# Only meets vagueness<sup>1</sup>

Katsuhiko YABUSHITA — Naruto University of Education

**Abstract.** An *only* sentence is construed to consist of the positive component, also referred to as the *prejacent* and the negative one. It is uncontroversial that the negative component is part of the literal meaning, or entailment of the *only* sentence. More controversial is the status of the prejacent, for it can be canceled (only epistemically, not directly) unlike the negative component; in the literature, it has been analyzed as entailment, presupposition, or conversational implicature. In this paper, novel data on the cancellability of the prejacent will be proffered to indicate that the prejacent is not always cancelable, but is sensitive to the vagueness of the main predicate, suggesting that the cancelability of the prejacent has nothing to do with the semantics of *only* per se. Indeed, couched in a dynamic semantic framework of vagueness, an alternative analysis of an *only* sentence will be presented, in which along with the negative component, the prejacent is part of the literal meaning of the sentence; however, sometimes, it will not be categorically *asserted*, or will be partly revoked as the speaker is aware of the possibility that the object in question does not satisfy the standard of the absolute use of the (vague) main predicate.

**Keywords:** *only*, prejacent, cancelation, vagueness, dynamic semantics

#### 1. Introduction

In the literature, it is uncontroversial that the interpretation of an *only* sentence, e.g., (1a) is composed of the positive component also referred to as the *prejacent*, (1b) and the negative component, (1c).

- (1) a. Only John smokes.
  - b. John smokes.
  - c. Nobody except for John smokes.

Schematically, an *only* sentence, its prejacent and its negative component are represented in terms of background-focus notation as (2a), (2b), and (2c), respectively.

- (2) a. ONLY(F, B)
  - b. Prejacent: B(F)
  - c. Negative Component:  $\forall x [[x \in ALT(F) \land x \neq F] \rightarrow \neg B(F)]$

Controversial is the status of the prejacent—i.e., whether it is an entailment (e.g., Atlas 1993, 1996), a presupposition (e.g., Geurts and van der Sandt 2004; Horn 1969, 1996; Rooth 1985, 1992), or a conversational implicature (e.g., Ippolito 2007; McCawley 1981, van Rooij and Schulz 2007) of an *only* sentence.

-

<sup>&</sup>lt;sup>1</sup> I would like to thank the audiences of Theoretical Linguistics at Keio (TaLK) 2016 and Sinn und Bedeutung (SuB) 21, especially Joseph DeVeaugh-Geiss, Mira Grubic, Peter Lasersohn, Manfred Krifka, Mats Rooth, Bernard Schwarz and Yasutada Sudo, for their helpful questions, comments and/or suggestions. I'm afraid that those have not been fully incorporated into the current version. All the remaining inadequacies are mine. Last, but not least, thanks to Rob Truswell for editing the current volume as well as being one of the organizers of SuB 21.

One of the most compelling pieces of evidence against the entailment and presupposition approaches is the cancellability of the prejacent observed in, e.g., (3).

- (3) a. Only Mary can speak French ... maybe she cannot.
  - b. Only John is tall ... maybe he is not.

However, a look at further data reveals that the prejacent is not always cancelable; it is cancelable only when the main predicate is a vague one as seen in (3) and (4) in conjunction with (5) and (6).

- (4) a. #Only Mary came to the party ... maybe she didn't.
  - b. #Only John is married ... maybe he is not.
- (5) a. Mary can speak French very well.
  - b. John is very tall.
- (6) a. \*Mary came to the party very much.
  - b. \*John is very married.

Data like (3) and (4) together are baffling to all the three existing approaches, for they cannot explain why the prejacent is cancellable sometimes and non-cancellable other times. In this paper, couched in a dynamic semantic framework for vagueness proposed by Barker (2002, 2013), I will present an analysis of the interpretation of an *only* sentence—in which the prejacent is indeed part of the semantic meaning of an *only* sentence but is not (categorically) asserted when the main predicate is a vague one.

Before moving on to the presentation of the current analysis, one more word is in order about the cancelability of the prejacent of an *only* sentence. That is, the prejacent is cancelable only epistemically as seen in the contrast between (7a) and (7b), and unlike the case of the cancelation of a conversational implicature in (7c).

- (7) a. Only Mary can speak French ... maybe, she can't.
  - b. #Only Mary can speak French ... she can't.
  - c. Mary has three children ... (actually,) she has exactly five children.

## 2. A novel analysis of the cancelability of the prejacent

It has been seen above that the prejacent of an *only* sentence is not always cancelable; the cancelation is possible only if the main predicate of the sentence is a vague one. This certainly suggests that the cancelation has no bearing on the semantics of an *only* sentence, or *only*. Indeed, in the current analysis to be proposed in the following, I will adopt such a semantics for *only* that both the prejacent and the negative component are hardwired in the literal meaning of (an) *only* (sentence), but after the utterance of an *only* sentence, the prejacent can be partly revoked, or can be not categorically asserted as the speaker becomes aware of the possibility that the focused object in question does not satisfy the standard for the absolute use of the (vague) predicate.

### 2.1. Semantics of only

Demonstrated by the contrast between (3) and (4), the prejacent of an *only* sentence is not always cancelable; it is cancelable only when the main predicate is a vague one. This strongly suggests that the prejacent is in fact part of the literal meaning of (an) *only* (sentence), but can be canceled (epistemically) from an interaction with vagueness. For the purpose of the present paper, any reasonable semantics of *only* with both the prejacent and the negative component incorporated will do, e.g., van Rooij and Schulz's (2007) *ONLY*, which is actually the penultimate version of their final proposed semantic meaning of *only*.

(8) Definition (van Rooij and Schulz's (2007) *ONLY*)  $ONLY(\langle F, B \rangle) = \{ w \in W : F(w)(B(w)) \& \neg \exists v [F(v)(B(v)) \& v <_B w] \},$ where  $<_B$  is a relation on W such that  $v <_B w$  iff v is exactly like w except that the extension of B in v is smaller than that in w, i.e.,  $B(v) \subset B(w)$ .

According to the definition of the meaning of an *only* sentence, e.g., *Only Mary can speak* French, whose semantic representation in terms of the focus-background notation is  $ONLY(\langle Mary, \lambda x. can speak French(x) \rangle)$  is the set of possible worlds whose extension of  $\lambda x. can speak French(x)$  is the set that contains Mary as its sole element; in other words, where Mary and nobody else can speak French. The meaning corresponds with the propositional content composed of both the prejacent and the negative component.

### 2.2. Semantic framework for vagueness: Barker (2002, 2013)

As a general semantic framework for the interpretation of sentences involving vague predicates, I will adopt a dynamic semantic framework proposed by Barker (2002, 2013). In the framework, the utterance of a sentence updates information states, here modeled as sets of ordered pairs of possible worlds and discourses, not just sets of possible worlds, having the schematic form  $\{\langle w, d \rangle : ... \}$ . The role of a discourse, among others, is to determine the standard for the absolute use of a vague predicate; that is, given a discourse, d, a possible world, w, and a vague predicate, say tall, d(w)([tall]) specifies the standard of tallness in w and d. In the setting, for example, John is tall is true in  $\langle w, d \rangle$ , i.e., [John is  $tall]^{w,d} = 1$  iff the degree of John's height is equal to or greater than the standard of tallness in w and d, which is:

(9)  $[John \ is \ tall]^{w,d} = 1 \ iff \ \iota e[[tall]^{w,d}(j)(e)] \ge d(w)([tall]),$  where  $\iota$  is the iota operator and e is a degree variable.

And the utterance of a sentence updates a given information state into an information state in whose ordered pairs of possible worlds and discourses the sentence is true, as illustrated with *John is tall* as an example in the following:

(10) 
$$C + "John is tall" = C' = \{\langle w, d \rangle \in C : [John is tall]^{w,d} = 1\} = \{\langle w, d \rangle \in C : \iota e[[tall]^{w,d}(j)(e)] \ge d(w)([tall])\}$$

The update of an information state by the utterance of an *only* sentence, in this case *Only John is tall*, is illustrated as follows:

(11)  $C + "Only John is tall" = C' = \{\langle w, d \rangle \in C : [[Only John is tall]]^{w,d} = 1\} = \{\langle w, d \rangle \in C : [[John is tall]]^{w,d} = 1 \land \forall x[x \neq j \rightarrow \iota e[[[tall]]^{w,d}(x)(e)] < d(w)([[tall]])\} = \{\langle w, d \rangle \in C : \iota e[[[tall]]^{w,d}(j)(e)] \geq d(w)([[tall]]) \land \forall x[x \neq j \rightarrow \iota e[[[tall]]^{w,d}(x)(e)] < d(w)([[tall]])\}$ 

### 2.3. A post-update operation: On Second Thought (OST)

When the prejacent of an *only* sentence is canceled, the *only* sentence is characteristically followed by a pause, which is expressed typographically as "..." before the cancelation, as seen in (2) and the examples in the literature in general. I take the pause to signify the speaker's having second thoughts about the standard for someone or something to be determined to have the property in question, i.e., she has been suspecting that the standard can be more stringent than she originally assumed and has decided to take precautions against such a possibility.

I propose that there should be a post-update operation on information states that will incorporate the possibility that the standard of the property in question is stricter than originally assumed. The operator is a function on information states and properties as its arguments and is named *On Second Thought (OST)*.

(12) Definition (*OST*)  $OST(C', \llbracket B \rrbracket) = \{\langle w, \mathbf{d}' \rangle : \exists \mathbf{d} [\langle w, \mathbf{d} \rangle \in C' \land \mathbf{d}' \geq_{w, \llbracket B \rrbracket} \mathbf{d}] \},$  where C' is an information state, B is the background predicate in question, and  $\geq_{w, \llbracket B \rrbracket}$  is a relation on the domain of discourses, D such that  $\mathbf{d}' \geq_{w, \llbracket B \rrbracket} \mathbf{d}$  iff  $\mathbf{d}'$  is exactly like  $\mathbf{d}$  possibly except that  $\mathbf{d}'(w)(\llbracket B \rrbracket) \geq \mathbf{d}(w)(\llbracket B \rrbracket)$ .

Given an information state and a property, the application of *OST* on the information state with respect to the property results in an information state such that it contains ordered pairs of a possible world and a discourse that are exactly like ones contained in the input information state with the possible exception that the discourse is stricter with regard to the standard for the absolute use of the property in the world.

Let us see the effects of *OST* on the information state resulting from the utterance of an *only* sentence, e.g., *Only John is tall*, i.e., (11), with respect to the property [[tall]].

(13) 
$$OST(C + "Only John is tall", [[tall]]) = OST((10), [[tall]]) = \{\langle w, d' \rangle : \exists d[\langle w, d \rangle \in C \land \iota e[[[tall]]^{w,d}(j)(e)] \geq d(w)([[tall]]) \land \forall x[x \neq j \rightarrow \iota e[[[tall]]^{w,d}(x)(e)] < d(w)([[tall]])] \land d' \geq_{w,[[tall]]} d\}$$

The resulting information state is such that nobody other than John is tall in all the ordered pairs of possible worlds and discourses that are elements of the information state; in some of the ordered pairs John is tall and in the others John is not tall.

#### 2.4. Veltman's (1996) update semantics

Veltman (1996) developed a dynamic-semantic framework to analyze epistemic modals and default reasoning. Relevant to the following discussion is his analysis of epistemic modals,

especially the epistemic possibility modal 'might', which I take to model maybe, which characteristically appears in the sentences canceling the prejacent of an only sentence as in (3).

Here I will introduce a minimum portion of Veltman's (1996) dynamic-semantic framework that is sufficient for the current issues and is adapted to the terms of the previous sections. Given an information state C and a sentence  $\phi$ , the update of C by (the utterance of)  $\phi$  is basically as we have assumed above, i.e., intersecting C with the propositional content of  $\phi$ ; consequently, the resulting information state is usually a proper subset of C, as in the cases of, e.g., (10) and (11). One of the exceptional cases is a sentence of the form  $might \ \psi$  with the epistemic operator might prefixed. Following is the definition of the update effected by  $might \ \psi$ .

### (14) Definition (Update Function of might $\psi$ )

Let C be an information state and  $might \phi$  be a sentence composed of an operator might and a sentence  $\psi$ .

```
C + might \psi = C \text{ if } C + \psi \neq \emptyset. (Otherwise, i.e., if C + \psi = \emptyset, C + might \psi = \emptyset.)
```

As is clear from the definition, the update by  $might \, \phi$  is actually not an "update", for the resulting information state is the same as the input one (or the "absurd" state, i.e.,  $\emptyset$ ). Veltman characterizes the function of  $might \, \phi$  as a test, by which you just see if the current information state is compatible with  $\phi$ .

From the perspective of whether someone in a given information state accepts a given sentence and whether the sentence is acceptable to her, the two relations between information states and sentences, i.e. *acceptance* and *acceptable* were defined as follows:

### (15) Definition (Acceptance)

Let C be an information state and  $\phi$  be a sentence.  $\phi$  is accepted in C ( $C \Vdash \phi$ ) iff  $C + \phi = C$  (which intuitively says that the propositional information of  $\phi$  is already subsumed by C).

### (16) Definition (Acceptable)

Let C be an information state and  $\phi$  be a sentence.  $\phi$  is acceptable in C iff  $C + \phi \neq \emptyset$  (which intuitively says that the propositional information of  $\phi$  is not rejected by C).

From the definitions of the update function of a sentence of the form  $might \ \phi$ , acceptance and acceptable, it follows that  $might \ \psi$  is accepted in C iff  $\psi$  is acceptable in C.

#### 2.5. Veltman's (1996) might for maybe and acceptance for felicitous continuation

Having reviewed Veltman's (1996) update semantics, I propose that the modal adverb that characteristically appears with the sentence suspending the prejacent, i.e., *maybe* should be modeled as Veltman's *might*, and the felicitous continuation as Velman's *acceptance*.

## 2.5.1. The case of an *only* sentence with a vague predicate

Let us take  $Only\ John\ is\ tall\ as\ an\ only\ sentence\ with\ a\ vague\ predicate.$  As shown above, the information state resulting from updating a given information state C with the utterance of the sentence is (11), which is reproduced here:

(11)  $C + "Only John is tall" = C' = \{\langle w, d \rangle \in C : [\![Only John is tall]\!]^{w,d} = 1\} = \{\langle w, d \rangle \in C : [\![John is tall]\!]^{w,d} = 1 \land \forall x[x \neq j \rightarrow \iota e[\![[\![tall]\!]^{w,d}(x)(e)\!] < d(w)([\![tall]\!])\} = \{\langle w, d \rangle \in C : \iota e[\![[\![tall]\!]^{w,d}(j)(e)\!] \geq d(w)([\![tall]\!]) \land \forall x[x \neq j \rightarrow \iota e[\![[\![tall]\!]^{w,d}(x)(e)\!] < d(w)([\![tall]\!])\}$ 

Then, the information state resulting from the application of OST to (11) with respect to the property [tall] is (13), which is reproduced here:

(13) 
$$OST(C + "Only John is tall", [[tall]]) = OST((11), [[tall]]) = \{\langle w, \mathbf{d}' \rangle : \exists \mathbf{d}[\langle w, \mathbf{d} \rangle \in C \land \iota e[[[tall]]^{w,\mathbf{d}}(j)(e)] \geq \mathbf{d}(w)([[tall]]) \land \forall x[x \neq j \rightarrow \iota e[[[tall]]^{w,\mathbf{d}}(x)(e)] < \mathbf{d}(w)([[tall]])] \land \mathbf{d}' \geq_{w,[[tall]]} \mathbf{d}\}$$

As (13) is a set of ordered pairs of possible worlds and discourses, in some of which John is not tall, in the others of which John is tall, and in all of which nobody other than John is tall, the following holds:

(17) 
$$OST(C + "Only John is tall", [tall]) (= (13)) + "John is not tall" \neq \emptyset$$

That is, "John is not tall" is acceptable in OST(C + "Only John is tall", [tall]), which, according to the definition of the update function for a sentence of the form  $might\ \psi$ , (15), means the following:

(18) 
$$(13) + might "John is not tall" = (13)$$

Consequently, according to the definition of acceptance, the following holds:

(19) 
$$OST(C + "Only John is tall", [[tall]]) (= (13)) \Vdash might "John is not tall" (might "John is not tall" is accepted by  $OST(C + "Only John is tall", [[tall]])$ .)$$

The result in (19), I contend, models well the felicitousness in continuation observed in (3b). First, C + "Only John is tall" represents the speaker's (tentative) assertion that John and nobody else is tall. Second, OST(C + "Only John is tall", [[tall]]) corresponds to the state where the speaker has had second thoughts about the standard for the absolute use of the predicate (be) tall; she has suspected that the standard might be stricter than she originally assumed. Finally, in the resulting state, it holds that might "John is not tall" (maybe, John is not (tall)), as  $OST(C + "Only John is tall", [[tall]]) \Vdash might$  "John is not tall".

#### 2.5.2. The case of an *only* sentence with a non-vague predicate

In the above, we have seen that the suspension of the prejacent of an *only* sentence with a vague predicate can be modeled well—with the identification of *OST* for the speaker's second thoughts on the standard for the absolute use of the vague predicate, Veltman's (1996) *might* for *maybe*, and Veltman's *acceptance* for the felicitousness in continuation with a prejacent-suspending sentence. Now, let us see the case of an *only* sentence with a non-vague predicate, e.g., *Only John is married*.

The information state resulting from updating a given information state *C* with the utterance of *Only John is married* is analogous to the case of *Only John is tall*, i.e., (11) and as follows:

```
(20) C + "Only John is married" = C' = \{\langle w, d \rangle \in C : [Only John is married]^{w,d} = 1\} = \{\langle w, d \rangle \in C : [John is married]^{w,d} = 1 \land \forall x[x \neq j \rightarrow ue[[married]]^{w,d}(x)(e)] < d(w)([married])\} = \{\langle w, d \rangle \in C : ue[[married]]^{w,d}(j)(e)] \geq d(w)([married]) \land \forall x[x \neq j \rightarrow ue[[married]]^{w,d}(x)(e)] < d(w)([married])\}
```

The result of applying OST to (20) with respect to the property [married] will be analogous to (13) and as follows:

```
(21) OST(C + "Only John is married", [[married]]) = \{\langle w, d' \rangle : \exists d[\langle w, d \rangle \in C \land \iota e[[[married]]^{w,d}(j)(e)] \geq d(w)([[married]]) \land \forall x[x \neq j \rightarrow \iota e[[[married]]^{w,d}(x)(e)] < d(w)([[married]])] \land d' \geq_{w,[[married]]} d\}
```

Before proceeding to see the consequences, let me point out a characteristic of non-vague, or definite predicates like *(be) married* with respect to degrees for someone or something to have the denoted property. That is, as a non-vague predicate, there is no vagueness with respect to whether the denoted property is applicable to an object or not. The characteristic is rendered into the following assumption:

(22) Assumption (Binary Degrees for Non-vague Properties)

The possible degrees for something or someone to have the property denoted by a non-vague predicate are binary, e.g., 1 and 0, and the standard for the absolute use of the property is the higher value, in this case, 1.

Given the assumption (22), let us now see if there is any feature with the information state (21) distinct from the information state (13). Indeed, the following holds:

```
(23) OST(C + "Only John is married", [[married]]) = \{\langle w, d' \rangle : \exists d[\langle w, d \rangle \in C \land \iota e[[[married]]^{w,d}(j)(e)] \geq d(w)([[married]]) \land \forall x[x \neq j \rightarrow \iota e[[[married]]^{w,d}(x)(e)] < d(w)([[married]])] \land d' \geq_{w,[[married]]} d\} = C + "Only John is married"
```

That is because there are no discourses whose standard for the absolute use of the predicate *(be) married* is higher than those already involved in the information state (10)—with the standard being fixed to the higher degree of the two possible ones in any discourse, as is a consequence of the assumption (22). Consequently, the result of applying OST to C + "Only John is married" with respect to [married] is the same thing as C + "Only John is married"; in other words, the operation of OST is vacuous when the predicate is a non-vague one. Being identical to C + "Only John is married", (23) is a set of ordered pairs of possible worlds and discourses such that in all the ordered pairs, John and nobody else is married, from which the following follows:

(24)  $OST(C + "Only John is married", [married]) + "John is not married" = \emptyset$ 

According to the definition of the relation of acceptable, (16), the following holds:

(25) "John is not married" is not acceptable in OST(C + "Only John is married", [married]).

Thus, according to the definition of the update function of a sentence of the form  $might \psi$ , (14) and that of the relation of acceptance, it follows that:

(26) OST(C + "Only John is married", [married]) \(\mathbb{H}\) might "John is not married" (might "John is not married" is not accepted by OST(C + "Only John is married", [married]).)

The result in (26), I contend, models well the non-suspendability of the prejacent and the infelicity of the continuation observed in (4).

### 2.5.3. Outcome of the current analysis

As is demonstrated by the two cases above, in the current analysis the following proposition holds:

(27) Proposition:

Let  $\alpha$  be a proper noun and P be a predicate.  $OST(C + "Only \ \alpha \ P", [\![P]\!]) \Vdash might \ \alpha \ not P \text{ iff } P \text{ is a vague predicate.}$ 

With the assumptions in (28), the proposition in (27) characterizes well the facts on the suspendability of the prejacent of *only* sentences observed in (3) and (4).

- (28) a. What is typographically expressed as "..." in examples of the suspension of the prejacent of an *only* sentence in the literature is a representation of the speaker's second thoughts on the standard for the absolute use of the predicate in question; specifically, she suspects that the standard might be stricter than she originally assumed. And the second thought is analyzed as the *OST* operator.
  - b. The epistemic modal that characteristically precedes the sentence suspending the prejacent, i.e., *maybe*, and the felicity in continuation are analyzed as Veltman's (1996) *might* and *acceptance*, respectively.

#### 2.6. Horn's (2002) notion of assertoric inertia: A precursor?

In the current analysis, the suspendability of the prejacent of an *only* sentence is crucially attributed to the vagueness of the predicate and the speaker's afterthought about the standard for the absolute use of the vague predicate. That is, by the utterance of an *only* sentence with a vague predicate, the prejacent is indeed asserted once. However, for some reason, the speaker can suspect that the standard might be stricter than she originally thought and she weakens the original assertion and accepts the possibility that the prejacent is not true.

In fact, in relation to the suspendability of the prejacent of an *only* sentence, Horn (2002) proposed a notion which appears to be related to the current analysis, i.e. *assertoric inertia*. Drawing on Stalnaker's (1978) notion of assertion of an utterance as an agreement among the interlocutors to update the common ground so that it is compatible with the propositional content of the utterance, Horn introduced the notion of assertoric inertia. Something is assertorically

inert when it is entailed but not asserted. He proposed that the prejacent of an *only* sentence should be assertorically inert; hence, it should be suspendable. I would like to point out some problems with Horn's analysis. First, he doesn't propose a formal implementation of the very notion of assertoric inertia. Second, he attributes assertoric inertia of the prejacent to *only* sentences as a construction, or the semantics of *only*; consequently, every instance of the prejacent of an *only* sentence would be predicted to be suspendable. However, the prediction is incompatible with the variability of the suspension of the prejacent—the suspendability of the prejacent is subject to whether the main predicate is vague or not among others. As such, Horn's *assertoric inertia*-based analysis can be said to be empirically inadequate.

#### 3. Issues to be addressed

I will conclude this paper by listing some issues to be addressed in the future work:

- In the current work, the cancelability of the prejacent of an only sentence is attributed to the speaker's second thought about the standard for the absolute use of a vague predicate, having nothing to do with the semantics of *only* per se. Hence, it will be predicted that "John is tall ... maybe, he isn't" is felicitous. Is this prediction borne out?
- Are there any factors other than vagueness that induce OST? Is OST independently motivated?
- Is there a variant of OST which supposes a more lenient standard instead of a stricter one? If not, why? If there were, the following continuation would be predicted to be felicitous: "Only John is tall ...maybe, some other people are".

### References

Atlas, J. (1993). The importance of being 'only'. *Journal of Semantics* 10(4), 301–318.

Atlas, J. (1996). 'Only' noun phrases, pseudo-negative generalized quantifiers, negative polarity items, and monotonicity. *Journal of Semantics 13*(4), 265–328.

Barker, C. (2002). The dynamics of vagueness. *Linguistics and Philosophy* 25(1), 1–36.

Barker, C. (2013). Negotiating taste. *Inquiry* 56(2–3), 240–257.

Geurts, B. and R. van der Sandt (2004). Interpreting focus again. *Theoretical Linguistics* 30(1) 1–44.

Horn, L. (1969). A presuppositional analysis of 'only' and 'even'. In *Papers from the Fifth Regional Meeting of the Chicago Linguistic Society*, pp. 98–107.

Horn, L. (1996). Exclusive company: 'Only' and the dynamics of vertical inference. *Journal of Semantics* 13(1), 1–40.

Horn, L. (2002). Assertoric inertia and NPI licensing. In *Papers from the Twenty-eighth Reginal Meeting of the Chicago Linguistic Society: The Panels*, pp. 55–82.

Ippolito, M. (2007). On the meaning of only. Journal of Semantics 25(1), 45–91.

McCawley, J. (1981). Everything that Linguists Have Always Wanted to Know about Logic but Were Ashamed to Ask. Chicago: University of Chicago Press.

Rooth, M. (1985). Association with Focus. Ph. D. thesis, University of Massachusetts, Amherst.

Rooth, M. (1992). A theory of focus interpretation. *Natural Language Semantics* 1(1), 75–116. Stalnaker, R. (1978) Assertion. In P. Cole (Ed.), *Syntax and Semantics* 9: *Pragmatics*, pp. 315–332. New York: Academic Press.

Van Rooij, R. and K. Schulz (2007). *Only*: Meaning and implicature. In A. Aloni, A. Butler, and P. Dekker (Eds.), *Questions in Dynamic Semantics*, pp. 193–224. Oxford: Elsevier.
Veltman, F. (1996). Defaults in update semantics. *Journal of Philosophical Logic* 25(3), 221–261.