The *only* implicature

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1   Introduction

Theories of the meaning of the focus sensitive particle *only* must account for the fact that a sentence containing this particle conveys that the *only*-less sentence is true. For example, the sentence in (1-a) conveys that John is at the party (cf. (1-b)) and that nobody other than John is (cf. (1-c)). Let us call (1-b) the *positive implicatum* of (1-a).[1]

(1) a. Only John is at the party.

  b. John is at the party.

  c. Nobody other than John is at the party.

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[1] In this paper, I will not discuss temporal uses of *only*. I believe that the analysis I will suggest does cover basic temporal uses like in (i) below, which conveys the information that it is no later than five o'clock:

(i) It is only five o'clock.

However, the following pair shows un unexpected contrast: while (ii) – in line with (i) above – conveys the information that John will not stay at home later than five o'clock, the sentence in (iii) surprisingly conveys the information that John will not arrive *earlier* than five o'clock.

(ii) John will stay at home only until five o'clock.

(iii) John will arrive only at five o'clock.

I will not be able to discuss these and related temporal cases in this paper.

In this paper I will be concerned with the question of the relation between (1-a) and (1-b). There are three main positions that have been defended in the literature and that I will consider: the entailment analysis according to which (1-a) entails (1-b); the presupposition analysis according to which (1-a) presupposes (1-b); the implicature analysis according to which (1-a) conversationally implicates (1-b). As the paradigmatic example of the entailment analysis I will discuss the proposal defended by Atlas (1993). In the strong form alluded to above, the presuppositional analysis of *only* has been advocated by Horn (1969), Rooth (1985), and Rooth (1992), among others. A weaker form of the presuppositional analysis has been proposed by Horn (1996) and, more recently, by Geurts and van der Sandt (2004). The implicature view was suggested by McCawley (1981). In light of some problems that affect both the entailment and the (strong and weak) presupposition analyses, I will argue that the implicature analysis is the one that best accounts for the meaning of *only*, and I will try to reply to some of the objections that have been raised against the implicature analysis of *only*.

From a more general perspective, this study might contribute from a linguistic point of view to the debate about the semantics/pragmatics distinction that has interested both philosophers and linguists. The fundamental observation that lies at the origin of this debate is that there are components of the information conveyed by an utterance that do not seem to be determined by the conventional linguistic meaning of the sentence that has been uttered. The object of most of the current research in this area of philosophical and linguistic investigation is to understand to what extent the (overt and covert) syntactic structure of the sentence determines what is said and whether and how exactly semantics and pragmatics interfere with each other (see, for example, the discussion of "weak" versus "strong" pragmatic effects in King and Stanley (2003) and their discussion of apparent pragmatic "intrusions" in the sense of Levinson (2000).).

Since, as we pointed out at the beginning of this section, the positive implicatum is part of what the speaker of an *only* sentence says, the question about the nature of this meaning component arises. I follow the focus semantics developed for example in Rooth (1985), Rooth (1996), and assume that the association with focus that characterizes focus-sensitive particles like *only* is represented syntactically by means of an operator introducing

a presupposed set of alternatives. The conclusion of this paper will be that the answer to the question about the nature of the positive implicatum is more complex than previously thought and that, while the positive implicatum of a positive *only* sentence is a conversational implicature, the positive implicatum of a negative *only* sentence should be analyzed as an entailment in order to account for the set of old and new data that I will discuss.

2 The entailment analysis and its shortcomings

According to a simplified version of Atlas' entailment analysis, the sentence *Only John is at the party* asserts that John is at the party and that nobody other than John is at the party. (2-a) shows a version of Atlas's truth conditions for the sentence in question (ignoring tense and the internal composition of the predicate *at the party*).

(2)   a.   at-the-party$(j) \wedge \neg \exists y(y \neq j \wedge$ at-the-party$(y))$
      b.   John was at the party and nobody other than John was at the party.

Because the logical form of the sentence *Only John was at the party* is analyzed as a conjunction, the sentence is predicted to entail that John was at the party (as well as that nobody other than John was at the party). The most compelling argument in support of the entailment analysis is that it surely seems like we would contradict ourselves were we to utter either (3) or (4).

(3)   #Only John was at the party, and/but Bill was too.

(4)   #Only John was at the party, and/but John wasn't.

In (3), the second part of the sentence contradicts the second conjunct in (2-b), i.e. that nobody other than John was at the party. In (4), the second part of the sentence contradicts the first conjunct in (2-b), i.e. that John was at the party. Since according to the entailment story presented above, the two conjuncts are both entailed by the sentence *Only John is at the party*, and you cannot deny either without contradicting yourself, the data in (3) and (4) support this view.

However, when we test whether the first conjunct in (2-b) patterns like an entailment with respect to negation, it seems clear that it does not. Mere entailments of a sentence S are no longer entailed when S is negated.

(5) a. John bought a red Ferrari $\rightarrow$ John bought a Ferrari.
     b. John didn't buy a red Ferrari $\nrightarrow$ John bought a Ferrari.

Now, when we negate our *only* sentence, as in (6), while the second conjunct in (2-b) can no longer be true, the first conjunct still is.

(6) a. Not only [John]$_F$ was at the party ... so, somebody other than John was at the party.
     b. Not only [John]$_F$ was at the party ... so, John was at the party.

The conclusion that seems reasonable to draw on the basis of these facts is that the two conjuncts in (2-b) are not equal and that only the second conjunct – that nobody other than John was at the party – is an actual entailment of the sentence *Only John was at the party*. Of course, the judgement in (4) remains to be accounted for.

3 The presupposition analysis and its shortcomings

The survival of an inference under negation is a typical feature of a presupposition. The example below illustrates this point with the presupposition trigger *regret*: both the positive and the negative sentence require that John was a smoker at some time before the speech time ($\gg$ means 'presupposes').

(7) a. John regrets having smoked.
     b. John does not regret having smoked.
     c. $\gg$ John smoked (at some time before the speech time).

The fact that the inference that John was at the party survives under negation (cf. (6)) might be accounted for if *only* – like *regret* – were to be a presupposition trigger and the

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implicatum in question a presupposition. According to this view, the sentence would assert that nobody other than John was at the party and would presuppose that John was.

Before we continue, let's make a more formal proposal about what the assertoric component of an *only* sentence should be. According to a Horn-style analysis of *only*, the sentence (8) asserts that nobody other than John was at the party.

(8)   Only $[\text{John}]_F$ was at the party.

Assuming that *only* is an operator taking three arguments – a contextual variable C, a proposition, and a world – the truth conditions for an *only* sentence would be as shown in (9).

(9) $\text{only}(C)(\varphi)(w) = 1$ iff $\forall \psi \in C(\psi(w) = 1 \rightarrow (\varphi \rightarrow \psi))$

In our example, φ is the proposition that John was at the party, and C is a contextually salient set of alternative propositions obtained by replacing the focus phrase with an alternative: the sentence asserts that for every proposition of the form 'x was at the party', if this proposition is true, then it must be entailed by the proposition that John was at the party. Since the only (relevant) proposition entailed by 'John was at the party' is that John was at the party, it follows that nobody other than John was at the party. The actual truth conditions for (8) are given in (10).

(10) $\text{only}(C)(\text{John was at the party})(w) = 1$ iff $\forall \psi \in C(\psi(w) = 1 \rightarrow ([\text{John was at the party}] \rightarrow \psi))$

The truth conditions in (10) do not entail that John was at the party. Indeed, we saw above in our discussion on the entailment analysis that this meaning component does not behave like an entailment, contrary to the exclusive part in (10). According to the presupposition analysis, that John was at the party is a presupposition of (8), and therefore this information will be preserved when the sentence is negated (i.e. the presupposition "projects", since negation is a 'hole', to use the terminology in Karttunen (1973)).

(11)   Only [John]$_F$ was at the party.

      a.   → nobody other than John was at the party.

      b.   ≫ John was at the party.

I will call this the "strong" presupposition analysis.

3.1 Problems with the "strong" version of the presupposition analysis

Presuppositions project under modal adjectives and adverbs, as shown below (Karttunen (1973), among many others).

(12)   a.   It's possible that John doesn't regret having smoked for ten years.

      b.   ≫ John smoked for ten years.

Both Horn (1996) and Geurts and van der Sandt (2004) have observed, however, that modalized *only* sentences do not strongly suggest the truth of the *only*-less sentence. (13) is fine even though the speaker is not assuming the truth of the proposition that John was at the party.

(13)   It is possible that only John was at the party . . .

      . . . and maybe not even he was there.

Well-established instances of presuppositions, though, cannot be suspended and when we try the test in (13), we do not obtain a felicitous discourse.

(14)   It's possible that John will regret having smoked . . .

      . . . #and maybe he never smoked.

(15)   It's possible that John quit smoking yesterday . . .

      . . . #and maybe he never smoked.

(16)   It's possible that John will go to the Opera with his wife . . .

...#and maybe he is not married.

As the infelicity of the continuations in (14) through (16) shows, the presuppositions triggered by *regret*, *quit* and the definite article cannot be "cancelled". If the information that John was at the party in (11) was a presupposition, we would expect the same behavior.[2]

The second problem has to do with question-answer pairs. Horn has observed that if an *only* sentence presupposed the truth of the *only*-less sentence and assuming that presuppositions are propositions that are part of the common ground (Stalnaker (1978)), then sequences like the following should be strange because the answer would be presupposing a piece of information that is not known by the person who is asking the question. Contrary to this expectation, however, these question-answer pairs are perfectly felicitous (Horn (1996)).[3]

(17)   A: Who was at the party?
        B: Only John.

To make things worse, standard cases of presuppositions do behave as expected, as shown by the following question-answer pairs, which are not felicitous unless a "marked" intonation is used. Whatever this intonation is (ironical? sarcastic?), it is certainly not required in (17).

(18)   Q: Is John married?
        A: #He went to the Opera with his wife.

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[2]One alternative would be to claim that there isn't just a single type of presupposition triggers and that some presuppositions may be easier to cancel (von Fintel, p.c.). For instance, Kay (1992) suggests that some presuppositions, for example the presupposition triggered by a lexical verb like *quit*, disappear when embedded under an epistemic modal like *maybe*:

(i)   (Looking at a guy we don't know who's chewing his finger nails.) Maybe he just quit smoking.

In response, we observed above that cancelling the presupposition of *quit* is not always easy, and this difference must be accounted for. Also, recently Simons (2001) and Abusch (2002) have suggested that these presuppositions that seem to disappear in some contexts might be better analyzed as implicatures.

[3]This observation was made already in Shanon (1976) (von Fintel, p.c.).

(19)   Q: Did you ever smoke?

         A: #I haven't quit.

(20)   Q: Did John marry Sue?

         A: #He doesn't regret that he did.

Now, if answering a question by presupposing the answer is indeed an illegitimate move in discourse, then (17) should be odd too.

To sum up, in this section I retraced Horn's arguments against the strong version of the presuppositional analysis according to which *only* presupposes the truth of the *only*-less sentence. In the next section, I will consider the "weak" version of the presuppositional analysis and present some arguments against it.

3.2   The "weak" versions of the presupposition analysis and their problems

In light of the problems just discussed, Horn (1996) suggested that the *implicatum* itself is not presupposed. He suggested that *only* functions semantically as the inverse of *all*, so that a sentence like *only A is/are B* is the inverse of *all B are A*. Some examples follow.

(21)   a.   Only [Bostonians]$_F$ *eat lobsters.*

         b.   All the people who eat lobsters are Bostonians.

(22)   a.   Only [John]$_F$ *was at the party.*

         b.   All the people at the party were identical to John.

Since the (a) sentences are equivalent to the (b) sentences and since a universal quantifier has the existential requirement that its domain B not be empty, Horn suggested that the *only* sentence too will require that B not be empty.[4] That is, as the (b) sentence in (21)

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[4]The question of whether the universal quantifier *all* carries an existential presupposition is part of a larger question about whether quantifiers in general carry an existential presuppostion. Among the most prominent analyses are Strawson (1952), McCawley (1972), De Jong and Verkuyl (1985), Diesing (1992), Lappin and Reinhart (1988), and Abusch and Rooth (to appear). An interesting and clear review of some

requires that there is *somebody who eats lobsters*, the (a) sentence will too. Now, this requirement together with the assertion that nobody other than Bostonians eat lobsters *entails* the proposition that Bostonians eat lobsters, but the latter is neither a presupposition of *only* nor an implicature.

Similarly in (22): the sentence asserts that nobody other than John was at the party, and it presupposes that somebody was at the party. Therefore, it follows from the assertion and the presupposition together that John was at the party.

What is the status of the existential requirement that *somebody eat lobsters* and that *somebody was at the party*? Horn is committed to the claim that this existential proposition is exactly like the existential requirement of a universal quantifier, leaving open the question whether it is a presupposition or an implicature.

Geurts and van der Sandt (2004) have argued that this existential proposition is a presupposition. The spirit of their analysis is similar to Horn's analysis just sketched, but according to Geurts and van der Sandt (2004), the existential presupposition is not triggered because *only* is the semantic inverse of *all*, but it is triggered by the focus structure of the sentence and the Background-Presupposition Rule (BPR), which is stated in (23).

(23)   *Background-Presupposition Rule*:

    Whenever focusing gives rise to a background $\lambda x.\varphi(x)$, there is a presupposition to the effect that $\lambda x.\varphi(x)$ holds of some individual.

In our example (21), the backgrounded material is $\lambda x.$ *eat-lobsters*(x), and according to the BPR, the presupposition will be $\exists x[\text{eat-lobsters}(x)]$. Therefore, in Geurts and van der Sandt's story, like in Horn's story, the proposition that Bostonians eat lobsters is not the presuppositions itself but what follows from the existential presupposition together with the assertion that nobody other than Bostonians eat lobsters. Similarly, the (a) sentence in (22) presupposes that $\exists x[\text{at-the-party}(x)]$ which, together with the assertion that nobody other than John was at the party, entails that John was at the party.

of these positions can be found in Heim and Kratzer (1998).

Against Horn's proposal, Geurts and van der Sandt point out that there is a lack of parallelism between the universal quantifiers and *only* with respect to downward monotonicity. Horn's prediction is that, since *only* A B is equivalent to *all* B A, then the first argument of *only* (the second argument of ∀) should be upward monotone, whereas its second argument (the first argument of ∀) should be downward monotone.

(24) a. Only Bostonians eat lobsters.

   b. → Only Bostonians eat red lobsters.

(25) a. Only rich Bostonians eat lobsters.

   b. → Only Bostonians eat lobsters.

NPIs should then be allowed to occur only in the second argument of *only*, and not in the first argument since NPIs are not allowed in the second argument of ∀, but Geurts and van der Sandt discuss some sentences that seem to be counterexamples to this prediction.[5]

(26) a. Only the students who had ever read anything about polarity passed.

   b. *All students who passed had ever read anything about polarity.

(27) a. Only the guests who had seen any of the suspects were questioned.

   b. *All the guests who were questioned had seen any of the suspects.

In order to avoid the monotonicity problem, Geurts and van der Sandt propose that the logical form of an *only* sentence does not feature a universal quantifier but an existential quantifier, as shown below.

(28) $\text{only}(C)(\varphi)(w) = 1$ iff $\neg \exists \psi \in C(\psi(w) = 1 \land (\varphi \not\rightarrow \psi))$

To conclude, the idea that the existential requirement behind the inference that the *only*-less sentence is true, is the same as the requirement that the restriction of a universal quantifier not be empty, is challenged by the lack of parallelism between the universal quantifier and *only* with respect to the monotonicity properties of these operators.

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[5]The issue of NPI-licensing in the first argument of *only* is discussed in detail in Fintel (1997).

Geurts and van der Sandt (2004)'s proposal is designed to capture the spirit of Horn's proposal, i.e. the idea that *only* triggers a weak (existential) presupposition, while at the same time accounting for the NPI facts presented above. In this section, however, I will present some challenges for both Horn's and Geurts and van der Sandt's analyses. Before I do this, let me point out that both proposals do help with the problem raised by the question-answer pairs in (17) because what B would be presupposing is not that John was at the party (something that A clearly doesn't know) but the weaker proposition that somebody was at the party, something that A might very well know without knowing their identity.

What are the problems for these WPAs? The first problem is the following. If this existential requirement is a presupposition, then it should show the same projection behavior of any other presupposition, which Geurts and van der Sandt do try to show. However, it seems to me that there is a wealth of cases where clearly it does not. First, consider the lack of projection under the modal adjective *possible*.

(29) a. It is possible that only John will arrive at the party on time ...

    ...and maybe not even him.

    b. It is possible that John will quit smoking tomorrow ...

    ...#and maybe he's not a smoker.

    c. It is possible that John will be glad to have quit smoking ...

    ...#and maybe he didn't quit.

Despite the fact that the presuppositions triggered by lexical verbs fail sometimes to project (see footnote 2), there is nevertheless a contrast between them and the existential requirement associated with *only*, since only the latter seems to be cancelable in the above examples.

Second, we know that presuppositions project when they occur in the antecedent of an (indicative) conditional. For example, in the (a) example in (30), the presupposition triggered by *regret* – that John smoked – projects.

(30) a. If John regrets having smoked, he will tell his children not to smoke.

    b. If John quits smoking tomorrow, he will be grumpy.

The prediction of the existential presupposition analysis is that, when *only* occurs in the antecedent, the $\exists x[\varphi(x)]$ presupposition will project. Consider the example in (31).

(31)   a.   If Sue invites only [John]$_F$ for dinner, she will upset Mary ...so, she will either invite nobody or John and Mary.

        b. $\exists x[$ you invite x for dinner$]$

If the antecedent presupposes $\exists x[$ you invite x for dinner$]$, this presupposition would project, i.e. (31) could only be added to a common ground that entails the presupposition in question. However, the speaker of (31) is not required to be assuming that you will invite somebody since she clearly considers inviting nobody an option.

Third, it seems that the weak presupposition analysis of *only* is too weak for cases where a plural NP is in the scope of the particle. For example, the sentence (32) suggests that John and Mary were at the party, but the weak presupposition analysis predicts that the sentence should only presuppose that somebody was at the party.

(32)   Only [John and Mary]$_F$ were at the party.

The sentence asserts that nobody other than John and Mary was at the party and presupposes that somebody was at the party. Since it does *not* follow from this that *both* John and Mary were at the party, we cannot account for the intuition that the *implicatum* of (32) is that both John and Mary were at the party.

Fourth and last, there is a problem with the negative *only* sentence. Consider (33).

(33)   Not only John was at the party.

The sentence asserts that somebody other than John was at the party, and it presupposes that somebody was at the party. It does not follow from the assertion and the presupposition that John is at the party. Now, Geurts and van der Sandt are aware of this problem, and to account for the fact that the positive implicatum (that John was at the party in (33)) is preserved in a negative sentence, they resort to an implicature story. According to this suggestion, the sentence in (33) only conversationally implicates that John was at the party.

This implicature arises from the speaker not having uttered (34).

(34)   [John]$_F$ wasn't at the party.

It follows from the BPR, that the sentence in (34) presupposes that somebody was at the party. Moreover, (34) asserts that John wasn't at the party. Since (33) presupposes that somebody was at the party, but asserts that somebody other than John was at the party, Geurts and van der Sandt suggests that (34) is more informative that (33), presumably because, if the presupposition of both sentences (that somebody was at the party) is true, then the assertion of (34) asymmetrically entails the assertion of (33): if it is true that somebody was at the party and John wasn't (the last conjunct is (34)'s assertion), then it is true that somebody other than John was at the party ((33)'s assertion). However, not viceversa: if it is true that somebody other than John was at the party, it does not follow that John wasn't at the party.

This proposal predicts that (i) in the positive *only* sentence *Only John is at the party*, the positive implicatum follows from the presupposition together with the assertion and, therefore, it should not be cancelable; (ii) in the negative *only* sentence *Not only John is at the party*, the positive implicatum is a scalar implicature, and therefore, should be cancelable, like other scalar implicatures. The problem is that the judgments point exactly in the opposite direction. In the following pair, the second conjunct *and maybe not even him* (with which the speaker conveys the information that she doesn't know whether John is strong enough to swim across the British Channel) is compatible with the positive *only* sentence, but incompatible with the negative *only* sentence, just the opposite of what Geurts and van der Sandt predict.

(35)   Only John is strong enough to swim across the British Channel, and maybe not even him.

(36)   #Not only John is strong enough to swim across the British Channel, and he is not.

4 The implicature analysis

In this section, I want to go back to a suggestion made in McCawley (1981) according to which the sentence (37) conversationally implicates (38).

(37)   Only Muriel, Lyndon, and Ed voted for Hubert.

(38)   Muriel, Lyndon and Ed voted for Hubert.

According to McCawley, if one of the persons enumerated in (37) is known by the speaker not to have voted for Hubert, then, in uttering (37) the speaker is being misleading, since she could have been more informative by leaving the person out of the list.

McCawley's suggestion has been found by some counterintuitive: Atlas (1993) remarks that the speaker who utters (37) knowing that, for example, Muriel did not vote for Hubert, does not seem to be misleading: rather, we would think that she is lying. In the rest of this paper, I will propose an implicature analysis of *only* that adresses the objections commonly raised to this type of analysis and that – I will argue – does not run into the problems that the other analyses run into.

4.1 The assertion

In this section I will reconsider the assertive content of an *only* sentence and I will propose an analysis that at first will look more complicated than the standard analyses of *only*. The idea behind the technical proposal is that the positive implicatum in a positive *only* sentence does not have the same status as the positive implicatum of a negative *only* sentence: while the former is a scalar implicature of the positive sentence, the latter is an entailment of the negative sentence. The technical proposal that I am about to present is an implementation of this idea. The advantage of this analysis over the analyses discussed above and a recent implicature proposal[6] is that it explains the cancellation facts in a positive *only* sentence as well as the puzzling fact that a negative *only* sentence does have a non-cancellable positive
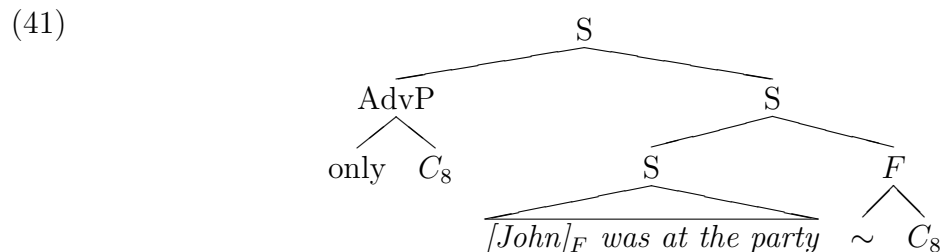
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[6]In an as-yet unpublished paper, van Rooji and Schulz have independently argued for an implicature analysis of *only*. See my remark in the Conclusion of this paper.

implicatum. I will couch my analysis in Rooth's alternative semantics, but before I begin, let me review the analysis of the focusing adverb *only* developed in Rooth (1992) and Rooth (1996). According to Rooth, focus evokes a set of alternative propositions in a presuppositional way. This idea is implemented by using a focus operator $\sim$ which introduces a presupposed alternative set, as follows.

(39)   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 $[\![\varphi]\!]^f$ containing $[\![\varphi]\!]^o$ and at least one other element.[7]

Consider our example again, whose structure is given in (41). The focusing adverb quantifies over propositions and, like other quantifiers in natural language, its domain is restricted. The Roothian idea of association with focus is implemented as follows: the restriction of the adverb is a variable coindexed with the presuppositional variable introduced by the focus operator $\sim$.

(40)   Only $[\text{John}]_F$ was at the party.

(41)

$$
\begin{array}{c}
\text{S} \\
\diagup \quad \diagdown \\
\text{AdvP} \qquad\qquad \text{S} \\
\diagup\diagdown \qquad\qquad \diagup \quad \diagdown \\
\text{only} \quad C_8 \qquad \text{S} \qquad\qquad F \\
\qquad\qquad \diagup \diagdown \qquad \diagup \diagdown \\
\qquad [John]_F\ was\ at\ the\ party \quad \sim \quad C_8
\end{array}
$$

The interpretation of C_8 is a matter of anaphora resolution but the presupposition introduced by $\sim$ constrains the possible values of C along the lines specified in (39). Below is a Roothian lexical entry for *only*.[8] The presupposition introduced by the focus operator $\sim$ is expressed as a partiality condition on the function denoted by the adverb. φ is the sentence in the scope of the adverb. In Rooth's analysis p is presupposed to be true (this presupposition is represented as a partiality condition on its second argument).

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[7] $[\![\alpha]\!]^o$ denotes the ordinary semantic value of the phrase α; $[\![\alpha]\!]^f$ denotes its focus value. For example, if α is the sentence *John runs*, $[\![[\mathbf{John}]_F\ \mathbf{runs}]\!]^f$ denotes the set of propositions of the form 'x runs'.

[8] This is a variant of Rooth's definition in Rooth (1996).

(42) $[\![\mathbf{only}]\!]^w = \lambda C : C \subset [\![\varphi]\!]^f$ and $\mid C \mid \geq 2. \ \lambda p : p(w) = 1. \ \forall q \in C(q(w) = 1 \rightarrow (p \rightarrow q))$

Let us go back to our sample sentence *Only [John]$_F$ was at the party.* Suppose that there are three people salient in the context of utterance, John, Mary and Bill. Then, the focus presupposition requires that C_8 be a subset of $[\![[\mathbf{John}]_F \ \mathbf{was \ at \ the \ party}]\!]^f$ including at least the proposition that John was at the party and some other proposition, and since its value must be a contextually salient set of propositions, I assume that C_8 is the Roothian set of alternatives closed under conjunction.

(43) $C_8 = \{$John was at the party; Mary was at the party; Bill was at the party; John and Mary were at the party; John and Bill were at the party; Mary and Bill were at the party; John and Mary and Bill were at the party$\}$.

According to the entry in (42), the sentence in (40) is true iff there is no proposition in C_8 that is true and not entailed by the proposition that John was at the party. The negation of (40) is true if there is a proposition in C_8 that is true and not entailed by the proposition that John was at the party. That John was at the party is not part of the assertion but is a presupposition triggered by the focusing adverb (as shown in the entry in (42)).

I will now develop a Roothian analysis of *only* where the adverb does not presuppose the truth of the proposition in its scope. In this analysis, (40) is true if nobody other than John was at the party, and its negation is true if John *and* somebody other than John were at the party. In all other cases, the sentence is undefined. I will keep the Roothian focus machinery and assume that C is required by the focus operator to be a subset of $[\![[\mathbf{John}]_F$ $\mathbf{was \ at \ the \ party}]\!]^f$ including at least the proposition that John was at the party and some other proposition. *Only* quantifies over the Roothian set of alternatives closed under conjunction, and the sentence containing the adverb asserts that there is no proposition in this set that is true and not entailed by p (the proposition that John was at the party). But let us suppose that the focusing adverb presupposes that, given a certain partition of C, this condition holds either of both members of the partition or of neither. Let us partition C into a subset containing all and only the alternatives in C that entail that John was at the party, and a subset containing all and only the alternatives in C that do not entail that

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John was at the party. Suppose that C is C_8 in (43), the partition will look as follows.

(44)   *Partition of C_8 w.r.t the proposition that John was at the party*:

$$
\left\{
\begin{array}{l}
\left\{
\begin{array}{l}
\text{John was at the party;} \\
\text{John and Mary were at the party;} \\
\text{John and Bill were at the party;} \\
\text{John and Bill and Mary were at the party}
\end{array}
\right\}, \\[1em]
\left\{
\begin{array}{l}
\text{Mary was at the party;} \\
\text{Bill was at the party;} \\
\text{Mary and Bill were at the party}
\end{array}
\right\}
\end{array}
\right\}
$$

Only [John]$_F$ was at the party is true if there is no proposition in C_8 that is true and not entailed by p. However, *only* presupposes that this condition is either true of both members of the partition in (44) or false of both of them. If this presupposition is not met, the sentence is undefined.

Let us make this proposal more formal. The structure of an *only* sentence is as shown in (45). The focusing adverb *only* associates with focus in Rooth's sense and takes two arguments: a salient set of propositions C_8, where C_8 is a free variable coreferential with the free variable introduced the the focus operator $\sim$; p, the proposition expressed by the sentence φ. I will assume that *only*'s projection is the phrase that contains its first argument and that the sentence φ is in the scope of (c-commanded by) *only*.

(45)
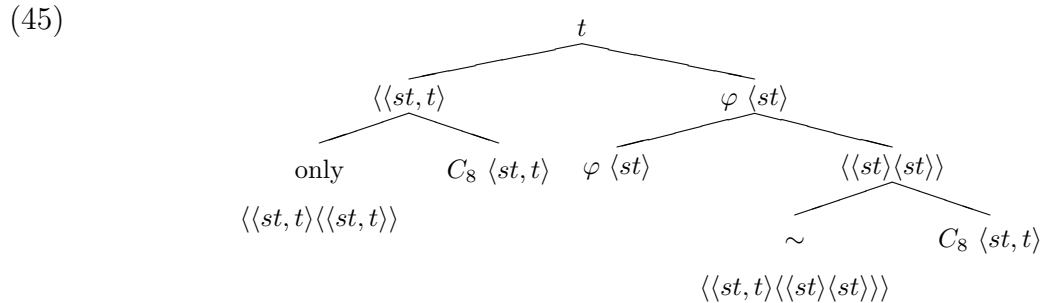
The truth conditions for an *only* sentence will be as shown in (46).

(46) $[\![\mathbf{only}(C_8)\ \varphi \sim C_8]\!]^{R,w}$ is defined only if the following conditions are satisfied:

(1) $R(8) \subset [\![\varphi]\!]^f$ and $\mid R(8) \mid \geq 2$ (focus pres)

$(2) \forall X, Y \in \left\{ \begin{array}{l} \{p \in R(8) : p \to [\![\varphi]\!]^o\}, \\ \{p \in R(8) : p \not\to [\![\varphi]\!]^o\} \end{array} \right\} :$

$(\neg \exists p \in X : p(w) = 1 \wedge [\![\varphi]\!]^o \not\to p) \leftrightarrow (\neg \exists p \in Y : p(w) = 1 \wedge [\![\varphi]\!]^o \not\to p)$ (only pres)

If defined, the sentence $[\![\mathbf{only}(C_8)\ \varphi \sim C_8]\!]^{R,w}$

$= 1$ if $\neg \exists p \in R(8) : p(w) = 1 \wedge [\![\varphi]\!]^o \not\to p$

$= 0$ if $\exists p \in R(8) : p(w) = 1 \wedge [\![\varphi]\!]^o \not\to p$

According to the truth conditions above, the sentence is true with respect to $R(8)$, if a certain condition holds of $R(8)$. However, given the presupposition in (2) above, the sentence can only be true with respect to $R(8)$ if the condition holds of *each* member of the partition. Therefore, if the sentence is true, it is true with respect to each member of the partition; and if it is false, it is false with respect to each member of the partition.

What follows from this proposal? Consider a world where John and Mary were at the party. In this world, the sentence (40) would be defined and false because in both members of the partition of C_8, there is a proposition that is true and entailed by the proposition that John was at the party, i.e. the proposition that John and Mary were at the party and the proposition that Mary was at the party (cf. example (47)).

(47) (Scenario: John and Mary were at the party)

Only John was at the party. **(false)**

In a world, however, where only John was at the party, the sentence would be defined and true since the *only* condition would be true of both members of the partition (cf. (48)).

(48) (Scenario: Only John was at the party)

Only John was at the party. **(true)**

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Consider now a world where only Mary was at the party: in this world, the sentence would be undefined since the *only* condition would be true of one member of the partition (i.e. the member containing ⟦**John was at the party**⟧^{o}) but not of the other member since the proposition that Mary was at the party is true and not entailed by the proposition that John was at the party. Therefore, since the presupposition is not met, the sentence is neither true nor false (cf. example (49)).

(49)   (Scenario: only Mary was at the party)

Only John was at the party.   (**truth-valueless**)

Notice that the same prediction with respect to (49) is made by the strong presuppositional theories: according to these theories, the sentence (49), uttered in a context where only Mary was at the party, would be undefined because the presupposition that John was at the party is not satisfied. The weak presupposition analyses, on the other hand, make the prediction that, when uttered in a context entailing that only Mary was at the party, (49) is false.

4.2   The scalar implicature

The positive implicatum of a positive *only* sentence is an inference that follows from the assertion together with an existential conversational scalar implicature. More precisely, the positive implicatum that John was at the party arises from a competition between the actual utterance *Only [John]$_F$ was at the party* and the more informative utterance that might have been made, i.e. *[Nobody]$_F$ was at the party.*

(50)   ⟦**only(C_8) [John]$_F$ was at the party** $\sim C_8$⟧^{R,w} = 1 if $\neg \exists p \in R(8)[p(w) = 1 \wedge$ ⟦**[John]$_F$ was at the party**⟧$^o \not\rightarrow p]$

(51)   ⟦**nobody(C_8) was at the party**⟧^{R,w} = 1 if $\neg \exists p[p \in R(8) \wedge p(w) = 1]$

The reason why these two propositions compete is that they are in a relation of asymmetric entailment, that is, the proposition that nobody was at the party asymmetrically entails the

proposition that nobody other than John was at the party.[9] This is represented in the scale below, where *nobody* is stronger than *nobody other than John.*

(52)   <nobody, nobody other than John>

In (53), I show the computation of the scalar implicature (which I call the 'weak' implicature) and how the positive implicatum (which I call the 'strong' implicature) arises, ignoring presuppositions.

(53)   a.   S uttered *Only [John]$_F$ was at the party*, which asserts:
            $\neg \exists p \in C_8[p(w) = 1 \wedge [[\textbf{John}]_F \textbf{ was at the party}]^o \nrightarrow p]$

        b.   S should have uttered the stronger statement *Nobody$_F$ was at the party* (Maxim of Quantity):
            $\neg \exists p \in R(8)[p(w) = 1]$.

        c.   Since S is being cooperative, it must be the case that S was not in a position to utter the stronger statement without violating the Maxim of Quality. Assuming that S knows what she is talking about, S must know that *somebody (in C$_8$) was at the party.* This is the weak implicature. Since S asserted that nobody other than John was at the party and implicated that somebody was at the party, it follows that S is epistemically certain that *John was at the party.* This is the strong implicature.

4.3   Consequences

Differently from the WPAs in Horn (1996) and Geurts and van der Sandt (2004), this proposal can account for *only* sentences with conjoined NPs in focus, and it can explain why when an *only* sentence is negated, the positive implicatum remains. Furthermore, differently from both WPAs and SPAs, this proposal also explains the projection and cancellation facts

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[9]Notice that if the stronger proposition, i.e. (51), is true, the presupposition triggered by *only* in the weaker proposition (50) is satisfied: if nobody in a salient set was at the party, then the condition that there be no proposition true and not entailed by the proposition that John was at the party is true of both partitions in (44).

presented above.

First, let us consider the problem of conjoined NPs in focus. Recall that the WPAs were not able to derive the fact that the positive implicatum of (54) is that John *and* Mary were at the party. What the WPAs derive is only the weak presupposition that somebody was at the party.

(54)   John and Mary were at the party.

      a.   Positive implicatum: John and Mary were at the party.

      b.   Negative implicatum: Nobody other than John and Mary were at the party.

I will first spell out the truth conditions of (54), and then I will show how the truth of the positive implicatum follows from two implicatures that the sentence generates.

Suppose there are three salient people: John, Mary and Bill. Focus is going to introduce a presupposed set of alternatives C_8. Let C_8 be as shown in (55).

(55) $C_8 = \{$John was at the party; Mary was at the party; Bill was at the party; John and Mary were at the party; John and Bill were at the party; Mary and Bill were at the party; John and Mary and Bill were at the party$\}$.

Now, since the partition of C_8 is done with respect to the proposition in the scope of the adverb, C_8 must be partitioned into a set that contains all and only those propositions in C_8 that entail that John and Mary were at the party, and a set that contains all and only those propositions in C_8 that do not entail that John and Mary were at the party, as shown in (56).

(56)   *Partition of C_8 w.r.t. the proposition that John and Mary were at the party*:

$$C_8 = \left\{ \begin{array}{l} \left\{ \begin{array}{l} \text{John and Mary were at the party;} \\ \text{John and Bill and Mary were at the party} \end{array} \right\}, \\ \\ \left\{ \begin{array}{l} \text{John was at the party;} \\ \text{Mary was at the party;} \\ \text{Bill was at the party;} \\ \text{John and Bill were at the party;} \\ \text{Mary and Bill were at the party} \end{array} \right\} \end{array} \right\}$$

The truth conditions for (54) are given in (57).

(57) $[\![\mathbf{only}(C_8)\ [_S[\mathbf{John\ and\ Mary}]_F\ \mathbf{were\ at\ the\ party}] \sim C_8]\!]^{R,w}$ is defined only if the following conditions are satisfied:

$(1) R(8) \subset [\![\mathbf{S}]\!]^f$ and $\mid R(8) \mid \geq 2$ (focus pres)

$(2) \forall X, Y \in \left\{ \begin{array}{l} \{p \in R(8) : p \to [\![\mathbf{S}]\!]^o\}, \\ \{p \in R(8) : p \not\to [\![\mathbf{S}]\!]^o\} \end{array} \right\} :$
$(\neg \exists p \in X : p(w) = 1 \wedge [\![\mathbf{S}]\!]^o \not\to p) \leftrightarrow (\neg \exists p \in Y : p(w) = 1 \wedge [\![\mathbf{S}]\!]^o \not\to p)$ (*only* pres)

If defined,

$[\![\mathbf{only}(C_8)\ [_S[\mathbf{John\ and\ Mary}]_F\ \mathbf{were\ at\ the\ party}] \sim C_8]\!]^{R,w}$

$\quad = 1$ if $\neg \exists p \in R(8) : p(w) = 1 \wedge [\![\mathbf{S}]\!]^o \not\to p$

$\quad = 0$ if $\exists p \in R(8) : p(w) = 1 \wedge [\![\mathbf{S}]\!]^o \not\to p$

Since the presupposition (2) in (57) requires that the condition imposed by *only* be true (or false) of every member of the partition, for the sentence to be either true or false, the condition that there be no true proposition not entailed by the proposition that John and Mary were at the party, must be either true or false of both members of the partition.

These truth conditions do make the sentence (54) true in precisely those situations

where nobody other than John and Mary is at the party. To see this, consider first a world where only John and Mary were at the party: in this world, (57) would be defined and true because the condition that there be no true proposition not entailed by the proposition that John and Mary were at the party is true of both members of the partition. Similarly, in a world where John and Mary and Bill were at the party the sentence would be defined and false because both members of the partition contain a proposition that is true but not entailed by the proposition that John and Mary were at the party. Now consider a world where only Bill is at the party: parallel to the case where the focus phrase was a simple NP, in this situation (57) is undefined because only one member of the partition does not contain any proposition that is true but not entailed by the proposition that John and Mary were at the party.

Finally, consider a situation where only John was at the party. Given the truth conditions above, the sentence (54) would be true, but infelicitous since the known facts contradict the implicature of the sentence, and whereas it is possible to utter an *only* sentence when the speaker is not committed to the truth of its implicature, it is not possible to do so when she knows that this implicature is false. I will go back to this point in section 5.

This explains the negative implicatum (the assertion), but how do we derive the positive implicatum that John *and* Mary were at the party? Here is the calculation.

(58)   a.   S uttered *Only [John and Mary]$_F$ were at the party*, which asserts:

   $\neg \exists p \in C_8 : p(w) = 1 \land [\![\textbf{[John and Mary]}_F \textbf{ were at the party}]\!]^o \not\hookrightarrow p$

   b.   S could (and, by the Maxim of Quantity, should) have uttered the stronger *Only [John]$_F$ was at the party* or the stronger *Only [Mary]$_F$ was at the party* :

   1.$\neg \exists p \in R(9) : p(w) = 1 \land [\![\textbf{[Mary]}_F \textbf{ was at the party}]\!]^o \not\hookrightarrow p$

   2.$\neg \exists p \in R(9) : p(w) = 1 \land [\![\textbf{[John]}_F \textbf{ was at the party}]\!]^o \not\hookrightarrow p$

   c.   Since S is being cooperative, it must be the case that S was not in a position to utter either stronger statement without violating the Maxim of Quality. Assuming that S knows what she is talking about, S must know that both these statements are false, i.e. she must know that *there is somebody other than Mary who was at the party* and that *there is somebody other than John who was at*

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the party. These are the weak implicatures.

    d.   Since S asserted that nobody other than John and Mary was at the party and implicated that somebody other than Mary was at the party and that somebody other than John was at the party, it follows that S is epistemically certain that *John and Mary were at the party.* This is the "strong implicature".

The current proposal also accounts for *only* sentences with bare plurals such as *Only Bostonians voted for John*, whose positive implicatum is that *some* Bostonians voted for John (maybe not even half of them). Since the stronger statement that the speaker could have made is that nobody voted for John, the scalar implicature will be that somebody vote for John. Since the speaker asserted that no non-Bostonian voted for John, it follows that some Bostonian voted for John.[10]

    The second consequence of our approach has to do with the positive implicatum of a negative *only* sentence. If the positive implicatum in a positive *only* sentence is a scalar implicature, why does the negative *only* sentence have the positive implicatum too? We already know the answer: the positive implicatum of the negative *only* sentence is an actual *entailment* of the negative sentence. Reconsider the truth conditions for the sentence *Only [John]$_F$ was at the party.*

(59) $[\![\textbf{only}(\textbf{C}_8) \ [\textbf{John}]_F \ \textbf{was at the party} \sim C_8]\!]^R = 1$ if $\neg \exists p \in R(8) : p(w) = 1 \wedge [\![[\textbf{John}]_F \ \textbf{was at the party}]\!]^o \not\rightarrow p$

The truth conditions for *Not only [John]$_F$ was at the party* will be the negation of (59), as shown below.

(60) $[\![\textbf{not only}(\textbf{C}_8) \ [\textbf{John}]_F \ \textbf{was at the party} \sim C_8]\!]^R = 1$ if $\exists p \in R(8) : p(w) =$

---

[10]A trickier case is the case of *only* sentences where the associate if disjoined noun phrase, as in the following sentence.

(i)   Only Mary or Sue voted for John.

The crucial question is what set of proposition C is. I will leave this question open for the future.

$$1 \wedge [\![[\textbf{John}]_F \textbf{ was at the party}]\!]^o \nrightarrow p$$

Now, for the negative *only* sentence to be true, its presupposition must be satisfied, i.e. it must be the case that either both members of the partition are such that there is no true proposition not entailed by the proposition that John was at the party or neither member is. Let us look back at the partition.

(61)   Partition of C_8 w.r.t. the proposition that John was at the party

$$\left\{ \begin{array}{l} \left\{ \begin{array}{l} \text{John was at the party;} \\ \text{John and Mary were at the party;} \\ \text{John and Bill were at the party;} \\ \text{John and Bill and Mary were at the party} \end{array} \right\}, \\ \\ \left\{ \begin{array}{l} \text{Mary was at the party;} \\ \text{Bill was at the party;} \\ \text{Mary and Bill were at the party} \end{array} \right\} \end{array} \right\}$$

The truth conditions just given require that there be one proposition in C_8 that is true and not entailed by the proposition that John was at the party, and the sentence is defined only if this condition is true of no member or both members of the partition. Therefore, for the sentence to be true, it must be the case that each partition in C_8 is such that there is a proposition true and not entailed by the proposition that John was at the party in each partition. Therefore, since one partition only includes propositions that entail that John was at the party, it follows that (60) can only be true if it is true that John was at the party.

The third consequence is that this proposal predicts that, while the implicatum of a positive *only* sentence should be cancellable, the implicatum of a negative sentence should not since it is an entailment. Recall that we observed above that the WPAs (at least Geurts and van der Sandt's version) make exactly the opposite prediction, i.e. that the positive implicatum should be cancellable in the negative sentence but not in the positive one. Crucially, the data contradict the WPAs and support our proposal.

(62)   Only John is strong enough to swim across the British Channel, and maybe not even
        him.

(63)   #Not only John is strong enough to swim across the British Channel, and maybe John
        isn't.

This contrast is no longer problematic in the present proposal.

        The fourth welcome consequence of our approach is that the lack of projection of the
positive implicatum under modal adjectives – the examples are repeated below – is no longer
suprising since implicature do not project under modal adjectives.

(64)   It is possible that only John will arrive at the party on time . . .
        . . . and maybe not even him will.

(65)   It is possible that John is glad to have quit smoking . . .
        . . . # and maybe he didn't quit.

Horn (1996) makes the same point with the following example.[11]

(66)   John will go to church only on Sunday, and may not even on Sunday if there is a
        football match in the morning.

Furthermore, the present proposal predicts that, when a negative *only* sentence is modalized,
the positive implicatum should not 'project', because it is an entailment. I think that the
following examples support this prediction since the speaker is not committed to the truth
of the proposition that John will take Syntax in (67).

(67)   Mary will not take Phonology. She might take Syntax or she might take Semantics.

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[11]Note that – contrary to Atlas's claim that "if one takes the epistemic, modal quantifier as essential in
tests of cancellation, anything, including logical entailment, will, incoherently, turn out to be cancelable."
(Atlas (1993) – the *only*-les counterpart of (66) is not coherent:

(i)   #John will go to church only on Sunday, and may not if there is a football match in the morning.

So, if she doesn't take only Syntax, she will take semantics.

This argument, however, may not be very convincing one way or another, as someone intending to defend the presuppositional view might claim that the felicity of (67) is an instance of local accomodation, just like in the following example from Kadmon (2001).

(68)   a.   It is possible that John has children and it is possible that his children are away.

            b.   It is possible that John has children and it is possible that *John has children* and his children are away.

On the other hand, in recent years there have been a number of studies suggesting that the ease with which some alleged lexical presuppositions are 'cancelled' is suspicious and sheds light on the presuppositional nature of the propositions in question (for example, that John has children in (68)), which might be best analyzed as conversational implicatures (see Simons (2001) and Abusch (2002)).

Before I turn to a different issue, let me comment briefly on the question of *only* and its NPI-licensing properties. Fintel (1999) observes that from the truth of (69-a) someone can not infer the truth of (69-b).

(69)   a.   Only John ate vegetables for breakfast.

            b.   Only John ate kale for breakfast.

The inference failure in (69) conflicts with the observation that *only* is an NPI-licenser, as shown in the examples below from Horn (2002), where the author observes that not only does *only* license weak NPIs such as *ever* and *any*, but it also licences minimizers such as *lift a finger* and *at all*.

(70)   a.   Only John ever suspected David Alexander.

            b.   Only young writers ever accept suggestions with any sincerity.

            c.   (Of all her friends,) Only Phil would lift a finger to help Lucy.

            d.   My nose and my lungs are only alive at all because they are part of my body and share its common life.   (C.S. Lewis, *Mere Christianity*)

According to Fintel (1999), we can account for the licensing of NPIs if we assume that what licences an NPI is not a downward entailing (DE) operator but what he labels a "Strawson-downward entailing" (SDE) operator, where a SDE operator is defined as follows.

(71) Strawson Downward Entailingness:

A function f of type $\langle \sigma, \tau \rangle$ is Strawson-DE iff for all x, y of type σ such that x$\Rightarrow$y and <u>f(x) is defined</u>: f(y)$\Rightarrow$f(x).

According to von Fintel's analysis, (69-a) does not downward entail (69-b). It does Strawson-downward entail it, under the assumption that *someone ate kale for breakfast* is a presupposition of (72-c).[12]

(72) a. *Someone ate kale for breakfast.*
      b. Only John ate vegetables for breakfast.
      c. Only John ate kale for breakfast.

In the implicature account of *only*'s positive implicatum, the NPI licensing with *only* is no longer a puzzle since (69-a) does downward entail (69-b). Therefore, the inference in (69) is valid. Now, it is true that the inference is somewhat strange unless it is known that someone (thus, John) ate kale for breakfast. But the strangeness of (69) is compatible with (69-a) downward entailing (69-b) and therefore the NPIs being regularly licensed in a downward entailing environment, even if we endorse the idea that the positive implicatum is an implicature. Ladusaw (1979) makes this point with respect to implicative verbs like *fail*.[13]

(73) John failed to buy any shirt.

      a. John failed to buy a shirt.

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[12]In Fintel (1999), the first premise, i.e. the presupposition of *only* sentence that represents the conclusion of the argument, is that John ate kale for breakfast. However, for the reason explained earlier, the weak existential proposition that someone ate kale for breakfast is enough to make the argument valid.

[13]Thanks to Kai von Fintel for reminding me of Ladusaw's suggestion and for the example in (73) taken from his 1999 paper.

b. John failed to buy a red shirt.

According to Ladusaw, (73-a) does entail (73-b) and that is why the NPI *any* is licensed in (73). The strangeness of the inference derives from the fact that meaning component according to which John tried to buy a red shirt is neither an entailment nor a semantic presupposition of (73-b) but a conventional implicature. As such, it does not affect the truth conditions of the sentence and does not interfere with the validity of the argument. All that needs to be said is that the inference above, even though it is valid, is odd because the truth of (73-a) is not enough ground for inferring the truth of the conventional implicature of (73-b). My analysis of *only* is then consistent with Ladusaw's suggestion with respect to NPI licensing in cases of apparent lack of downward entailment, in that the positive implicatum is a conversational implicature and as such does not interfere with the validity of the argument. The strangeness of (69) is due to the fact that the conversational implicature of the conclusion is not assumed to be true in the context of utterance.

Do conversational implicatures generally interfere with downward entailments? Consider the following two sentences: (74-a) conversationally implicates that somebody at the party ate meat; (74-b) conversationally implicates that someone at the party ate kale.

(74)　　a.　　Not everyone at the party ate vegetables.
　　　　b.　　Therefore, not everyone at the party ate kale.

Suppose a speaker utters (74-a): can the hearer make the inference in (74-b)? According to my intuitions, the inference in (74-b) is strange if the hearer does not know that somebody at the party ate kale, the scalar implicature of (74-b). If the scalar implicature of (74-b) is not known or assumed to be true, then the discourse seems rather strange. Is (74-b) a downward entailment of (74-a)? Just looking at the assertive component of the two sentences, (74-b) is a downward entailment of (74-a), just like (72-c) is a d-entailment of (72-b). However, just like in the *only* example, the argument in (74) is odd because the implicature in (74-b) does not follow from (74-a).

5   Degrees of cancelability

On the basis of examples like those in (75-a) and (75-b), Horn (2002), echoing an objection already raised in Atlas (1993), critizes asymmetric theories of the meaning of *only* where the positive implicatum is expected to be cancellable.

(75) a. #Only [Hillary]$_F$ trusts Bill, and (even) she doesn't.
      b. #I love only [you]$_F$, but I don't love you either.

Examples like these show that simple cancellation of the positive implicatum does not give rise to acceptable results. In light of these examples, Atlas argued that the right theory is a symmetricalist theory and that the positive implicatum is asserted.

Horn (2002) is sympathetic with Atlas's concern on the basis of examples like (75) and the belief – shared with Fintel (1999) – that *only* cannot be classified as a DE operator in light of the inference failure discussed in the previous section. In order to account for the NPI-licensing properties of *only*, Horn suggests a "hybrid" theory where an *only* sentence entails both the positive and the negative implicata, but, while the negative implicatum is asserted, the positive implicatum is *assertorically inert*. Similarly to Fintel (1999), Horn suggests that in order to explain the NPI-licensing property of *only* while at the same time accounting for the lack of DE in (69), NPIs must be thought of as being sensitive to downward assertion, and not to downward entailment as such.

Now, in the theory that I have proposed here, the positive implicatum in (75-a) – that Hillary trusts Bill – is a scalar implicature and, therefore, should be cancellable. The observation is that it is possible to cancel the implicature only by means of modal operators. Compare (75-a) with the felicitous (76).

(76)   Only [Hillary]$_F$ trusts Bill, and *maybe* not even she does.

I would like to explain the contrast between (75-a) and (76) by suggesting that the deviance of (75-a) does not follow from the fact that the positive implicatum is entailed by the *only* sentence (as in Atlas's or in Horn's versions of the entailment story), but from the fact that trying to deny the implicature as Atlas did in (75-a) is a pragmatically illegitimate move.

First, we can assume that, when a speaker utters *Only [Hillary]$_F$ trusts Bill*, Hillary must be a member of a *salient* group of individuals that the speaker's assertion is supposed to be about. According to the semantics of focus we have assumed, the set of salient alternatives must be a subset of $[\![[\mathbf{Hillary}]_F \ \mathbf{trusts} \ \mathbf{Bill}]\!]^f$, which includes the proposition that Hillary trusts Bill (and at least some other proposition). If Hillary was not a member of a salient group of individuals and, consequently, the speaker did not have to say something about her too, then the speaker would have said that *nobody trusts Bill*, which asserts that of the salient people, nobody trusts Bill. Therefore, the speaker's utterance presupposes that Hillary is salient. Second, by uttering *Only [Hillary]$_F$ trusts Bill*, the speaker set Hillary aside from every other salient person. Now, if the speaker knew that Hillary does not trust Bill, then since Hillary is salient too, the speaker would (and should) have said *nobody trusts Bill*. She did not; therefore, it must be the case that the speaker does not believe that Hillary does not trust Bill. Consider (77) where the denial of the implicature that John might not read both *War and Peace* and *Anna Karenina* is felicitous. Why is (77) different from (75-a)?

(77)   John might read *War and Peace* or *Anna Karenina*; in fact, he might read both.

The implicature of the clause is that John might not read both *War and Peace* and *Anna Karenina*, but the suspender clause denies this implicature by asserting that the conjunction is in fact true. Why is the speaker allowed to utter the first clause in (77) while knowing that the implicature of the sentence is false? This move seems legitimate in a context where it is not *relevant* to know whether John might read more than one book (this might, for example, be a context where what is relevant is to know whether John might read *War and Peace* or *Anna Karenina*, or whether he might read *a* Russian book): since it is not relevant to know whether John might read more than a Russian book, more informative statements will not play any role in determining what the speaker intended to communicate.[14] However, things are different in the case in (75-a), where the speaker knows that the implicature that Hillary trusts Bill is false. Suppose we say that the reason why the speaker chose to utter the *only Hillary* statement despite the fact that she believes the implicature of that statement

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[14]This is an instance where adding a piece of information (the suspender's clause) is not required by Relevance.

to be false, is that knowing whether Hillay trusts Bill or not is irrelevant for the purpose of the conversation. The problem with this exlanation is that, as we observed above, this is not possible since the semantics of focus forces us to presuppose a salient set of alternatives which includes the proposition that Hillary trusts Bill. Therefore, the parallel between (75-a) and (77) breaks down because of the semantics of focus. Therefore, every occurrence of *Only Hillary trusts Bill* is felicitous only if Hillary is relevant and if it is relevant whether she trusts Bill or not; but since if the speaker knew that Hillary does not trust Bill she would have uttered *Nobody trusts Bill*, the only time an utterance of *Only [Hillary]$_F$ trusts Bill* is felicitous is when the speaker either doesn't know whether Hillary trusts Bill or knows that she does. The latter is the typical scalar implicature of the *only* utterance. The former is the case in (76): the speaker's ignorance about whether Hillary trusts Bill is compatible with it being relevant in the conversation whether she does (and, since the speaker doesn't know that Hillary does not trust Bill, she could not have used the universal statement *nobody trusts Bill*). Therefore, the only time when cancelling the implicature of an *only [A]$_F$ is B* sentence is compatible with having used the *only* sentence is when the speaker does not know whether A is B. The observation that good cases of cancellation with an *only* sentence involve modal operators in the suspender clause is thus explained.[15]

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[15]Recall that in the system that I have constructed above an *only* sentence with a conjoined NP in focus, such as *Only [John and Mary]$_F$ can sim across the British Channel*, comes out true in a world where only John can swim across the British Channel. However, the sentence would be highly deviant if uttered in such a world. The observations above may help us understand why: if it is known that Mary cannot swim across the British Channel and Mary is a member of a salient set of individuals, then the speaker's utterance was very misleading as she should have said *Only John can swim across the British Channel*. The only circumstance in which the speaker would be pragmatically allowed to utter the sentence with the coinjoined NP *John and Mary* in a world where only John can swim across the Britich Channel is one where Mary is relevant and the speaker does not know whether Mary has the ability to swim across the British Channel. I believe you can indeed suspend the implicature that Mary has the ability to swim across the British Channel, as in the following example.

(i)   Only John and Mary can swim across the British Channel, and maybe Mary can't either.

However, sometimes the positive implicatum of a positive *only* sentence does not even seem cancelable with the help of a modal suspender clause. According to the speakers that I have consulted, there is a contrast between (78) and (79).

(78)   Only John can win the Boston marathon, and maybe not even him.

(79)   #Only John is at the party, and maybe not even him.

Below I have listed the types of sentences that pattern like (78) in that the implicatum is allowed to be cancelled fairly easily: sentences with modal verbs, stative verbs, and gradable adjectives.

(80)   MODAL VERBS

    a.   Only John <u>can</u> win the Boston marathon, and maybe not even him.   (ability modal)

    b.   Only John is <u>able</u> to swim across the British Channel.

(81)   STATIVE VERBS

    a.   Only John <u>loves</u> Mary, and maybe not even him.

    b.   Only John <u>understands</u> Mary, and maybe not even him.

(82)   GRADABLE ADJECTIVES

    a.   Only Mary is <u>reliable</u>, and maybe not even her.

    b.   Only Mary is <u>healthy</u>, and maybe not even her.

    c.   Only John is <u>fast</u> enough to win the Boston marathon, and maybe not even him.

Example of sentences where it does not seem possible to cancel the implicatum as easily as we did above are (83) and (84).[16]

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[16]As shown by the comparative and the *too...to...* tests below, non-stative verbs are not gradable predicates:

(i)   a. #John married Sue more than Bill did.

(83)   NON-STATIVE VERBS

    a.   #Only John <u>married</u> Sue, and maybe not even him.

    b. #Sue <u>hired</u> only John, and maybe not even him.

(84)   NON-GRADABLE ADJECTIVES

    a. #Only John is <u>dead</u>, and maybe not even him.

The generalization that seems to emerge is that cancelling the positive implicatum is possible and easier when the main predicate in the sentence is a gradable predicate. In what follows, I will present some tentative ideas that might explain how the gradability of the predicate may affect the cancellability of the implicature.

      Because of the semantic contribution of focus, when a speaker S asserts *Only [A]$_F$ is B*, S's utterance is understood as the exhaustive answer to an implicit question in the discourse: *Who is B?* If C is the contextually salient set of alternatives, S's utterance is understood exhaustively with respect to C. Now, an *only* sentence will satisfy the exhaustivity requirement only if we take into account the assertion together with what I have suggested is its scalar implicature, we do not expect the negative assertion to be able to satisfy such a requirement by itself, since negative partial answers to *wh*-questions are typically infelicitous in this context, as shown in the following example.

(85)   Q: Who married Sue?
       A: #Bill didn't.

It follows from what we have just said that suspending the implicature of the sentence *Only A is B* (i.e. that A is B) should give rise to the same infelicity we found in (85). The infelicity of (83) and (84) would seem to follow from the fact that, even though allowed by its implicature nature, suspending the positive implicatum violates the requirement that

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    b. #John is too married to Sue to go to the game.

The fact that the English modals are not compatible with the comparative and *too...to...* constructions has a morphological/syntactic explanation, as shown by the fact that the predicate *able*, modal in meaning but not morphologically, does behave like we expect from a gradable predicate in the tests.

the *only* assertion be interpreted as an exhaustive answer to the implicit question in the discourse (for example, in (83-a), the sentence would not answer the sub-question *Did John marry Sue?*). From this perspective, then, the question becomes: why is suspending the implicature in (80), (81), (82) allowed with ease? Take the modal case, repeated below.

(86)   Only John can win the Boston marathon, and maybe not even him.

In (86), the speaker believes that nobody other than John can win the Boston marathon but does not know whether John can. This obviously violates the exhaustivity requirement by not being informative with respect to John: the speaker does not believe that John is capable of winning the Boston marathon (suspender clause), and she cannot be taken to believe that John is incapable either, since, had she believed so, she would have uttered *Nobody can win the Boston marathon*. Since exhaustivity is violated by a negative partial answer, and in order for (86) not to be understood as a negative partial answer, the hearer must assume that the speaker's choice not to include John in the set of people unable to win the Boston marathon, while not knowing whether he is able to do so, is an indication that the speaker has some reason to believe that John is the most likely person to win the Boston marathon, e.g. the speaker might believe that John is *more capable* than anybody else to win the Boston marathon. Indeed, suspending the positive implicature of an *only* sentence in the acceptable cases in (80), (81) and (82), forces an interpretation whereby the speaker is ordering the alternatives with respect to some salient scale, the focus alternative being ranked the highest (roughly, paraphrasable as 'if there is anybody who can win the Boston marathon, that's John'). Because gradable adjectives are lexically associated with a scale[17], this interpretation – which rescues sentences in violation of the exhaustivity requirement, is easier is there is a gradable predicate.

Cases where the *only* implicature is not easily cancelable are cases where there is no gradable predicate in the assertion itself, and no scale is made lexically salient. For example, the predicate *marry* in the (a) sentence in (83) is not gradable: for any x where x is a person, x is either married or not. Applying the reasoning we used for (86), the speaker who utters

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[17]Kennedy (1999), and Kennedy (2003), among many others.

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(81-a) does not know whether John married Sue (the suspender clause): in order to reconcile this fact with the exhaustivity requirement, the hearer must assume that the speaker has some reason to believe that John is more likely than anybody else to be married to Sue. However (and this is where this case differs from the previous one), this reason cannot be that the speaker believes that John is more married to Sue than anybody else! The ordering source cannot be the predicate *marry*.

However, if the context is sufficiently rich, it can provide a way to order alternatives, making cancellation acceptable even when no gradable predicate is present. For example, consider the following case.

(87)   *Scenario*: *Mary organized a party and invited ten people. She made a party favor for each invitee and she arranged all the party favors on a table. Each party favor has a label with the name of one invitee. The rule is that the people will take their party favor with them when they're leaving the party. Suppose that you are an outside observer who knows all these facts. Towards 11 o'clock at night, you see that only one party favor is on the table, the one with the label "John". The party favor being on the table may mean either than John is the only person left at the party, or that everybody other than John came and left and John never showed up. In this context, the following exchange takes place:*
        Somebody: Who's still at the party?
        You: **Only John, and maybe not even him**.

Being at the party is not a gradable predicate. So, how could the implicatum be cancelled in (87)? Like in the modal case, this scenario made salient a set of propositions that constitute the *evidence of being at the party*: that somebody is at a certain location and that the party favor with their name be on the table. Even if the speaker does not know whether John is at the party, she may utter the bold sentence in (87) as long as she has some reason to believe that if somebody is at the party, that's John: that is to say, if she knows that – based on the available evidence – the degree to which John is likely to be at the party is greater than the degree to which anybody else is likely to be at the party.

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To conclude, I have suggested that whether the positive implicatum is easy or hard to cancel depends on how easy it is to 'repair' the exhaustivity violation caused by suspending the implicature, i.e. how easy it is to find a reason for believing that the sentence in the scope of the adverb is the most likely to be true (in a certain set). When the sentence in the scope of *only* contains a gradable predicate, then the ordering is lexically accessible, the 'repairing' is easy and the *only* sentences with a suspender is acceptable out-of-the-blue. If the sentence cointains no gradable predicate, then the burden of providing a reason for believing that the sentence in the scope of the adverb is the most likely to be true, falls on the context (which must therefore be quite elaborate), making the sentences odd out of context.

6 Conclusion

As I was in the final stage of the writing of this paper, I discovered a very recent proposal by Rooij and Schulz (2005), where the authors independently argue for an implicature analysis of *only*. Similarly to what I have done in this paper, van Rooij and Schulz suggest that the negative implicatum is the only component that is asserted by a positive *only* sentence, and that the positive implicatum is a conversational implicature and not a presupposition (whether strong or weak). However, despite this similarity, the two analyses crucially diverge with respect to negative *only* sentences. Van Rooij and Schulz do mention that the positive implicatum is inferred in negative *only* sentences too, but they do not address the obvious objection to any implicature analysis, i.e. that implicatures do not survive in negative sentences.

In this paper, however, I have directly addressed the question of the status of the positive implicatum in a negative *only* sentence and I have argued, on the basis of some new observations, that the positive implicatum is a scalar implicature of a positive *only* sentence but an *entailment* of the negative *only* sentence. What seemed to be the strongest piece of evidence in support of the presuppositional analysis – the survival of the positive implicatum when the sentence is negated – turns out to be just an illusion.

I discussed alternatives analyses such as the weak and the strong presuppositional

analyses (Horn (1969), among others, and Geurts and van der Sandt (2004), respectively) and the implicature version of Horn (1996) based on the claim that an *only A is/are B* is equivalent to the sentence *all B are A* and that the universal quantifier's requirement that there be some B holds for *only* too. The implicature analysis that I proposed here is in the spirit of a suggestion made by McCawley (1981), and inspired by some of the arguments in Horn (1996). Differently from any other implicature analysis that I know of, the current proposal accounts for the mixed behavior of the positive implicatum (its survival under negation and its cancellability) by suggesting that it is the scalar implicature of a positive *only* sentence but an entailment of its negative counterpart.

I discussed Atlas's observation that in order to cancel the implicature it is necessary to use a modal operator in the suspender clause and I argued that, even though true, this observation dos not necessarily undermine the implicature analysis and I offered an alternative pragmatic explanation for this fact. Furthermore, I presentend some new data having to do with the ease with which it is possible to cancel the implicature that the implicatum is true. Cancelling the implicature of an *only* sentence violates the requirement – induced by the semantics of focus – that the sentenc be an exhaustive answer to an implicit *wh*-question. This violation is repaired by assuming that, even though the speaker does not know whether P (the positive implicatum) or not-P, she must have uttered the *only* sentnece because she believes that P is the most likely of all its alternatives. The presence of a gradable predicate in the sentence makes the ordering source available even out of context.

The proposal developed in this paper falls in line with recent work by Simons (2001) and Abusch (2002), who have suggested that some propositions that have been traditionally labeled 'presuppositions', should be analyzed instead as conversational implicatures in light of the fact that it is possible to find sentences where these alleged presuppositions are cancelled.

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