The scalar presupposition of *only* and *only if*[*]

Sam Alxatib[1]

CUNY Graduate Center
alxatib@alum.mit.edu

Abstract

We diagnose a pattern of reversal in the scalar presupposition of *only* in *only if* constructions, and attempt to relate it to the monotonicity of conditional antecedents. At the heart of the analysis is a proposal that reduces the scalar presupposition of *only* to the particle's need to be non-vacuous. The reversal pattern is derived, but difficulties and questionable ingredients of the story are noted.

1 Introduction

This paper is about the scalar presupposition of *only* and its behavior in *only if* constructions. We focus our attention on the following generalization: while the use of *only* is dispreferred with relatively high focus associates, the same high associates are acceptable under *only if*, and it is with *low* associates that the acceptability of *only if* decreases. This is illustrated below:

(1) a. #This band only released ten$_{\mathrm{F}}$ albums (ten is high)
    b. ✓This band only released two$_{\mathrm{F}}$ albums (two is relatively low)

(2) a. A band qualifies for this award only if they released (at least) ten$_{\mathrm{F}}$ albums
    b. #A band qualifies for this award only if they released (at least) two$_{\mathrm{F}}$ albums

Let us make it clear from the start that we do not claim (1a) and (2b) to be categorically unacceptable. We merely highlight an apparent reversal in the effects of *only*'s scalar presupposition: being too high for acceptability with *only* coincides with being acceptable with *only if*, and being low and acceptable with *only* coincides with (near) unacceptability with *only if*. Note that the same reversal is found with alternative scales that are not logically ordered, as shown in (3-6) below. We will talk briefly about these cases later.

(3) a. ??John only got an A$_{\mathrm{F}}$
    b. ✓John only got a C$_{\mathrm{F}}$

(4) a. A student will only be considered for admission if she gets (at least) an A$_{\mathrm{F}}$
    b. ??A student will only be considered for admission if she gets (at least) a C$_{\mathrm{F}}$

(5) a. ??John only knows how to make turducken$_{\mathrm{F}}$[1]
    b. ✓John only knows how to make [boiled eggs]$_{\mathrm{F}}$

(6) a. People get to work at that restaurant only if they know how to make turducken$_{\mathrm{F}}$
    b. ??People get to work at that restaurant only if they know how to make [boiled eggs]$_{\mathrm{F}}$

[*]For helpful discussions, I thank Kai von Fintel, Danny Fox, Elena Herburger, Jon Nissenbaum, Yael Sharvit, and Anna Szabolcsi. All errors are my own.

[1]I'm assuming a scale of difficulty, and that turducken is hard to make, but boiled eggs are easy.

Similar findings seem to hold of bare plurals also. I will not discuss those in this paper.

(7) a. ??Only bands that released (at least) two$_{\mathrm{F}}$ albums qualify for this award
b. ??Only students with (at least) a C$_{\mathrm{F}}$ are considered for admission
c. ??Only people who know how to make [boiled eggs]$_{\mathrm{F}}$ get to work at that restaurant

It is reasonable at first glance to relate this reversal to the downward monotonicity of *if*-clauses. Assuming that *only if* is composed of *only* and a conditional prejacent, and assuming that the focus associate of *only* in these cases is part of the antecedent, we expect the logical relationship between the alternatives to be reversed. This is because replacing an associate ϕ in 'if ϕ then ψ' with a stronger alternative ϕ' produces a *weaker* conditional. It would then follow that what counts as 'too strong' for association with *only* will make for a weak conditional prejacent in the case of *only if*, and that for a weak ϕ'', the conditional 'if ϕ'' then ψ' will be strong and thus (nearly) incompatible with *only*. This explains the reversal in (1-6).

The main goal of this paper is to lay out the details of this explanation. Doing this will involve making clear our assumptions about the semantics of *only if* constructions—here we will largely follow von Fintel 1997—and also involve articulating the scalar presupposition of *only* in a plausible way where the monotonicity of *if* will play this role. The formulation that I will suggest reduces the presupposition to another property that the particle is known to have: its infelicitousness when it is assertorically vacuous. The sketch of this reduction, and the predictions it brings to the *only*/*only if* reversal, is what I intend as the main contribution of the paper. To the extent that the overall proposal is plausible, a tentative corollary is that conditionals in *only if* constructions have universal (or near-universal) quantificational force. This contrasts with recent proposals in which *if* is assigned an existential semantics (Herburger 2015, Bassi and Bar-Lev 2017).

2 The semantics of *only* and *only if*

Standard analyses of *only* take the particle to operate on a propositional argument (the prejacent) and a set of alternatives to that argument. The alternatives are generated by replacing the focus-marked element in the prejacent with its contextually salient alternatives. Given a prejacent ϕ and a set A of alternatives to ϕ, *only* presupposes ϕ (though this is disputed)[2], and asserts the negation of whatever can be negated from among the elements of A. Consider (8):

(8) Mary only saw [John and Sue]$_{\mathrm{F}}$

We analyze (8) effectively as an expression where *only* takes the sentence *John saw Mary* as its prejacent.[3] The alternatives in this case differ from the prejacent only with respect the focus-marked element *John and Sue*, giving us *Mary saw John*, *Mary saw Sue*, *Mary saw Bill*, etc. The semantics of *only*, shown in (9), negate those alternatives that do not follow from the prejacent, in this case, *Mary saw Bill*.

(9) Given a proposition ϕ and a set of propositions A,
$[\![only]\!]^w(A)(\phi)$ is defined only if $\phi(w)=1$, and if defined,
$[\![only]\!]^w(A)(\phi)=1$ iff $\forall\psi(\psi\in A \;\&\; \phi\nvDash\psi \;\rightarrow\; \psi(w)=0)$

[2]The prejacent presupposition is due to Horn (1969). In Horn 1996 the presupposition is taken to be existential, and in Ippolito 2008 it is weakened further to a conditional presupposition. See Ippolito 2008 and Beaver and Clark 2008 for review and discussion of other possibilities.

[3]It is clear that *only* appears to take a VP argument here. We ignore this fact given that it does not affect the points of this paper.

Note that I set aside the mechanism with which the alternatives are made to depend on the form of the prejacent, and differ only in its focus. I refer the reader to Mats Rooth's work on this (Rooth 1985, Rooth 1992).

Let us extend the entry in (9) to *only if*, which we will take to consist of *only* with a conditional prejacent. As a working example, consider (10):

(10) Mary will only go if [John and Sue]$_F$ go

In (10), the focus associate of *only* appears inside the antecedent of the conditional prejacent. We do not want to say that every instance of *only if* is one where there is an identifiable focus-bearing expression inside the antecedent. But for now let us explore the possibility of analyzing (8) and (10) uniformly.[4]

Intuitively, (10) presupposes that Mary will go if John and Sue go (though again, this is not without controversy), and more relevantly for us, asserts that Mary will not go if John goes alone, and will not go if Sue goes alone. This reading is not straightforwardly derivable from the analysis developed so far. To see why, assume first a variably-strict implication account of the conditional prejacent, i.e. that *if* denotes a subsethood relation between accessible antecedent-worlds and consequent worlds:

(11) *If* as variably-strict
For any $p, q \in D_{\langle s,t \rangle}$, $[\![\textbf{if}]\!]^w(p)(q) = 1$ iff $\textsc{sim}_w(p) \subseteq q$
(where $\textsc{sim}_w(p)$ is the set of maximally-similar p-worlds to w)

By our current assumptions, the alternatives to the conditional prejacent in (10) will look something like (12). Their negations, as provided by the assertion of *only*, are shown in (13).

(12) ALT(If [John and Sue]$_F$ go, Mary will go) = {If John goes, Mary will go,
If Sue goes, Mary will go, $\cdots$}

(13) $[\![(10)]\!]^w$ is defined only if $\textsc{sim}_w(j\&s) \subseteq m$, and if defined
$[\![(10)]\!]^w = 1$ iff $\textsc{sim}_w(j) \nsubseteq m$ and $\textsc{sim}_w(s) \nsubseteq m$ and $\cdots$

According to (13), the assertive component of (10) says that not all accessible (or maximally similar) John-going worlds are Mary-going worlds, and not all accessible Sue-going worlds are Mary-going worlds. But as von Fintel notes, this is not strong enough to capture the intuited meaning of (10). The conditions in (13) allow for some accessible John-going-alone worlds to be Mary-going worlds, so we predict that (10) be true in contexts where it is possible for Mary to go even if John goes without Sue. But intuitively, this is incorrect.

There are a number of ways of making the weak result above stronger. We will look at two of them, and we will point out an amendment that is needed on both. On the first option, we revise (11) and take *if* to denote an *existential* quantifier over worlds. This will do two things. It will weaken the truth conditions of conditionals generally, so we would then have to explain why they typically give rise to universal-like readings when unembedded.[5] But it will also provide us with a promising prediction: the negations of (existential) conditionals, the alternatives to the prejacent, will have strong truth conditions. The entry and its result are shown below.

[4] In Section 4 I will mention the possibility that, regardless of accenting, a conditional prejacent has only one alternative, that in which the antecedent is replaced with its negation. Unfortunately I will not be able to give this possibility the attention it deserves here.

[5] Bassi and Bar-Lev (2017) propose that the universal force of conditionals (in UE contexts) results from recursive exhaustification (Fox 2007).

(11′) <u>An existential definition of *if*</u>
For any $p,q \in D_{\langle s,t\rangle}$, $[\![\textbf{if}]\!]^w(p)(q)=1$ iff $\textsc{sim}_w(p) \cap q \neq \varnothing$
(where $\textsc{sim}_w(p)$ is the set of maximally-similar p-worlds to w)

(13′) $[\![(10)]\!]^w$ is defined only if $\textsc{sim}_w(j\&s) \cap m \neq \varnothing$, and if defined
$[\![(10)]\!]^w=1$ iff $\textsc{sim}_w(j) \cap m = \varnothing$ and $\textsc{sim}_w(s) \cap m = \varnothing$ and $\cdots$

The assertion in (13′) now says that no (maximally similar) John-going world is a Mary-going world, and no (maximally similar) Sue-going world is a Mary-going-world. However, we now have another problem. If some John-and-Sue-going worlds are Mary-going worlds, as the presupposition says, there is no way that *no* John-going worlds are Mary-going worlds, because the John-going worlds include John-and-Sue worlds, and we know that some of those are worlds where Mary goes. How do we get around this problem? Maybe we can assume that the maximally-similar worlds where John goes exclude those where he goes with Sue, but I am not prepared to discuss this possibility. Instead I will assume, at least given our current construal of the alternatives to conditionals, that the alternatives to the prejacent in *only if* constructions are conditionals whose antecedents are *exhaustified* with respect to the antecedent of the prejacent itself. In the case of the current example, this revision will give us (14).[6]

(14) ALT(If [John and Sue]$_\text{F}$ go, Mary will go) = {If $\textsc{exh}$(John goes), Mary will go,
If $\textsc{exh}$(Sue goes), Mary will go, $\cdots$}

With the revision in (14) we derive the desired assertion, as shown in (13″): the assertion says that no accessible John-but-not-Sue-going worlds are Mary-going worlds, and no accessible Sue-but-not-John-going worlds are Mary-going worlds.

(13″) $[\![(10)]\!]^w$ is defined only if $\textsc{sim}_w(j\&s) \cap m \neq \varnothing$, and if defined
$[\![(10)]\!]^w=1$ iff $\textsc{sim}_w(\textsc{exh}(j)) \cap m = \varnothing$ and $\textsc{sim}_w(\textsc{exh}(s)) \cap m = \varnothing$ and $\cdots$

Let us now turn to the second way of strengthening the weak results derived earlier. Here we will also need to maintain the internal-exhaustification assumption illustrated in (14), but instead of assuming an existential semantics for conditionals, we maintain universal force and add a homogeneity presupposition to them (von Fintel). We summarize this in (11″):

(11″) <u>*If* as homogeneous and variably-strict</u>
For any $p,q \in D_{\langle s,t\rangle}$, $[\![\textbf{if}]\!]^w(p)(q)$ is defined only if $\textsc{sim}_w(p) \subseteq q \vee \textsc{sim}_w(p) \subseteq \overline{q}$,
If defined, $[\![\textbf{if}]\!]^w(p)(q)=1$ iff $\textsc{sim}_w(p) \subseteq q$

According to (11″), conditionals impose an all-or-nothing precondition on their propositional inputs. When a conditional is false, it is false because the antecedent worlds are *disjoint* from the consequent worlds. This, together with the exhaustified alternatives in (14), produce a universal presupposition for *only if*, and also a strong assertion like the one in (13″):

(13″) $[\![(10)]\!]^w$ is defined only if $\textsc{sim}_w(j\&s) \subseteq m$, and if defined
$[\![(10)]\!]^w=1$ iff $\textsc{sim}_w(\textsc{exh}(j)) \subseteq \overline{m}$ and $\textsc{sim}_w(\textsc{exh}(s)) \subseteq \overline{m}$ and $\cdots$
i.e. iff $\textsc{sim}_w(\textsc{exh}(j)) \cap m = \varnothing$ and $\textsc{sim}_w(\textsc{exh}(s)) \cap m = \varnothing$ and $\cdots$

[6] This assumption is related to Menendez-Benito's (2005) Obligatory Exclusification Hypothesis, though I will leave a thorough comparison to a future occasion (I thank Kai von Fintel for pointing the similarity out to me).

Let us take stock. We followed von Fintel 1997 and assumed that *only if* constructions can be analyzed compositionally as cases where *only* takes a conditional prejacent. To make the analysis work, we revisited the important question of how to strengthen the exclusive component of *only if*. We then looked at two possible answers: on the first, we assume an existential semantics of *if*; on the second, we assume that conditionals carry a homogeneity presupposition. On either option we discovered that the antecedents in the alternative conditionals, assuming that they vary by the focus inside them, have to be understood to exclude the antecedent of the prejacent. We achieved this by stipulating that alternatives contain an embedded exhaustifier. The assumptions are summarized in (15), and the two options about the semantics of conditionals are shown in (15iii,iii′).

(15) (i) *Only if* consists of *only* together with a conditional prejacent.

(ii) The alternatives in the case of *only if* are conditionals that vary with respect to the focus associate in the prejacent, and they include conditionals where the antecedent is exhaustified against the antecedent of the prejacent.

(iii) Conditionals are variably-strict and homogeneous.

(iii′) Conditionals (under *only*) are existential.

3 The scalar presupposition of *only*

Everyone knows that *only* is evaluative. The intuition, illustrated earlier in (1,3,5), is sometimes captured by writing into the semantics of *only* a presupposition that its prejacent rank low with respect to its alternatives, on whatever ordering is provided in context (Klinedinst 2005, Zeevat 2008, Beaver and Clark 2008).

But what is the connection between the "height" of an alternative on a scale—the property that affects its acceptability as a prejacent to *only*—and the "height" of the conditional that contains that alternative in its antecedent? In what (possibly partial) way is the scale of conditionals based on the scale that its antecedent appears in, and what relationship is there between the threshold of lowness in one scale and the threshold of lowness in the other?

I will not attempt to answer these questions, because I want to try to reduce the scalar presupposition of *only* to another known constraint on the use of the particle. This is the ban against its assertoric vacuity, demonstrated below.

(16) a. #John only invited all_{F} of his friends

b. John only invited some_{F} of his friends

(17) a. #John only always_{F} puts sugar in his coffee

b. John only $\text{sometimes}_{\text{F}}$ puts sugar in his coffee

(18) a. #Of his three siblings, John only gets along with $[\text{Mary, Bill, and Sue}]_{\text{F}}$

b. Of his three siblings, John only gets along with $[\text{Bill and Sue}]_{\text{F}}$

The examples in (16-18) tell us that *only* is not licensed when it has no alternatives to negate — though for reasons that need not concern us, the more accurate characterization should say that *only* is infelicitous when its prejacent settles the truth values of all of its alternatives:

(19) $*only(p)$, given alternatives A, if $\forall p'(p' \in A \rightarrow (p \vDash p' \text{ or } p \vDash \neg p'))$

What determines the alternatives to a given prejacent? There are no doubt a number of formal constraints (see Katzir 2007 for a possible view), but beyond these, there must also be a number of contextual factors that allow some alternatives and not others to matter given the details of the conversational setting (see e.g. van Kuppevelt 1996). Notice for example that the acceptable (b) examples in (16-17) become strange with slight changes to the predicate:

(16b′) #John only stabbed some$_{\mathrm{F}}$ of his friends

(17b′) #John only sometimes$_{\mathrm{F}}$ puts sugar in his ears

As I said before, I do not claim these examples to be categorically infelicitous, but there is no denying that there are many imaginable natural contexts where they would sound odd or dismissible. Why should this be? There seems to be something beyond the formal and the scalar similarity of (16b,17b) to (16b′,17b′), and this may lead us to conclude that something additional to the vacuity ban takes part in the semantics of *only*. But I want to suggest that this conclusion is not necessary. It is also plausible that the oddness of (16b′,17b′) comes from a piece of common ground that makes the *some*/*sometimes* prejacents contextually-equivalent, respectively, to their *every*/*always* alternatives. These may be contexts where e.g. stabbing some friends and stabbing all of them are equally horrible, or where it is equally strange for John to sometimes put sugar in his ear as it is for him to always do so. If this is right, then the ban against vacuity *would* be violated in (16b′,17b′), because their prejacents happen to be contextually-equivalent to their formal universal alternatives, leaving nothing else for the exclusive particle to negate. The formal details of this idea, e.g. of how contextual equivalence can be represented and derived from the assumed conversational background, must be left for future work.[7]

Let us now assume an abstract set of alternatives $A=\{a_1, a_2, a_3\}$, and let a_3 asymmetrically entail a_2, and a_2 asymmetrically entail a_1:

(20) $a_1 \dashv a_2 \dashv a_3$

It is easy to see that within this group of alternatives, the ban against vacuity will make *only* infelicitous with a_3. This is because every alternative in A follows from a_3, and so *only* has no alternatives to negate, and is therefore assertorically vacuous. The cases of (16a,17a,18a) are instantiations of this case.

Consider now the case of *only if*, holding constant the assumptions in (15ii,iii), that *if* is variably-strict and homogeneous, and that its alternatives are determined by the alternatives to its antecedent. Here we predict vacuity in the case of [*only* [*if* a_1*, q*]], the weakest available antecedent, but not in the case of [*only* [*if* a_3*, q*]]. In the latter case the contribution of *only* will not be trivial because the assumed alternatives in (21) *are* predicted to be negated by the exclusive particle, as shown in (22). The assertive component of *only* will say that all worlds where a_1 is true but a_3 is false are worlds where $\neg q$, and likewise (redundantly) for worlds where a_2 is true but a_3 is false.

(21) $\mathrm{ALT}(\textit{if } a_3,\ q) = \{\textit{if } \textsc{exh}(a_1),\ q,$
$\qquad\qquad\qquad\qquad \textit{if } \textsc{exh}(a_2),\ q\}$

[7] One possibility is to define "equivalence" as indistinguishability, and to base indistinguishability on plausible background considerations. Considerations can be represented as questions, which in turn are represented as sets of propositions. We now say that two alternatives (propositions) p, p' are indistinguishable relative to a question Q iff there is an answer q to Q such that both p, p' are subsets of q. This is intended to capture the intuition that p, p' do not provide different answers to Q, and are thus indistinguishable given Q.

(22) $[\![$*only* [if a_3, q]$]\!]^w$ is defined only if $\textsc{sim}_w(a_3) \subseteq q$, and if defined
$[\![$*only* [if a_3, q]$]\!]^w = 1$ iff $\textsc{sim}_w(\textsc{exh}(a_2)) \subseteq \overline{q}$ and $\textsc{sim}_w(\textsc{exh}(a_1)) \subseteq \overline{q}$ and $\cdots$

But what if the weakest alternative a_1 appears in the antecedent of *only if*? In this case we predict an infelicitous use of *only*, on account of vacuity. The alternative set is shown in (23):

(23) $\text{ALT}(\textit{if } a_1,\ q) = \{\textit{if } \textsc{exh}(a_2),\ q,$
$\qquad\qquad\qquad\qquad \textit{if } \textsc{exh}(a_3),\ q\}$

In each alternative in (23) the antecedent entails the antecedent of the prejacent.[8] Therefore, on the strict implication view the alternatives come out to be weaker than the prejacent, so they are not negated by *only*. The overall result, then, is that given a set of logically-ordered alternatives like (20), *only* is predicted to be vacuous with the strongest element, and in the case of *only if* the vacuity is predicted if the antecedent contains the weakest element. This holds if we assume (15ii,iii): strict-implication and associate-driven alternatives.

Can we find a vacuous *only if* that instantiates this case? As a first example suppose we take the *some-all* scale. If we can be sure that the scale is limited to just these two items, or at least that it contains nothing weaker than *some*, then we predict that *only if* containing a *some*-antecedent be infelicitous, but this isn't true:

(24) Mary will only go if some$_\text{F}$ of her friends go

But perhaps the conditional here has an alternative where *some* is replaced by *no*. If so, then we no longer predict vacuity.[9] Another kind of example we might look for is one where the antecedent is trivially weak. (25) is an example, and it is indeed strange.

(25) #John will only buy the car if it has (at least) two doors

But the construction is also strange without *only*:

(26) #John will buy the car if it has (at least) two doors

The trouble here is that the trivial antecedent makes the conditional equivalent to its consequent. This alone may be why both (25) and (26) are odd. We may therefore be up against a design confound: the kind of conditional that would instantiate [*if* a_1, q] may be the very same kind of conditional that is equivalent to its consequent, and hence infelicitous independently. What we need is a case of a licit conditional where the antecedent is for all intents and purposes vacuous, but which is still used acceptably to communicate its consequent. (27a,b) are examples of this sort, and indeed, they are quite strange in their *only if* versions:

(27) a. If the car gets him from A to B, he will buy it
b. If he wakes up breathing, he will go to his daughter's wedding

(28) a. #He will only buy the car if it gets him from A to B
b. #He will only go to his daughter's wedding if he wakes up breathing

[8] This is true regardless of the contribution of $\textsc{exh}$; because a_2 and a_3 are by assumption stronger than a_1, and $\textsc{exh}(a_2)/\textsc{exh}(a_3)$ are either stronger or equivalent to a_2/a_3, it follows that the antecedents of the alternatives in (23) entail a_1.

[9] I think there are independent empirical reasons to keep *no* out of the *some-every* scale, but I can't discuss them here. Matsumoto (1995) has argued that formal alternatives should have the same monotonicity, and if he is right then we cannot use *no* to rescue (24).

This is as much as I can do to find a convincing instance of a vacuous, and hence infelicitous, *only if*. Now I want to relate the discussion to the scalar presupposition of *only*.

Take a scale where some background information makes alternatives contextually equivalent. An example is the case of *sometimes put sugar in one's ear* and *always put sugar in one's ear*. Assuming that doing either is equally weird, and assuming that the conversational background does not concern finding finer grades of weird behavior, the distinction between *some* and *every* in this case will be blurred, and this causes the alternatives to occupy the same node in the scale. From this perspective, we expect adjacent nodes within a given scale to be more susceptible to collapse than non-adjacent nodes. We also expect vacuity of *only* to be more likely when its prejacent is high than when it is low; with a high prejacent, equivalence to nearby higher alternatives brings the prejacent closer to the end of the scale, thus closer to making *only* vacuous. This is not true of lower prejacents. However, we expect the reverse for *only if*. Presumably, if a_i and a_j are contextually equivalent, then the conditionals [*if* a_i, q] and [*if* a_j, q] will also be contextually equivalent. An instance of *only if* that contains a low antecedent has a greater chance of being vacuous than one that contains a high antecedent.

Let me summarize. I have suggested that what researchers call the scalar presupposition of *only* is the same as the particle's need to be assertively non-vacuous. The inference arises in its guise as a separate presupposition in just those cases where the only alternatives that can be negated happen to be in some sense contextually-equivalent to the prejacent. This keeps them from being excluded by the particle, and the particle is consequently made vacuous. Assuming this perspective, we saw that the higher elements of a scale of alternatives are more likely to give rise to these near-vacuity violations under *only*, and that the lower ones are the more likely to cause near-vacuity for *only if*. This was the reversal that we wanted to capture.

4 Remaining issues and concluding remarks

The sketch presented in this paper makes many theoretical presumptions. Among them is that the alternatives to *if* in *only if* are determined by changing the associate in the *if*-clause with its scalemates. Another plausible take on this is that conditional prejacents have only one alternative: that in which the antecedent is replaced with its negation. I have not addressed this possibility in this paper for reasons of space, and I leave it for future work. An important question is whether *only if* can ever be vacuous if the alternative to the prejacent [*if* ϕ, ψ] is the conditional [*if* $\neg\phi$, ψ]. Vacuity here would require the two conditionals to be equivalent in some contextually determined sense, but I do not yet know how this might work in a principled way. If it cannot work, and if there are good reasons to adopt this stance on alternatives, then what I proposed is likely wrong.

On the other hand, if this proposal is on the right track, it sheds light on a couple of issues. One of them concerns the quantificational force of *if* under *only*. We saw earlier that, on the variably-strict treatment, *only if* is predicted to be vacuous when its antecedent is the weakest in the given scale. But this prediction does not follow if *if* is existential (recall (15iii′)). To see why, take our abstract scale again:

(29) $a_1 \dashv a_2 \dashv a_3$ (=(20))

If the prejacent contains the weakest member of the scale, as in [*if* a_1, q], then we have the alternatives in (30).

(30) $\mathrm{ALT}(\textit{if } a_1,\, q) = \{\textit{if } \textsc{exh}(a_2),\, q,\; \textit{if } \textsc{exh}(a_3),\, q\}$ (=(23))

But on an existential view, the alternatives are stronger than the prejacent, because they make existential claims about a smaller set of worlds than the prejacent does. In this case [*only* [*if* a_1, q]] should mean that some a_1 worlds are q worlds, and that no a_2 worlds are q worlds, and no a_3 worlds are q worlds. The relationship between the scale and the position in it that leads to vacuity will not emerge in the way it did on the strict-implication view. Again, however, I must reiterate that the validity of this point rests on our assumption (15ii) about alternatives.[10]

Finally, I have only discussed scales in which alternatives are ordered by their logical strength. But as I noted, reversal holds also in cases where the alternatives are non-logically ordered (recall (3-6)). If the vacuity account of reversal is right, along with our other assumptions about alternatives and the semantics of *if*, then the findings suggest that *only* is logical even when the contextually understood alternatives are ordered non-logically. In those cases, *only* operates on a reinterpretation of the contextually provided ranking, where each element corresponds to the disjunction that consists of it and every scalemate above it. This way, the scalar ordering is translated to a logical ordering, and given the logical ordering, the predictions derived above would hold in the same way. The details of this must be left for future development.

References

Bassi, Itai, and Moshe Bar-Lev. 2017. A unified existential semantics for bare conditionals. In *Sinn und Bedeutung 21*, ed. Rob Truswell.

Beaver, David, and Brady Clark. 2008. *Sense and Sensitivity*. Wiley Blackwell.

von Fintel, Kai. 1997. Bare plurals, bare conditionals, and *only*. *Journal of Semantics* 14:1–56.

Fox, Danny. 2007. Free choice and the theory of scalar implicatures. In *Presupposition and Implicature in Compositional Semantics*, ed. Uli Sauerland and Penka Stateva. Houndmills: Palgrave Macmillan.

Herburger, Elena. 2015. *Only if*: if only we understood it. In *Sinn und Bedeutung 19*, ed. Eva Csipak and Hedde Zeijlstra.

Horn, Laurence R. 1969. A presuppositional analysis of *only* and *even*. In *CLS 5*, ed. Robert I. Binnick, Alice Davidson, Georgia M. Green, and Jerry L. Morgan. University of Chicago Department of Linguistics.

Horn, Laurence R. 1996. Exclusive company: *only* and the dynamics of vertical inference. *Journal of Semantics* 13:1–40.

Ippolito, Michela. 2008. On the meaning of *only*. *Journal of Semantics* 25:45–91.

Katzir, Roni. 2007. Structurally-defined alternatives. *Linguistics and Philosophy* 30:669–690.

[10] Bassi and Bar-Lev propose an existential semantics of conditionals, but add subdomain alternatives. Though each subdomain alternative would on their view be stronger than the conditional prejacent, together the subdomain alternatives exhaust the worlds that make up the antecedent. This makes the alternatives non-innocently excludable. So if all these subdomain alternatives are added to the stronger alternatives entertained in this paper, the predictions will change and will make it possible to derive similar vacuity predictions. However, questions still remain about alternative conditionals with weaker antecedents. Under strict implication these are stronger and hence potentially excludable, but on an existential semantics they are weaker globally and hence unexcludable.

Klinedinst, Nathan. 2005. Scales and *Only*. Master's thesis, UCLA.

van Kuppevelt, Jan. 1996. Inferring from topics: Scalar implicatures as topic-dependent inferences. *Linguistics and Philosophy* 19:393–443.

Matsumoto, Yo. 1995. The conversational condition on Horn Scales. *Linguistics and Philosophy* 18:21–60.

Menendez-Benito, Paula. 2005. The Grammar of Choice. Doctoral Dissertation, UMass Amherst.

Rooth, Mats. 1985. Association with focus. Doctoral Dissertation, UMass Amherst.

Rooth, Mats. 1992. A theory of focus interpretation. *Natural Language Semantics* 1:75–116.

Zeevat, Henk. 2008. "Only" as a mirative particle. In *Focus at the Syntax-Semantics Interface*, ed. Arndt Riester and Edgar Onea. Working Papers of the SFB 732, Vol. 3, University of Stuttgart.