks down in negative sentences: while the exclusive proposition behaves like a true entailment, the prejacent does not.

- (3) a. Not only [the Red Sox]_F can beat the Yankees. Therefore, somebody other than the Red Sox can. The Blue Jays can too.
b. Not only [the Red Sox]_F can beat the Yankees. Therefore, the Red Sox can.

I would like to thank David Beaver, Josh Brown, Kai von Fintel, Larry Horn, Craige Roberts, and the audiences at the University of Michigan's Workshop in Linguistics and Philosophy 2005 and Salt 16. Mistakes and omissions are mine.

On the basis of the asymmetry in (3), it seems reasonable to maintain that the two propositions are not equal and, more specifically, that the prejacent is not an entailment of the sentence. In particular, the behavior of the prejacent under negation suggests that it is a presupposition.

3. The Problem of the Strong Presupposition Analysis

According to what I will label the ‘strong presupposition’ analysis, (1) asserts that nobody other than the Red Sox can beat the Yankees, and presupposes that the Red Sox can. Because presuppositions project under negation (negation is a ‘hole’ in Karttunen’s terminology), the asymmetry in (3) is explained.

Even though this analysis is appealing, it faces some challenges. The first problem, observed already by Horn (1996) and more recently by Geurts and van der Sandt (2004), is that, contrary to the standard behavior of presuppositions (see 4b, the prejacent does not project in modalized *only* sentences: for example, in (4) the speaker is not committed to the truth of the proposition that the Red Sox can beat the Yankees.

- (4) a. It is possible that only [the Red Sox]_F can beat the Yankees, and maybe not even they can.
 b. It is possible that John will regret having smoked, #and maybe he never smoked.

The second problem, observed again by Horn (1996), is based on the observation that the following question-answer exchange is felicitous.

- (5) A: Who can beat the Yankees?
 B: Only [the Red Sox]_F.

If the *only* statement presupposed that the Red Sox can beat the Yankees, then B’s answer would be presupposing something that A does not know. Since what is presupposed is taken to be common ground between the participants in the conversation, the following move is expected to cause infelicity. Indeed, when we consider standard instances of presuppositions, this expectation is met. The following exchange is quite odd.

- (6) A: Is John married?
 B: #His wife is a doctor.

The comparison between (5) and (6) suggests that the prejacent is not a presupposition.

A defender of the strong presupposition analysis might suggest that (6) is worse than (5) because B’s assertion in the former is irrelevant to the question (the presupposition being a partial answer), whereas B’s assertion in the latter is in fact a partial answer to the question. While this difference is real, I don’t think it explains the contrast in judgement between (5) and (6). To see this, consider the following pair.

- (7) a. A: Did the Red Sox beat anyone?
 B: #It is the Yankees that they beat.
 b. A: Did the Red Sox beat anyone?
 B: They beat the Yankees.

The difference between (7a) and (7b) does not lie in what kind of information the two answers convey, but in how this information is conveyed in the two cases: the proposition that the Red Sox beat someone is conveyed by both answers but, while it is presupposed in the infelicitous (7a), it is asserted in (7b).

4. The Weak Presupposition Analysis

Horn (1996) and more recently Geurts and van der Sandt (2004) have suggested variants of the presupposition analysis. Here I will abstract away from their differences and I will collect these theories under the label “weak presupposition analysis”. According to these theories, *only* is a presupposition trigger but the presupposition that it triggers is an existential proposition. For example, the presupposition triggered by *only* in our familiar example is that someone can beat the Yankees.

- (8) Only [the Red Sox]_F can beat the Yankees.
 >> Someone can beat the Yankees.

Since the assertion is the exclusive proposition that nobody other than the Red Sox can beat the Yankees, it follows from the assertion together with the existential presupposition that the Red Sox can beat the Yankees.

The weak presupposition analysis, however, does not clearly resolve the problems faced by the strong presupposition analysis: (i) the lack of projection in modal sentences is still unaccounted for, and (ii) the felicity of (5) would be explained by assuming that the question *Who can beat the Yankees?* presupposes that someone can beat the Yankees, an assumption controversial at best.

Moreover, the weak presupposition analysis faces its own problems. First, as independently also observed by Rooij and Schulz (2005), an *only* sentence with a conjoined NP in focus, such as (9), only presupposes that someone can beat the Yankees.

- (9) Only [the Red Sox and the Blue Jays]_F can beat the Yankees.

Since the assertion is that nobody other than the Red Sox and the Blue Jays can beat the Yankees, it does not follow that both the red Sox and the Blue Jays can, and therefore we can't explain the prejacent.

Second, the weak presupposition analysis cannot account for why asserting a negative *only* sentences commits the speaker to the truth of the prejacent. Consider (10).

- (10) Not only [the Red Sox]_F can beat the Yankees.

The sentence asserts that someone other than the Red Sox can beat the Yankees, and presupposes that someone can beat the Yankees. It does not follow from assertion and presupposition together that the Red Sox can beat the Yankees. Why then upon hearing (10) are we committed to the prejacent? Geurts and van der Sandt (2004) are aware of this problem and, in order to solve it, propose that the prejacent in (10) is a conversational implicature arising from a competition with the sentence *John_F cannot speak French*.¹ However, their solution is highly problematic: it predicts that, while the prejacent is not cancellable in a positive *only* sentence (it follows from the assertion and the presupposition together), it should be cancellable in a negative *only* sentence since it is a mere implicature. As the following pair shows, this result is incorrect.

- (11) a. Only [the Red Sox and the Blue Jays]_F can beat the Yankees, and maybe not even they can.
 b. #Not only [the Red Sox]_F can beat the Yankees, and in fact the Red Sox can't.

The situation is reversed: the prejacent is cancellable in the positive sentence, but not in the negative.

5. The Implicature Analysis is Problematic Too

McCawley (1981) proposed that the prejacent is a conversational implicature. Let us go back to our familiar example.

- (12) Only [the Red Sox]_F can beat the Yankees.

The idea is the following. When a speaker utters (12), she is asserting that nobody other than the Red Sox can beat the Yankees. If she knew that the Red Sox cannot beat the Yankees, she should have said so by uttering the sentence *Nobody can beat the Yankees*. Assuming that she is knowledgeable on the issue of who can beat the Yankees, her utterance must mean that she knows that the Red Sox *can* beat the Yankees. More recently, a version of the implicature analysis has been defended by Rooij and Schulz (2005).

The main objection that implicature accounts of the prejacent face is that, while conversational inferences of positive sentences do not remain when these sentences are negated (see (13)), the prejacent of an *only* sentence does.

- (13) a. John has two children.
 John has exactly two children.
 b. John doesn't have two children.
 John has exactly two children.

¹See Geurts and van der Sandt (2004) for the details of how this implicature is derived.

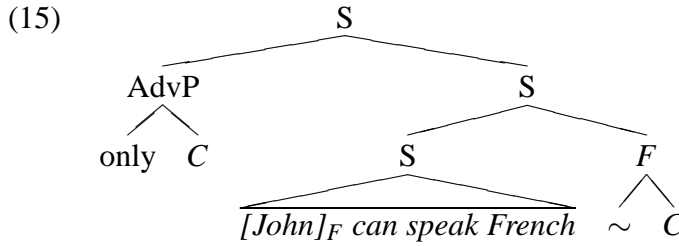
The appeal of the implicature analysis is that it explains why a positive *only* sentence Even though interesting, a simple implicature analysis does not work. In what follows I will present my own proposal, which is developed in greater detail in Ippolito (2007).

6. The Proposal

The particle *only* associates with focus. Following Rooth (1992) and Rooth (1996), I take focus to introduce a set of alternative propositions in a presuppositional way, according to the definition in the \sim operator (see 14).

- (14) Where φ is a syntactic phrase and C is a syntactically covert semantic variable, $\varphi \sim C$ introduces the presupposition that C is a subset of $\llbracket \varphi \rrbracket^f$ containing $\llbracket \varphi \rrbracket^o$ and at least one other element.²

When we apply this semantics to *only*, the sentence *Only the Red Sox can beat the Yankees* comes out with the following structure.



What is the contribution of *only* to the truth conditions of the sentence? We want the sentence to assert that for all propositions p in C , where C is a contextually salient set of alternative propositions of the form x can beat the Yankees, if p is true then it is entailed by the proposition that the red Sox can beat the Yankees. In order to do so, I will adopt the Roothian semantics for focus, but contrary to Rooth I will not take the preajcent to be a presupposition triggered by *only*. Here is the meaning of the adverb.

- (16) $\llbracket \text{only} \rrbracket^w = \lambda C : C \subset \llbracket \varphi \rrbracket^f$ and $\llbracket \varphi \rrbracket^o \in C$ and $|C| \geq 2$. $\lambda p. \forall q \in C (q(w) = 1 \rightarrow (p \rightarrow q))$

Let us go back to our sentence, repeated in (17), and let us suppose that C is constituted by the set {the Red Sox can beat the Yankees; the Blue Jays can beat the Yankees; the Orioles can beat the Yankees; the Devil Rays can beat the Yankees}, closed under conjunction.³

- (17) Only [the Red Sox]_F can beat the Yankees.

² $\llbracket \alpha \rrbracket^o$ denotes the semantic value of the phrase α , whereas $\llbracket \alpha \rrbracket^f$ denotes its focus value.

³Let us also suppose that the proposition that the Yankees can beat the Yankees cannot be included in C .

My proposal is that *only* does trigger a presupposition, but the presupposition it triggers is neither the prejacent that the Red Sox can beat the Yankees nor the existential presupposition that someone can beat the Yankees. Instead, it is the “scalar” presupposition in (18): if any proposition in C is true, then the proposition in the scope of *only* is true.

- (18) *Only* presupposition (where ϕ is its complement):
 $\forall q \in C (q(w) = 1 \rightarrow \llbracket \phi \rrbracket^w = 1)$

Applied to our example, the presupposition is that if any proposition in C is true, then it is true that the Red Sox can beat the Yankees. In other words, if any salient alternative to the Red Sox can beat the Yankees, then the Red Sox can.

The truth conditions for (17) will then look as follows.

- (19) $\llbracket \text{Only}(C_5) [\text{the Red Sox}]_F \text{ can beat the Yankees} \sim C_5 \rrbracket^{R,w}$ is defined only if:
 (1) $R(5) \subset \llbracket \text{The Red Sox can beat the Yankees} \rrbracket^f$ and $\llbracket \text{The red Sox can beat the Yankees} \rrbracket^w \in R(5)$ and $|R(5)| \geq 2$ (focus presupposition)
 (2) $\forall q \in R(5) (q(w) = 1 \rightarrow \llbracket \text{The Red Sox can beat the Yankees} \rrbracket^w = 1)$

If defined, $\llbracket \text{Only}(C_5) [\text{the Red Sox}]_F \text{ can beat the Yankees} \sim C_5 \rrbracket^{R,w}$
 $= 1$ if $\neg \exists q \in R(5) : q(w) = 1 \wedge \llbracket \text{The Red Sox can beat the Yankees} \rrbracket^w \not\models q$
 $= 0$ if $\exists q \in R(5) : q(w) = 1 \wedge \llbracket \text{The Red Sox can beat the Yankees} \rrbracket^w \not\models q$

The sentence will be defined and true in worlds where only the Red Sox can beat the Yankees; defined and false in worlds where the Red Sox and some other (relevant) team can beat the Red Sox; undefined in worlds where some other (relevant) team can beat the Yankees but the Red Sox can't.

6.1. Deriving the Prejacent

With these truth conditions in hand, we can now add the last piece to the picture: the prejacent follows from a conversational implicature. Assuming that everybody in conversation is following the Gricean maxims, the implicature will be generated as follows. A speaker who, in a context where it is relevant to know who can beat the Yankees, utters the sentence *Only the Red Sox can beat the Yankees* instead of the more informative (stronger/asymmetrically entailing) *Nobody can beat the Yankees*, will be understood as not being in a position to utter the stronger statement. Assuming that the speaker is competent about the subject, she will be understood as intending to communicate that the stronger statement is false, i.e. that there is someone who can beat the Yankees. This is the implicature. Now, since she asserted that nobody other than the Red Sox can, it must be that she believes that it is the Red Sox who can beat the Yankees. This is the prejacent.

7. Solving the Problems Raised by the Previous Theories

In this section I will consider the problems raised against the previous theories of the meaning of *only* and I will show that the current analysis, which combines elements of the presupposition and the implicature analyses, does not run into the same difficulties.

7.1. Cancellability of the Prejacent in Positive ‘Only’ Sentences

Recall one of the objections to both the strong and the weak presupposition analyses: neither the prejacent nor the existential presupposition seem to project in modal sentences.

- (20) It is possible that only [the Red Sox]_F can beat the Yankees, and maybe not even they can.

As we observed above, the speaker is not committed to the truth of the prejacent nor to the truth of the proposition that someone can beat the Yankees. In the analysis that I am proposing, this is no longer a problem since the prejacent is a conversational implicature and, as such, cancellable. All that is expected to project is the conditional presupposition that if anyone can beat the Yankees, that’s the Red Sox.

7.2. The Prejacent in Negative ‘Only’ Sentences

Above we saw that the present analysis, just like the implicature analysis sketched in Section 5, scores better than the presupposition analyses with respect to the cancellability of the prejacent in positive sentences. However, implicature analyses are too weak and cannot explain why the prejacent remains in a negative *only* sentence. The current analysis does not face this problem and it predicts that the prejacent should remain in a negative sentence. Here is why. Consider an utterance of the sentence in 21.

- (21) Not only [the Red Sox]_F can beat the Yankees.

This sentence carries the presupposition that if anybody can beat the Yankees, the Red Sox can, as shown below.

- (22) $\forall q \in C [q(w) = 1 \rightarrow \llbracket [\text{The Red Sox}]_F \text{ can beat the Yankees} \rrbracket^w = 1]$.

Moreover, (21) asserts that there is a proposition in C that is true and not entailed by the proposition that the Red Sox can beat the Yankees. Because (21) can be true only if (22) is true, if (21) is true, then it follows that the Red Sox and someone other than the Red Sox can beat the Yankees, which entails that the Red Sox can beat the Yankees (the prejacent).

The analysis correctly explains the cancellation data discussed in Section 4 and repeated below.

- (23) a. Only [the Red Sox]_F can beat the Yankees, and maybe not even they can.
 b. #Not only [the Red Sox]_F can beat the Yankees, and in fact the Red Sox can't.

Recall that the fact that the prejacent is cancellable in a positive *only* sentence but not in a negative one was problematic for all types of analyses discussed before. The strong and weak presupposition analyses had trouble with the cancellability of the prejacent in the positive sentence and Geurts and van der Sandt's proposed solution did not help explain why the prejacent is not cancellable in a negative *only* sentence. As for the implicature analyses, they faced the problem of explaining why a negative *only* sentence carries the truth of the prejacent.

The present analysis, on the other hand, correctly account for (23): the prejacent is cancellable in the positive sentence because it follows from a conversational implicature; it is not cancellable in the negative sentence because it is entailed by the assertion and the presupposition together.

7.3. Conjoined NPs in Focus

The current analysis can also explain the prejacent in *only* sentences where a conjoined NP is in focus. In (24) I repeat the example we considered before.

- (24) Only [the Red Sox and the Blue Jays]_F can beat the Yankees.

The prejacent (the Red Sox and the Blue Jays can beat the Yankees) is a conversational scalar implicature, derived as follows. Imagine that a speaker, who is supposed to be following the Gricean maxims, were to utter (24). Because they are both more informative (asymmetrically entailing), she should have uttered either *Only the Red Sox can beat the Yankees* or *Only the Blue Jays can beat the Yankees*. The fact that she did not must mean that she was not in a position to make either stronger claim. Assuming that she is knowledgeable about who can beat the Yankees, this means that she believes that either stronger statement is false, i.e. that there is someone other than the Red Sox who can beat the Yankees and there is someone other than the Blue Jays who can too. Since she asserted that nobody other than the Red Sox and the Blue Jays can beat the Yankees, she must believe that only the Red Sox and the Blue Jays can.

8. Some Apparent Puzzles

When we discussed the truth conditions in Section 6, we noticed that the proposal correctly predicts that the sentence *Only [the Red Sox]_F can beat the Yankees* will be defined and true in a world where the Red Sox and nobody else can beat the Yankees; will be defined and false in a world where the Red Sox and somebody else can beat the Yankees; will be undefined if someone other than the Red Sox, but not the Red Sox, can beat the Yankees. Consider now a world where nobody

can beat the Yankees (or, better, consider a context set entailing that nobody can beat the Yankees). Does our proposal account for the intuition that the sentence is infelicitous?

- (25) Context: Nobody can beat the Yankees.
 #Only [the Red Sox]_F can beat the Yankees.

At first, it would seem that this context creates a problem for the analysis: the presupposition carried by the *only* sentence (“if there is a proposition in *C* that is true, then it is true that the Red Sox can beat the Yankees”) seems true (since the antecedent is false) and the sentence should come out as defined and true, contrary to the judgment in (25). Is this a real problem? I will call this “point 1”.

“Point 2” is the following. We said so far that the prejacent of a positive *only* sentence is cancellable. However, one important observation is that cancelling it requires the use of an epistemic operator, e.g. the modal adverbs *maybe* or *perhaps*. As the pair below shows, cancelling the prejacent by simply denying it gives rise to a contradictory discourse.

- (26) a. #Only [the Red Sox]_F can beat the Yankees; in fact, not even they can.
 b. Only [the Red Sox]_F can beat the Yankees, and maybe not even they can.

This is unexpected since conversational implicatures are not subject to this constrained.

- (27) The Red Sox won some games; in fact, all.

In what follows I will suggest that points 1 and 2 are related and that the proposal I have defended does explain both.

Reconsider the presupposition triggered by *only* in the sentence *Only the Red Sox can beat the Yankees*.

- (28) $\forall q \in C [q(w) = 1 \rightarrow \llbracket [\text{The Red Sox}]_F \text{ can beat the Yankees} \rrbracket^w = 1)$

Assuming that a proposition expressed by a sentence *S* is the set of possible worlds where *S* is true, adding the proposition in (28) to the context set (the set of all possible worlds where all the propositions in the common ground are true) amounts to ruling out worlds where somebody other than the Red Sox (e.g. the Blue Jays) can beat the Yankees but the Red Sox cannot. Therefore, after adding (28) to the context set, this latter will contain: (i) worlds where the Red Sox can beat the Yankees and nobody else can; (ii) worlds where the Red Sox *and* somebody else (e.g. the Blue Jays) can beat the Yankees; (iii) worlds where nobody can beat the Yankees. The context set is an idealized representation of a state of information, that is the information that the participants in the conversation share. Let us make the assumption that you can represent the likelihood of a proposition quantitatively, i.e. a proposition *p* is more likely than a proposition *q* in a particular context set iff there are more *p*-worlds than *q*-worlds in the context set. Applied to our presupposition, it follows that when the speaker presupposes (28), she is presupposing that the Red

Sox are more likely than any other team (in the relevant set) to be able to beat the Yankees.

Now, assume a model such that if a proposition is *certain*, then it gets probability 1, and if a proposition is *impossible*, then it gets probability 0. If the probability that the Red Sox can beat the Yankees is greater than the probability that any other (relevant) team can beat the Yankees, then the probability that the Red Sox can beat the Yankees must be greater than 0. Therefore, it must be at least possible that the Red Sox can beat the Yankees. In other words, the presupposition that the Red Sox are more likely than any other (relevant) team to beat the Yankees entails that they *can* beat the Yankees.

We are now in a position to explain now the pair in (26). Take the infelicitous discourse in (26a): in order for the context to be successfully updated with the sentence *Only the Red Sox can beat the Yankees*, it must entail the presupposition that the Red Sox are more likely than the other (relevant) teams to beat the Yankees, and, therefore, that it is possible that they can beat the Yankees. However, the suspender clause asserts that it is not possible that the Red Sox can beat the Yankees, giving rise to a contradiction. In (26b), instead, no contradiction arises thanks to the modal adverb *maybe*. The presupposition entails that it is possible that the Red Sox can beat the Yankees and this is perfectly compatible with the suspender's assertion that it is possible that they can't.

The infelicity of (25) also follows: since the *only* sentence presupposes that it is possible that the Red Sox can beat the Yankees, this presupposition can never be satisfied in a context entailing that nobody can beat the Yankees, and the sentence cannot be added to it.

9. Conclusion and Remaining Issues

In this paper I have reviewed some of the objections to the entailment analysis, the strong presupposition analysis, the weak presupposition analysis, and the implicature analysis. The view of the meaning of *only* that I have defended here builds on work by Rooth (1992) and Rooth (1996), among others, and shares with most view of *only* defended previously the idea that the assertion of a sentence of the form *Only [A]_F is B* is the exclusive proposition that all true propositions (in the relevant set) are entailed by the proposition that A is B. What is different is the mechanism explaining the nature of the prejacent. The proposal that I have defended here argues that: (i) *only* is a presupposition trigger, but that the presupposition it triggers is a “scalar” presupposition according to which if any proposition in the relevant set is true, then it is true that A is B; (ii) the prejacent in a positive *only* sentence is a conversational implicature, and as such cancellable; (iii) given the semantics that I proposed, a negative *only* sentence entails the prejacent, which explains the apparent presuppositional behavior of the prejacent and the fact that the prejacent can't be cancelled in the negative sentence; (iv) we showed that the puzzling fact that it is not possible to cancel the prejacent by denying it follows from the pro-

positional, and that adding a modal operator like *maybe* is required in order to avoid the contradiction and rescue the sentence.

Open questions remain, however, and among the puzzling facts that still need explaining is the observation made and discussed in Ippolito (2007) that cancelling the prejacent seems easier with modal and, more generally, gradable predicates.

References

- Atlas, Jay: 1993, 'The Importance of Being *Only*: Testing the Neo-Gricean Versus Neo-Entailment Paradigms', *Journal of Semantics* **10**, 301–318.
- Geurts, Bart and Rob van der Sandt: 2004, 'Interpreting Focus', *Theoretical Linguistics* **30**, 1–44.
- Horn, Larry: 1996, 'Exclusive Company: 'Only' and the Dynamics of Vertical Inference', *Journal of Semantics* **13**, 1–40.
- Ippolito, Michela: 2007, 'On the Meaning of *Only*'. University of Toronto, manuscript.
- McCawley, James: 1981, *Everything that Linguists Have Always Wanted to Know about Logic but Were Ashamed to Ask*. University of Chicago Press.
- Rooij, van R. and Katrin Schulz: 2005, '*Only*: Meaning and Implicatures'. manuscript.
- Rooth, Mats: 1992, 'A theory of Focus Interpretation', *Natural Language Semantics* **1**, 75–116.
- Rooth, Mats: 1996, 'Focus', in S. Lappin (ed.), *The Handbook of Contemporary Semantic Theory*, 271–297. Blackwell.