

Even in presupposition denials*

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Abstract: This paper explores a novel puzzle: *even* can be used in denials of presuppositions, but only when it appears below negation. I present a solution to this puzzle that makes crucial use of the additive presupposition of *even*. This presupposition is controversial; I argue that the evidence used to challenge its presence in the relevant cases does not show what it is claimed to show. I demonstrate that the puzzle is not unique to English and sketch crosslinguistic implications of the proposed analysis.

1 A puzzle

This paper explores a puzzle about *even*. This focus particle can optionally be used in denials of presuppositions, as in (1).

- (1) A: When did Radu quit smoking? ↔ Radu smoked
B: He didn't **even** smoke!

This use of *even* exhibits a curious restriction: it is only acceptable if *even* is below negation in the surface string,¹ as illustrated for a variety of presupposition triggers below.

- (2) A: Did Kenji's wife come to the picnic? ↔ Kenji has a wife (i.e. is married)
B: He isn't **even** married!
B': #He's **even** unmarried/a bachelor!

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¹To defend this claim, we will actually need to consider a three-member paradigm of responses like the one in (i). For ease of exposition, we will focus for now on deriving the contrast between sentences with and without sentential negation in (B)-(B'); once we have an account of this contrast in hand, we will revisit the contrast between sentences with *even* above and below sentential negation (B)-(B'') in Section 3.3.

- (i) A: Did Kenji's wife come to the picnic? ↔ Kenji has a wife (i.e. is married)
B: He isn't **even** married!
B': #He's **even** unmarried/a bachelor!
B'': #He **even** isn't married!

- (3) A: Open the window. ↔ The window is closed
 B: It isn't **even** closed!
 B': #It's **even** open (already)!
- (4) A: I hear that Marisa was late to class again. ↔ Marisa has been late before
 B: She's never **even** been late (before)!
 B': #She's **even** always been on time (before)!

This asymmetry is surprising. The positive and negative responses in each example should be truth-conditionally equivalent in context; why then does it matter which one is used? Furthermore, this asymmetry is not reducible to independent properties of *even* or of presupposition denial. Indeed, positive sentences with *even* are not generally banned; when they are not used to deny presuppositions, such sentences are perfectly acceptable (5).

- (5) [Alex keeps falling for married men. Tomo wants to help.]

I think Derek would be great for Alex. (He's really sweet, and) he's even unmarried!

In a similar vein, positive sentences are not generally incompatible with presupposition denial; if *even* is removed from the sentences in presupposition-denying contexts, the asymmetry disappears (6).

- (6) A: Open the window. ↔ The window is closed
 B: (But/Hey, wait a minute –) It isn't closed!
 B': (But/Hey, wait a minute –) It's open (already)!

This suggests that the asymmetry reflects something about how *even* and presupposition denial interact.²

The fact that the asymmetry centres on the polarity of the sentence that hosts *even* suggests a connection to another, much older, puzzle related to the behaviour of *even* in NPI-licensing and non-NPI-licensing contexts, illustrated in (7). It has been observed that a sentence containing *even* in a non-NPI-licensing context, like (7-a), licenses two inferences: in this case, that i) wugs are the least likely (or most noteworthy) thing for Maida to draw, and ii) that Maida draws something other than wugs. The puzzle is that both of these inferences appear to be reversed in NPI-licensing environments: that is, (7-b) licenses the inferences that i) wugs are the most likely thing for Maida to draw, and ii) that there are things other than wugs that Maida does not draw.

- (7) a. Maida even draws [wugs]_F
 (i) Wugs are the least likely thing for Maida to draw.
 (ii) Maida draws something other than wugs.

²It should be noted that this is not the only environment where *even* appears in sentences that object to another speaker's discourse move. Iatridou & Tatevosov (2016) describe a similar use of *even* in questions; their proposal and its relevance to the cases we are considering will be discussed in Section 4, once we have a proposal on the table to compare it to.

- b. Maida doesn't even draw [wugs]_F
- (i) Wugs are the most likely thing for Maida to draw.
 - (ii) There is something other than wugs that Maida does not draw.

The literature on *even* agrees that in positive sentences like (7-a) *even* has (more or less) the meaning in (8).³ According to this denotation, *even* takes two arguments: a set of propositions (C) and a proposition (p). The set of propositions C (also known as the set of focus alternatives for *even*) is a contextually salient subset of the set of propositions that could be derived by making substitutions within those parts of the prejacent (p) that bear focus.⁴ *Even* is a partial function, defined only when its two presuppositions are satisfied. The first of these, the scalar presupposition, is that its prejacent is less likely (<_w) than any other member of the set of alternatives (C) that are salient in the context. The second of these, the additive presupposition, is that there is at least one member of the set of salient alternatives (C) different from the prejacent that is true. When defined, *even* is truth-conditionally vacuous; it returns the prejacent proposition (p) unchanged.

$$(8) \quad \llbracket \text{even} \rrbracket^{g,w} = \lambda C_{\langle st,t \rangle} \cdot \lambda p_{\langle s,t \rangle} : \forall q \in C [q \neq p \rightarrow p <_w q] \\ \& \exists q \in C [q \neq p \& q(w) = 1]. p(w)$$

To see how this works concretely, let us work through the example in (7-a). We assume the LF and set of salient alternatives C in (9):

- (9) Maida even draws [wugs]_F
- a. LF: even_C [Maida draws [wugs]_F]
 - b. $C = \{\text{Maida draws wugs, Maida draws cats, Maida draws giraffes...}\}$

Given the denotation for *even* in (8), *Maida even draws [wugs]_F* will be defined only if the following two presuppositions are met. Firstly, the scalar presupposition requires that it is less likely that Maida draws wugs than the salient alternatives (*Maida draws cats*, *Maida draws giraffes*). Secondly, the additive presupposition requires that at least one of the non-prejacent alternatives (*Maida draws cats*, *Maida draws giraffes*) is true. When defined, this sentence asserts that Maida draws wugs.

The literature diverges on how to derive the reversal of the inferences in (7-b). Two kinds of approaches have been proposed: the movement approach and the lexical ambiguity approach. We will examine each of these in turn.

On the movement account (Karttunen & Peters 1979, Kay 1990, Wilkinson 1996, Lahiri 1998, Guerzoni 2004, Nakanishi 2012, among others), the reversal in (7-b) is derived by

³I assume that *even* is an operator that acts on propositions. There is an alternative strand of literature which holds that *even* can act on smaller constituents (when it focus-associates with something smaller than a proposition). This mirrors a debate that has taken place in the literature on *only*. I adopt the propositional view because i) it is the view articulated in Karttunen & Peters's (1979) seminal work on *even* and ii) recent work (e.g. Hirsch 2017) on these kinds of operators suggests that they always act at the level of propositions, even when appearances might suggest otherwise.

⁴For more details about how this set of alternatives is built, see Section 3.4.

having *even* move covertly to scope above negation at LF, as in (10).

- (10) Maida doesn't even draw [wugs]_F
- a. LF: $\text{even}_C \text{ NEG [Maida draws [wugs]_F]}$
 - b. $C = \{\text{Maida doesn't draw wugs, Maida doesn't draw cats, Maida doesn't draw giraffes...}\}$

Given the LF and set of alternatives *C* in (10), we predict that this sentence will be defined only if i) it is less likely that Maida doesn't draw wugs than that she doesn't draw cats or that she doesn't draw giraffes, and ii) at least one of the non-prejacent alternatives (*Maida doesn't draw cats*, *Maida doesn't draw giraffes*) is true. These are equivalent to the inferences given in (7-b). When defined, this sentence asserts that Maida doesn't draw wugs.

On the lexical ambiguity account (Rooth 1985, Rullmann 1997, Erlewine 2016, among others), there are two *evens*, one the familiar low-likelihood *even* in (8) and the other a high-likelihood *even* with reversed presuppositions,⁵ as in (11). The scalar component of this *even* presupposes that its prejacent is the most likely of the alternatives rather than the least likely, while the additive component presupposes that there is a non-prejacent alternative that is false. This high-likelihood *even* is an NPI, and so it is restricted to negative sentences.

- (11) $\llbracket \text{even}_{\text{NPI}} \rrbracket^{g,w} = \lambda C_{\langle st,t \rangle} . \lambda p_{\langle s,t \rangle} : \forall q \in C [q \neq p \rightarrow q <_w p]$
 $\& \exists q \in C [q \neq p \& q(w) = 0]. p(w)$

In our negative sentence (7-b), this requires that we assume the LF and set of alternatives *C* in (12). With the denotation for even_{NPI} given in (11), we predict that this sentence will be defined only if i) Maida drawing wugs is more likely than Maida drawing cats or giraffes, and ii) at least one of the alternatives in *C* that is different from the prejacent (i.e. *Maida draws cats*, *Maida draws giraffes*) is false. These are again equivalent to the inferences observed in (7-b).

- (12) Maida doesn't even draw [wugs]_F
- a. LF: $\text{NEG [even}_{\text{NPI}C} \text{ [Maida draws [wugs]_F}]}$
 - b. $C = \{\text{Maida draws wugs, Maida draws cats, Maida draws giraffes...}\}$

Importantly, under either of these theories, the presuppositions of positive and negative sentences are equivalent. For the scalar presupposition, the movement account required that Maida not drawing wugs was less likely than Maida not drawing any other animal; under the reasonable assumption that what one is most likely to draw is what one is least likely to not draw, this is exactly equivalent to the requirement made by the lexical ambiguity account that Maida drawing wugs is more likely than Maida drawing any other animal. For the additive presupposition, the movement account required that there was an alternative

⁵There is variation within the ambiguity camp. For example, Rullmann 1997 argues for dropping the additive presupposition for both *evens*; the denotation given here is closer to what is proposed in Rooth 1985.

of the form *not-p* that was true, while the ambiguity account required that there was an alternative of the form *p* that was false; these are again equivalent.

Returning to our puzzle, this means that positive and negative presupposition denials should be both truth-conditionally and presuppositionally equivalent, regardless of which theory of *even* we assume. We are thus left with the same question as before: What property of *even* is responsible for the observed contrast? Taken together, the facts outlined here suggest that our puzzle does not reflect some property of *even* or of presupposition denial simpliciter but instead reveals something unique to sentences that both contain *even* and deny presuppositions. This paper will seek to uncover what this mysterious something is.

The remainder of this paper is organized as follows: Section 2 presents a proposal that relies crucially on the additive presupposition of *even*. Section 3 discusses potential problems for and predictions of the proposed account. Section 4 considers the role of *even* in presupposition denials, beginning in Section 4.1 with a description of a use of *even* in questions that bears a family resemblance to the use we are interested in. This motivates a crosslinguistic tour of particles that can play a role in presupposition denial undertaken in Section 4.2, which shows that the puzzle is not restricted to English. Section 4.3 examines the prospects for unifying uses of *even*-like items in presupposition-denying discourse moves of different types. Following this discussion, Section 5 explores the possibility of extending the proposed analysis to a broader range of sentences that object to discourse moves. Section 6 concludes with a summary of the main findings and directions for future research.

2 Proposal

To solve our puzzle, we will need to explain the contrast in acceptability between positive and negative presupposition denials with *even*. We also need to explain why this asymmetry only appears in sentences that both contain *even* and deny a presupposition. The goal of this section is to provide an account that satisfies these desiderata.

I will assume a movement approach to *even*, meaning that *even* has a single low-likelihood meaning and moves covertly from the position where it is merged in negative sentences in order to associate with a focused constituent across negation at LF.⁶ This provides a natural distinction between positive and negative sentences with *even*; in negative sentences, all of the alternatives that *even* has access to contain negation, whereas this is not the case in positive sentences. As noted in Section 1, this is not in and of itself enough to derive the asymmetry we are interested in; however, when combined with other ingredients it will form an integral part of the solution.

The cases we are concerned with are prosodically ambiguous; as the predicate bears non-default prosody, the focus-associate of *even* must minimally consist of the predicate;

⁶Nothing hinges on this choice. As noted in Section 1, the movement theory and the ambiguity theory are equivalent in their predictions for positive and negative sentences, and so it should not surprise us that it is possible to give an equivalent account of the puzzle in a lexical ambiguity framework. I sketch the lexical ambiguity counterpart of the analysis proposed here in the Appendix.

however, this prosody is also consistent with *even* focusing a proposition-sized constituent containing the original vP-internal copy of the subject, as shown schematically in (13).

- (13) He isn't even MARRIED!
- a. Possible LF: $\text{even}_C [\text{NEG} [\text{he is } [\text{MARRIED}]_F]]$
 - b. Possible LF: $\text{even}_C [\text{NEG} [\mathbf{he is MARRIED}]_F]$

I will assume that *even* focuses a proposition-sized constituent (of type $\langle s, t \rangle$), as in (13-b). This means that the alternatives that *even* makes reference to will be derived from the prejacent by making substitutions for this proposition-sized constituent. In the discourse contexts that we are considering, the discourse move made by Speaker A will make certain propositions particularly salient, and thus particularly attractive as substitutions.⁷ For example, if Speaker A's move was to ask a wh-question like *Who invited Kenji's wife to the picnic?*, the salient alternatives will be the set of possible answers denoted by the question: $\{\text{Alex invited Kenji's wife to the picnic, Derek invited Kenji's wife to the picnic, ...}\}$. If Speaker A's move was to ask a polar question like *Did Kenji's wife come to the picnic?*, the salient alternatives will again be the set of possible answers: $\{\text{Kenji's wife came to the picnic, Kenji's wife didn't come to the picnic}\}$. Farkas & Bruce (2009) argue that the default responses to polar questions (i.e., $p?$) and declaratives (i.e., p) are the same: *yes* or *no*, which are equivalent to asserting p and $\neg p$, respectively. I will therefore assume that, if Speaker A's move was to utter a declarative like *Kenji's wife came to the picnic*, the propositions $\{\text{Kenji's wife came to the picnic, Kenji's wife did not come to the picnic}\}$ will again be made salient. Crucially, in each case the alternatives contain the trigger for the presupposition that Speaker B ultimately denies. This means that, if the prejacent is true, these alternatives would be presupposition failures, as shown in (14)-(15).

- (14) He isn't even married!
- a. LF: $\text{even}_C [\text{NEG} [\text{he is married}]_F]$
 - b. $C = \{\text{NEG} [\text{he is married}], \text{NEG} [\text{his wife came to the picnic}], \text{NEG} [\text{his wife didn't come to the picnic}]\}$
 $= \{\text{He isn't married, \#His wife didn't come to the picnic, \#His wife came to the picnic}\}$

- (15) #He's even unmarried!
- a. LF: $\text{even}_C [\text{he is unmarried}]_F]$
 - b. $C = \{\text{he is unmarried, his wife came to the picnic, his wife didn't come to the picnic}\}$
 $= \{\text{He is unmarried, \#His wife came to the picnic, \#His wife didn't come to the picnic}\}$

Recall that *even* adds two presuppositions to its prejacent: the scalar presupposition that

⁷As we will see, I actually assume something stronger: that these are the only substitutions that make it into the contextually salient set of alternatives. More on this later.

the prejacent is the least likely of the relevant alternatives, and the additive presupposition that there is some alternative besides the prejacent that is true. It is not obvious how the scalar presupposition should be evaluated here, as the non-prejacent alternatives have presuppositions that the prejacent lacks. For the additive presupposition, however, matters are somewhat clearer. If the non-prejacent alternatives that *even* sees all contain the trigger for the presupposition that the prejacent denies, they will be presupposition failures whenever the prejacent is true. This will in turn result in the sentence that is uttered being a presupposition failure due to the additive presupposition of *even*; because all of the relevant alternatives to the prejacent are themselves presupposition failures, none of them can be true.⁸

This cannot be the whole story. Our task is to derive an asymmetry between positive and negative presupposition denials with *even*. So far, we predict that both kinds of sentences will suffer from a failure of the additive presupposition. To explain why the negative presupposition denials with *even* are acceptable, we will need to ensure that the additive presupposition of *even* is satisfied in just these cases. This means that we will need to find a way for the presupposition-trigger-bearing alternatives that *even* sees to not be presupposition failures just in case they contain negation.

This desideratum dovetails nicely with the second task that we set ourselves at the beginning of this section; we need to explain why our puzzling asymmetry only shows up in presupposition-denying sentences with *even*, and not in sentences with *even* that do not deny presuppositions. I propose that the key lies in a tool that is used to deal with presupposition-denying sentences more generally. This tool is a meta-assertion operator (Bochvar 1939), which takes a propositional argument and asserts that it is true, as in (16):

(16) Truth table for A operator (Beaver & Krahmer 2001: 152)

	A
T	T
F	F
#	F

As Beaver & Krahmer (2001) note, this operator has the effect of wiping out presuppositions in a trivalent semantics⁹ When applied to a proposition that is true or false in *w*, the A operator will be vacuous. However, when applied to a proposition that is neither true nor false in *w*, as is the case for a presupposition failure, A will map this proposition to false; this can be thought of as turning presupposed material into asserted material. Importantly, this operator has been argued to provide a useful way of understanding presupposition denials like (17).¹⁰

⁸This is true for alternatives to both the positive and negative presupposition denials; because presuppositions project across negation, the alternatives inherit the problematic target presupposition in both cases.

⁹That is, a semantics where there are not two but three truth values: 1, 0, and # (undefined). The third truth value is assigned to presupposition failures.

¹⁰There are other ways of accounting for data like (17), such as local accommodation (Heim 1983) and metalinguistic negation (Horn 1985, 1989). Although I use an A operator in the proposal presented here, it is

(17) The king of France isn't bald, because there is no king of France!

The fact that this sentence is acceptable is surprising. The definite description *the king of France* in the first clause triggers the presupposition that there is a (unique) king of France. Because negation is a hole for presupposition projection (Karttunen 1973), this should become a presupposition of the entire first clause. However, the second clause asserts that there is no king of France. If the second clause is true, the first clause should be a presupposition failure; if the first clause is not a presupposition failure, the second clause should be false. In actual fact, (17) is a perfectly coherent thing to say. Beaver & Krahmer (2001) note that if we parse this sentence with a silent A operator below negation, its presupposition will become part of the asserted content; this allows the presupposition to be negated instead of projected. This in turn makes the first clause perfectly compatible with the continuation in the second clause, hence the observed acceptability.

- (18) a. NEG [the king of France is bald]
(i) Presupposes: There is a unique king of France.
(ii) Asserts: The king of France is not bald.
b. NEG [A [the king of France is bald]]
(i) Presupposes: nothing
(ii) Asserts: It is not the case that [there is a unique king of France and the king of France is bald].

I propose that there is a parse of the presupposition denials with *even* that we are interested in that includes the A operator, and that this is what accounts for our polarity-based asymmetry. The A operator only makes it possible to deny presuppositions when it is below negation; let us therefore assume that the relevant parse places the A operator below negation in these sentences. This will effectively cancel presuppositions in negative alternatives.

Let us see how this works for the presupposition denial in (2). If we assume the parse in (19-a), the alternatives will all contain an A operator under negation, as in (19-b).

- (19) He isn't even married!
a. LF: $\text{even}_C [\text{NEG} [\text{A} [\text{he is married}]_F]]$
b. $C = \{\text{NEG} [\text{A} [\text{he is married}]], \text{NEG} [\text{A} [\text{his wife came to the picnic}]], \text{NEG} [\text{A} [\text{his wife came to the picnic}]]\}$
 $= \{\text{It is not true that he is married, It is not true that he has a wife and she came to the picnic, It is not true that he has a wife and she didn't come to the picnic}\}$

As we have already seen, the material below the A operator in the non-prejacent alternatives (*his wife came to the picnic, his wife didn't come to the picnic*) would be a presupposition failure in the contexts we are considering. The A operator prevents this presupposition

hoped that parallel accounts could be formulated using these tools instead.

from projecting across negation to turn the entire alternative into a presupposition failure. Instead, it maps *his wife came to the picnic* and *his wife didn't come to the picnic* to false. When negation encounters the result of applying A to *his wife came to the picnic* and *his wife didn't come to the picnic*, the result will be the propositions that it is not true that Kenji has a wife and she came to the picnic and that it is not true that Kenji has a wife and she didn't come to the picnic, respectively. Both propositions are entailed by the prejacent *it is not true that he is married*. This trivially satisfies the additive presupposition of *even*, meaning that whenever the prejacent is true the alternative is true as well. The scalar presupposition is likewise trivially satisfied; because the prejacent entails both of the salient alternatives, it cannot be more likely than them. Thanks to the A operator and the higher negation in each of the alternatives, *He isn't even married!* is no longer a presupposition failure. We thus predict this response to be acceptable, as observed.

If this analysis is to be successful, we must ensure that allowing A operators in our LFs will not lead us to predict that the corresponding positive presupposition denials are acceptable. Let us therefore consider what will happen if we select a parse for *He's even unmarried* that includes an A operator, as in (20-a), instead of (15-a).

(20) #He's even unmarried!

- a. LF: $\text{even}_C [\mathbf{A} [\text{he is unmarried}]_F]$
- b. $C = \{A [\text{he is unmarried}], A [\text{his wife came to the picnic}], A [\text{his wife came to the picnic}]\}$
 $= \{He \text{ is unmarried, } He \text{ has a wife and she came to the picnic, } He \text{ has a wife and she didn't come to the picnic}\}$

As in the negative case, all of the alternatives will contain the A operator under this parse; unlike the negative cases, however, they will not contain negation above the A operator. As in the negative case, applying A to *his wife came to the picnic* and *his wife didn't come to the picnic* will yield false propositions (equivalent to *He has a wife and she came to the picnic* and *He has a wife and she didn't come to the picnic*, respectively). However, because these alternatives do not contain a negation above the A operator, they will both remain false. This will result in a failure of the additive presupposition of *even*, just as the A-less parse did.

The puzzle that we set out to solve was a curious one: presupposition denials with *even* are acceptable only when this particle starts out below negation, but presupposition denials without *even*, and sentences with *even* that are not presupposition denials, exhibit no such restriction. We have sought a solution that would distinguish between presupposition denials with and without *even*, and sentences with *even* that are and are not presupposition denials, accordingly.

We have successfully derived the asymmetry at the centre of our puzzle. The positive presupposition denials with *even* are infelicitous because of a failure of *even*'s additive presupposition. This is because all of the alternatives that *even* encounters carry the trigger for the presupposition that the prejacent denies; they will thus all be either presupposition failures (on a parse without an A operator) or false (a parse with an A operator). On the

other hand, the negative presupposition denials with *even* are felicitous, because there is a parse available for these sentences with an A operator under negation; this negates the presupposition, delivering alternatives that are true and can satisfy the additive presupposition of *even*.

I have argued that the two relevant differences between presupposition denials involving *even* and those without it are that *even* invokes alternatives and introduces presuppositions. The oddness of the positive presupposition denials with *even* was analyzed as a presupposition failure: more particularly, as a failure of the additive presupposition of *even*, because none of the alternatives to the prejacent can be true when the prejacent is true. This was dependent on our assumption that these alternatives contain the triggers for the presupposition that the prejacent denies, ensuring that they will be presupposition failures whenever the prejacent is true. I have argued that the central differences between *even* sentences that are presupposition denials and those that are not are i) the alternatives that are salient and ii) the presence of an A operator. In non-presupposition-denying contexts we do not expect the salient alternatives to be other possible responses to a presupposition-bearing discourse move, and so the alternatives will not all contain an unsatisfied presupposition. In presupposition-denying contexts, where all of the alternatives did contain a presupposition trigger, it was the presence of the A operator that rescued the negative *even* presupposition denials, but failed to save the positive ones.

3 Discussion

3.1 The additive presupposition

This account relies on the additive presupposition of *even*. More particularly, it exploits the fact that the additive presupposition cannot be satisfied when the alternatives for *even* are mutually exclusive; we ensured that this would be the case in our presupposition denials by assuming that all of the alternatives contain the trigger for the presupposition denied by the prejacent. However, this presupposition is controversial; it has been claimed (von Stechow 1991, Rullmann 1997, Crnič 2011)¹¹ to not be active when the alternatives are mutually exclusive.

The meaning that we have been assuming for *even* predicts that whenever the salient alternatives are mutually exclusive the sentence will be unacceptable; because only one mutually exclusive alternative can be true at a time, there will be a failure of the additive presupposition. The claim in the literature is that sentences of this kind are in fact acceptable, contrary to our expectations. The cases that this literature is concerned with are of two types; the first type involves *even* and a lower *only* associating with a single element, as in (21). The second type involves alternatives that are mutually exclusive because of independent real-world facts; in (22), the alternatives to *bronze* in the context of medals are

¹¹It should be noted that, in later work, Crnič (2013) assumes (without comment) that the additive presupposition is active when alternatives are mutually exclusive.

silver and *gold*, but real-world knowledge tells us that one cannot win multiple medals for the same event.

(21) Bill even danced only with [Sue]_F (von Stechow 1991: 817)

(22) A: Mary won a bronze medal.
B: No, she even won a SILVER medal. (Crnič 2011: 152)

If Bill danced only with Sue, it cannot be true that he danced (only) with any other person. Similarly, because one can only win one medal in a given event, if Mary won the silver medal she did not win the bronze or the gold medal. Thus, the additive presupposition of *even* cannot be satisfied, and so we predict that these sentences should be infelicitous; the claim in the literature is that these sentences are in fact perfectly acceptable. To ensure this result, various modifications to the meaning of *even* have been proposed; for example, Crnič (2011) formulates the additive presupposition so that it only applies when the alternatives are not mutually exclusive, while Rullmann (1997) eliminates this presupposition from the lexical entry for *even* entirely, deriving the additive inference instead by pragmatic reasoning. If this position is correct, our analysis cannot be; if there is no additive requirement when the alternatives are mutually exclusive, we predict the positive presupposition denials with *even* to be acceptable, contrary to fact.

Before we reject our analysis, it is worth undertaking a closer examination of the evidence for the claim that the additive presupposition of *even* is inert when the alternatives are mutually exclusive. One cause for concern is that the key examples presented in support of this claim are generally not presented in context, which can make it difficult to tell what intuition the reported judgements reflect. Let us therefore examine a version of (21) due to Krifka (1992), given in (23). This is the only version of this example that I have been able to find in the literature where a context is given.

(23) [At yesterday's party, people stayed with their first choice of drink. Bill only drank WINE, Sue only drank BEER, and]

John even₁ only₂ drank [WATER]_{F1, F2} (Krifka 1992: 22)

According to Krifka (1992), this sentence is acceptable and conveys that i) John drank water, ii) John did not drink anything other than water, and iii) there are other relevant beverages *x* such that it is more likely that John drank *x* and nothing else than that John drank water and nothing else. However, the alternatives made salient in the context that Krifka provides are not of the form *John drank only x*; they are of the form *y drank only x*. As Wilkinson (1996: 205) notes, this licenses a different parse entirely, one where there is a second focus on the subject, as in (24).¹² The existence of this parse appears to be corroborated prosodically; native speakers do not accept this sentence with the subject deaccented. Under this parse, the alternatives that *even* considers (24-b) are no longer

¹²Wilkinson suggests that the focus on the subject could be construed either as being associated with *even* or as free focus.

mutually exclusive.

- (24) [JOHN]_{F(1)} even₁ only₂ drank [[WATER]_{F2}]_{F1}
a. LF: even_{C1} [only_{C2} [[John]_{F(1)} drank [[water]_{F2}]_{F1}]]
b. C₁ = {John only drank water, Sue only drank beer, Bill only drank wine...}

Importantly, speakers report a contrast between (23) and (25), where the context makes salient alternatives that are truly mutually exclusive.¹³ Indeed, I have been unable to find any speakers who accept (25).

- (25) [At yesterday's party, John stayed with his first choice of drink. But you'll never guess what he chose.]

#He even₁ only₂ drank [WATER]_{F1, F2}.

- a. LF: even_{C1} [only_{C2} [he drank [water]_{F1, F2}]]
b. C₁ = {He only drank water, He only drank beer, He only drank wine...}

Armed with this knowledge, we can tell a parallel story about von Stechow's original example. Given the focus marking provided in (21), this sentence should be acceptable in the context in (26), which makes clear that what is unlikely is that John danced only with Sue instead of dancing only with someone else. All of the speakers that I have interviewed find this sentence infelicitous in this context. However, in a context like (27), where the alternatives are no longer mutually exclusive, the sentence is judged to be acceptable.

- (26) [At the dance last night, Bill picked one partner and danced only with them all night, as he always does. But you'll never guess who he picked as his sole partner.]

#He even₁ danced only₂ with [Sue]_{F1, F2}.

- a. LF: even_{C1} [only_{C2} [he danced with [Sue]_{F1, F2}]]
b. C₁ = {He only danced with Sue, He only danced with Mary, He only danced with Anna...}

- (27) [At the dance last night, each linguist picked one partner and danced only with them all night. Alex danced only with Derek, Maida danced only with Kaz, and]

[Bill]_{F1} even₁ danced only₂ with [[Sue]_{F2}]_{F1}

- a. LF: even_{C1} [only_{C2} [[Bill]_{F1} danced with [[Sue]_{F2}]_{F1}]]

¹³The proper name has been replaced with a pronoun both for naturalness and to ensure that we will be able to tell whether the subject is focused or not. Pronouns, unlike proper names and other lexical vocabulary, do not carry a pitch accent of their own unless they are stressed.

- b. $C_1 = \{\text{Bill danced only with Sue, Maida danced only with Kaz, Alex danced only with Derek...}\}$

In the case of examples like (22), I would like to suggest that, to the extent that they are acceptable, speakers have been imagining a slightly different discourse than the one given by Crnič (2011). I have been unable to find anyone who finds the dialogue in (22) acceptable, but native speakers report that the following is perfectly fine. The crucial difference between them is that the discourse context in (28) licenses a parse where the alternatives are not mutually exclusive.

- (28) A: Last year, Sue won the bronze medal.
 B: That's nothing! [This year]_F, she even won the [silver]_F medal.

In this section we have seen that the data presented in support of the additive presupposition being inactive when alternatives are mutually exclusive does not show us what we thought it showed. With careful consideration of the contexts involved, it appears that – at least for the speakers I have interviewed – these examples are unacceptable when the salient alternatives are mutually exclusive, but acceptable under a parse that makes them not mutually exclusive.¹⁴ This is exactly what we should expect if the additive presupposition is active. Thus, these data turn out to be an argument in favour of the additive presupposition being active in these cases rather than against it.

3.2 The A operator

The proposal presented above makes crucial use of the A operator to cancel presuppositions in the negative presupposition denials. Worries have been raised about this kind of presupposition-denying mechanism. For example, Singh (2014) notes that if we allow this operator to be merged anywhere, as Beaver & Kraemer (2001) propose, matrix occurrences of the A operator would lead to presuppositions behaving as assertions far more often than usually imagine; Singh notes that we might thus expect to be able to target these asserted presuppositions with objections like *That's false!*, but this does not seem to be the case. Importantly, the account that I have proposed does not require that the A operator can be merged anywhere we like; all that is required is that it be licensed below negation in presupposition denials. Any theory of presupposition denials like (17) will need to assume this or some corresponding mechanism. My account is also compatible with a more liberal theory of the A operator; as we have seen, including it in positions other than below negation does not change the results of the account. All that matters for our purposes is that whatever mechanism yields the apparent cancellation of the presupposition in (17) can apply in our presupposition denials with *even* as well.

One could also object to the selection of the parse with an A operator for the preajacent

¹⁴If there are speakers who find these sentences acceptable in contexts where the alternatives must truly be mutually exclusive, we should predict that they will not exhibit the puzzling asymmetry in the declarative presupposition denials that we are concerned with. This is a worthy avenue for future investigation.

on other grounds. In the proposal presented above, the A operator does its work in the alternatives; it is vacuous in the prejacent because the prejacent does not carry a presupposition. This parse was selected purely to ensure that the A operator is included in all of the relevant alternatives; one might worry that such a parse should not be licensed, given that a simpler parse was available and the extra operator has no effect on the prejacent. However, by affecting the alternatives (and thus, the presuppositional content) of the *even* sentences, this operator does contribute to their meaning, albeit in a roundabout way.

3.3 Revisiting the generalization

Let us recall the original generalization of the puzzle put forward in Section 1: *even* is acceptable in presupposition denials only if it is below negation in the surface string. As it currently stands, the proposed account predicts something slightly weaker. Nothing in the account relied on the position of *even* with respect to negation; all that was required to derive the observed asymmetry was the presence vs. absence of negation in minimal pairs like (29), repeated from (2).

- (29) A: Did Kenji's wife come to the picnic?
B: He isn't **even** married!
B': #He's **even** unmarried/a bachelor!

In light of this, the contrast in (30) is puzzling.

- (30) A: Did Kenji's wife come to the picnic?
B: He isn't **even** married!
B': #He **even** isn't married!

This appears to be another instance of the asymmetry we have been investigating, but in this case both sentences contain negation, differing only in whether *even* is above or below negation in the surface string. This is particularly puzzling because, on the movement theory of *even* that we have been assuming, *even* should scope above negation in both sentences at LF. We should expect that a parse including an A operator under negation should be equally possible for both sentences when they are uttered in a presupposition-denying context. What is responsible for the contrast in (30)?

One possibility is that this reflects a closer link between the A operator and *even* than we have assumed up to this point. This would be a surprising result, but it would allow us to capture the data: perhaps the A operator can only be merged alongside *even*, or perhaps the A operator is left behind as a trace of *even* when it moves covertly. An analysis along either of these lines would require significant auxiliary assumptions. It is not clear that we can say that the A operator can only be merged alongside *even*; this would require us to posit covert *evens* in any case of presupposition denial, like (17). It is also not clear that we can say that an A operator is always left behind when *even* moves; this would predict that presuppositions triggered below *even* are always turned into negatable assertions in sentences where *even* has moved covertly. This does not seem to be correct; both sentences

in (31) appear to presuppose that there is a king of France, even though *even* undergoes covert movement in one of them.

- (31) a. Chester didn't even [SEE]_F the king of France!
 b. Lester even [ATE DINNER WITH]_F the king of France!

Another possibility is that *even* simply cannot occupy a position above negation in the surface string, and so the contrast in (31) does not reflect on our puzzle at all. This does not appear to be the case; at least some native speakers of English report that such sentences are well-formed. However, these speakers also report that sentences with *even* above negation (e.g. *Kenji even isn't married*) are generally dispreferred compared to equivalent sentences that do not have *even* above negation (i.e. *Kenji isn't even married* or *Kenji's even unmarried*, depending on the context).

I am not entirely sure how best to capture the contrast in (30), but here is a sketch of one possibility. *Even* is only able to focus-associate with material that originated in its scope (Jackendoff 1972, Erlewine 014a,b). If *even* can only focus-associate with material that is merged below it, this means that *even* has different focus association possibilities when it appears above and below negation, as schematized in (32).

- (32) Focus association possibilities
- a. (i) SS: He isn't even married!
 (ii) LF: even_C [NEG A [[**he is married**]_F]]¹⁵
- b. (i) SS: He even isn't married!
 (ii) LF: even_C [NEG [A [**he is married**]]]_F

These different focus association possibilities in turn allow for different sets of focus alternatives. More particularly, the alternatives for (32-a) will all contain negation (and the A operator), while this will not necessarily be so for (32-b). Recall that what prevented the negative presupposition denials with *even* from suffering the same fate as the positive ones in the core proposal was the fact that all of the alternatives contained the presupposition-cancelling [NEG A] combination. This combination is guaranteed to be present in (32-a), but not in (32-b), because in the latter case the negation and A operator are included in the focus associate and thus eligible to undergo substitution. If we were to further suppose that *even* cannot occupy this higher position unless it is going to exploit its increased focus association possibilities, we would have an explanation for the asymmetry. On this view, the problem is not that a parse with an A operator under negation is not accessible in (32-b); the problem is that selecting such a parse when these operators are part of the focus does not guarantee that all of the alternatives will contain these operators. This kind of constraint would derive the data in (30), but it cannot be a general condition on the position of *even*. It is usually perfectly acceptable to not spell out *even* immediately above its focus associate. For example, both of the sentences in (33) can be interpreted with narrow focus on *hardest*,

¹⁵Because the A operator is covert, we cannot tell its position relative to *even* in the surface string here, and so we cannot tell whether it is eligible for inclusion in the focus associate.

even though one would in principle allow a larger focus-associate that includes the verb.

- (33) a. Chris solved **even** the [hardest]_F problem.
 b. Chris **even** solved the [hardest]_F problem.

More work is needed to explain the contrast in (30); I leave this to future research.

3.4 A prediction

The analysis that I have proposed makes a testable prediction. As noted above, the proposal relies on the additive presupposition of *even* to derive our puzzling asymmetry: the infelicitous positive presupposition denials with *even* suffer from a failure of the additive presupposition of *even* (that is, none of the alternatives to the prejacent are true) while their negative counterparts do not. We should therefore predict that if we could supply the positive sentences with a true alternative, these sentences would become acceptable.

To see how this could be done, we will need to be explicit about our assumptions regarding how C, the set of salient alternatives that *even* has access to, is built. As is standard in any theory of focus, we have assumed that these alternatives are derived from the prejacent by making substitutions within the focused part of the sentence that hosts *even*. Following Fox & Katzir (2011), there are three ways of being an eligible substitution: (i) being an element of the lexicon (of the same type as the node it is substituted for), (ii) being a subtree of the prejacent, or (iii) being a contextually salient constituent (of the same type as the node it is substituted for). We exploited option (iii), arguing that what is substituted is a proposition made salient by the addressee's discourse move. These propositions all contained the trigger for the presupposition denied by the prejacent. Although some of the propositions that were salient in the discourse contained negation, none of them contained an A operator (i.e. the A operator was not part of the substitution source); this made it impossible to produce the desired presupposition-cancelling configuration $\text{NEG} > \text{A} > \phi$ in any of the alternatives for the positive sentence with *even*. It is this configuration that ensures that, when a presupposition-bearing propositional alternative ψ is substituted for ϕ , its presupposition will be safely cancelled, yielding a true proposition that satisfies the additive presupposition of *even*. In negative sentences this configuration can be produced no matter what substitutions are made, because both the A operator and negation are outside of the focused constituent. This is shown schematically in (34).

- (34) a. He isn't even married!
 (i) LF: $\text{even}_C \text{ NEG } [A \text{ [he is married]}_F]$
 (ii) $C = \{p \mid p = \text{NEG } [A \text{ [q]]}\}$
 b. #He's even unmarried!
 (i) LF: $\text{even}_C [A \text{ [he is unmarried]}_F]$
 (ii) $C = \{p \mid p = [A \text{ [q]]}\}$

This allows us to make a prediction: If we could supply *even* with an alternative that contains A under negation, positive presupposition denials with *even* should become ac-

ceptable. The relevant examples are given in (35), where the familiar presupposition-denying *even* sentence is preceded by a negated sentence carrying the presupposition trigger – a sentence that can only be acceptable if it is parsed with an A operator under negation (cf. (17)). Because this presupposition-cancelling sentence has just been uttered, it will be salient, and thus part of the substitution source from which we can build *even*'s alternatives. This makes it possible for there to be a true alternative, as shown in (36).

- (35) A: Did Kenji's wife come to the picnic?
 B: #No/His wife didn't come to the picnic – he's even unmarried!
 B': #Not only did his wife not come to the picnic – he's even unmarried!
- (36) #...He's even unmarried!
 a. LF: $\text{even}_C [A [\text{he is unmarried}]_F]$
 b. $C = \{A [\text{he is unmarried}], A [\text{his wife came to the picnic}], A [\text{his wife didn't come to the picnic}], A [\text{NEG } [A [\text{his wife came to the picnic}]]] \}$
 $= \{He \text{ is married, He has a wife and she came to the picnic, He has a wife and she didn't come to the picnic, It's not true that he has a wife and she came to the picnic} \}$

Unfortunately for the proposal presented above, native speakers judge these responses to be just as unacceptable as the original positive examples. We can confirm that the source of the unacceptability is not due to difficulty in accessing a presupposition-cancelling parse for the first clause (i.e. one that includes an A operator below negation) because there is a clear contrast between the responses in (35) and those in (37). If such a parse were unavailable the continuations with *even* would be false, yielding incongruity.

- (37) A: Did Kenji's wife come to the picnic?
 B: No/His wife didn't come to the picnic – he isn't even married!
 B': Not only did his wife not come to the picnic – he isn't even married!

The fact that this prediction is not satisfied suggests that something is not quite right in the proposed analysis. This could in principle reflect a problem with the implementation (A operators, etc.) or with the core idea of the analysis (that the asymmetry reflects a failure of the additive presupposition of *even*). In the next section, we will see that there is crosslinguistic support for the core of the analysis.

4 *Even* as a tool for presupposition denial?

Now that we have an analysis of our puzzle in hand, this section will seek to determine what *even* is doing in presupposition denials to begin with. This question is all the more important because, as we will see in this section, the use of *even* to object to another speaker's discourse move is not restricted to declaratives, nor to English. We will begin in Section 4.1 by examining Iatridou & Tatevosov's (2016) account of a use of *even* in questions that

resembles the behaviour of the declaratives we have been considering. This will motivate a crosslinguistic tour of particles that can participate in presupposition denials in Section 4.2. Section 4.3 will evaluate the prospects for a unified analysis of *even* and its crosslinguistic kin as tools for presupposition denial.

4.1 *Even* in presupposition-challenging questions

Iatridou & Tatevosov (2016) describe a use of *even* in questions that challenge discourse moves, illustrated in (38)-(39).

- (38) A: Let's meet at Oleana for dinner. Is that okay?
 B: Where is that **even**? (Iatridou & Tatevosov 2016: 298)
- (39) A: Shall we ask Joan to prepare something special for dinner?
 B: Is Joan **even** here? (Iatridou & Tatevosov 2016: 319)

Iatridou & Tatevosov (2016) observe that these *even*-questions trigger an inference of extreme ignorance on the part of the speaker; they convey that the speaker does not know the first thing about the Question Under Discussion (QUD).¹⁶ They note that this effect only appears when *even* is sentence-final or adjoined to VP – positions from which this particle is known to be able associate with an entire sentence.

Iatridou & Tatevosov (2016) propose that these questions contain the familiar, garden-variety low-likelihood¹⁷ *even* scoping above and focus-associating with the entire question.¹⁸ This means that the focus alternatives for this question-focusing use of *even* (QF-*even*) will be other questions, and *even* will presuppose that of all these questions its pre-jacent is the least likely one. Iatridou & Tatevosov (2016) propose that the relevant notion of likelihood for questions is likelihood of being asked (or askable) in context. They note a suggestion made to them in personal communication by Floris Roelofsen that this could be unified with the more familiar notion of likelihood in terms of truth that applies to other uses of *even* if the relevant notion is something more like likelihood of being sincerely utterable in context.

¹⁶Iatridou & Tatevosov (2016) observe that the polar questions trigger an additional inference of speaker bias toward the negative answer; we will abstract away from this feature here.

¹⁷Iatridou & Tatevosov (2016) note that the usual worries over whether this is the right characterization of *even*'s scalar contribution could be raised here. Nothing in their analysis relies on the flavour of the scale being unlikely rather than, say, noteworthiness. I follow their lead here in omitting the additive presupposition of *even* for the discussion. Iatridou & Tatevosov (2016) show that this presupposition does seem to be active for the questions they investigate in that QF-*even* is odd when all other relevant questions have been resolved; however, it does not play a role in their analysis of the extreme ignorance inference.

¹⁸To allow *even* to combine with a question meaning in this way, Iatridou & Tatevosov (2016) assume that *even* can be of a higher type than usual, as in (i).

(i) $\llbracket \text{even} \rrbracket^{w,g} = \lambda C_{stt,t} \cdot \lambda q_{st,t} : \forall q' \in C [q \neq q' \rightarrow q <_w q'] \cdot q$
 where $q <_w q'$ iff, given relevant facts in w , q is less likely than q'
 (Iatridou & Tatevosov 2016: 308)

As is usual, the set of alternatives for *even* is contextually restricted in this analysis. Iatridou & Tatevosov (2016) suggest that the alternative questions that *even* sees are the background questions (BQs) that are made salient by the preceding discourse. In the conversation about where to meet for dinner in (38), for example, reasonable candidates would be questions about Oleana that would need to be addressed in order to answer the question posed by Speaker A. To derive the inference of extreme ignorance, Iatridou & Tatevosov (2016) propose the following link between likelihood of asking a question and likelihood of knowing its answer:

- (40) Asking-to-Ignorance link:
 The likelihood of asking a particular question is reversely proportional to the likelihood of knowing the answer to this question. (Iatridou & Tatevosov 2016: 305)

That is, what is least likely to be asked is what is most likely to be known. Iatridou & Tatevosov (2016) assume that there is a (defeasible) conversational implicature associated with the act of asking a question; in the usual case, asking a question implicates that the speaker does not know the answer to it. This, combined with (40) and (39), licenses the following inferences to yield extreme ignorance.

- (41) Compounded inference:
 I do not know the answer to the question whose answer is the most likely to be known. (Iatridou & Tatevosov 2016: 305)
- (42) Implicature of extreme ignorance:
 I do not know the answer to any of the BQs and as a result cannot answer the QUD. (Iatridou & Tatevosov 2016: 306)

Importantly for our purposes, Iatridou & Tatevosov (2016) stress that what QF-*even* questions do in discourse can be thought of as a kind of presupposition denial.¹⁹ When

¹⁹Iatridou & Tatevosov (2016) note that QF-*even* cannot be used to challenge assertions:

- (i) A: Joan is here.
 B: Is he really here?
 B': #Is he **even** here? (Iatridou & Tatevosov 2016:316)

This fact is not directly explained by Iatridou & Tatevosov (2016), but it appears to be consistent with the behaviour of other presupposition-challenging devices. For example, the *Hey, wait a minute!* (von Fintel 2004; see also Shanon 1976) challenge is known to be unable to target material that is asserted rather than presupposed.

- (ii) A: The mathematician who proved Goldbach's Conjecture is a woman.
 B: Hey, wait a minute. I had no idea that someone proved Goldbach's Conjecture.
 B': #Hey, wait a minute. I had no idea that that was a woman. (von Fintel 2004: 271)

In the case of QF-*even*, this restriction makes good sense. The content of assertions is not presupposed, but rather put on the Table for ratification by the addressee before it can be added to the common ground; it is presented as controversial and open to questioning by the addressee. Perhaps the content of an assertion is

one asks a question, one presupposes that one's addressee is in a position to answer it; when Speaker B responds to Speaker A's question with a question that triggers an extreme ignorance inference, Speaker B indicates that she does not in fact have the necessary information to answer Speaker A's question.²⁰ This presupposition-challenging effect is what gives QF-*even* questions their corrective feel, and what connects them to the declaratives we have been considering.

4.2 Crosslinguistic extensions

4.2.1 A familiar pattern

English is not the only language that uses a special particle to challenge presuppositions. Iatridou & Tatevosov (2016) note that there are particles in German (*überhaupt*), Greek (*kan*), and Russian (*voobščē*) that can be used to challenge presuppositions in questions with the same discourse effects that *even* exhibits in English.²¹

- (43) Greek
- a. Pu ine **kan** afto?
where is KAN this
'Where is that even?' (Iatridou & Tatevosov 2016: 316)
 - b. Ine **kan** edho o Yanis?
is KAN here the Yanis
'Is Joan even here?' (Iatridou & Tatevosov 2016: 319)
- (44) German
- a. Wo ist das **überhaupt**?
where is that ÜBERHAUPT
'Where is that even?' (Iatridou & Tatevosov 2016: 317)
 - b. Ist Joan **überhaupt** hier?
Is Joan ÜBERHAUPT here
'Is Joan even here?' (Iatridou & Tatevosov 2016: 319)
- (45) Russian
- a. Eto **voobščē** gde?
this VOOBŠČE where
'Where is that even?' (Iatridou & Tatevosov 2016: 316)
 - b. Vanja **voobščē** zdes'?
Vanja VOOBŠČE here
'Is Vanja even here?' (Iatridou & Tatevosov 2016: 319)

thus not sufficiently unlikely to be questioned to make it eligible for challenging via QF-*even*.

²⁰Iatridou & Tatevosov (2016) note that QF-*even* can also appear in responses to imperatives. They subsume these uses under their analysis for responses to questions by noting that imperatives presuppose that the target of the command is equipped to carry it out, which plausibly includes knowing certain things.

²¹Iatridou & Tatevosov (2016) note that some Greek speakers only allow *kan* in polar questions.

It turns out that these particles can also appear in declarative presupposition denials, where they show roughly the same asymmetry that we have observed in English.²²

- (46) Greek
- A: Did Kenji's wife come to the picnic?
 B: Ma then ine **kan** pandremenos!
 but NEG is KAN married
 'But he isn't even married!'
 B': *Ma ine **kan** anipandros!
 but is KAN unmarried
 Intended: 'He is even unmarried!'

- (47) German
- a. Did Kenji's wife come to the picnic?
 b. Er ist **überhaupt** nicht verheiratet!
 he is ÜBERHAUPT NEG married
 'He isn't even married!'
 c. #Er ist **überhaupt** unverheiratet!
 he is ÜBERHAUPT unmarried
 'He's even unmarried!'

- (48) Russian
- a. Did Kenji's wife come to the picnic?
 b. ?Da on **voobščē** ne ženat.
 DA he VOOBŠČE NEG married
 'He isn't even married!'
 c. ??Da on **voobščē** xolostyak.
 DA he VOOBŠČE unmarried
 'He's even unmarried!'

Greek *kan* appears to be a bona fide NPI *even*; it is restricted to NPI-licensing contexts, where it is best translated into English as *so much as* (Giannakidou 2007). The associate of *kan* is always a low scalar endpoint (i.e. a high likelihood element) within the NPI-licensing environment (Giannakidou 2007, Crnič 2011), as shown in (49).

- (49) Metaniosa pu aniksa **kan** to vivlio.
 regret.1sg that opened.1sg KAN the book
 'I regret that I so much as opened the book.' (Giannakidou 2007: 60)

²²In Russian, there appears to be significant interspeaker variation; some speakers report no contrast between positive and negative presupposition denials, while those who do report that the contrast is not always as sharp as in English. Some speakers can only use *voobščē* in this way if it is accompanied by *-to*, in which case there is no contrast between positive and negative presupposition denials. For all speakers interviewed, there is a clear contrast between positive and negative sentences with *daže*, the garden-variety *even* particle in this language.

Importantly for our purposes, *kan* has been analyzed by Crnič (2011) as being morphologically complex; on his view, one of the components of *kan* is an operator with the same meaning as *even*, and this part moves covertly above NPI licensers (e.g. negation) just as English *even* does.²³ This explains the acceptability of *kan* in negative presupposition denials. Its unacceptability in positive sentences is doubly to be expected; given that *kan* is an NPI, we would expect the attested asymmetry regardless of its meaning.

Iatridou & Tatevosov (2016) claim that German *überhaupt* and Russian *voobščē* are also NPIs. This would give us a uniform explanation for the asymmetry in all three languages that is independent of our puzzle. It turns out that *überhaupt* and *voobščē* are in fact perfectly acceptable in contexts that do not license NPIs; this suggests that the asymmetry in (47) and (48) cannot be reduced to a simple ban on these particles occurring in positive sentences.

Überhaupt and *voobščē* share a common profile. These items have different meanings depending on the polarity of their environment, in a way that is reminiscent of the behaviour of *even*.²⁴ They mean something like *at all, to a minimal degree* in NPI-licensing contexts but *absolutely, in general, to a high degree* in non-NPI-licensing contexts.²⁵

- (50) Russian
 [We are discussing whether John would be a good addition to our basketball team.]
- a. On **voobščē** ne vysokiy.
 he VOOBŠČE NEG tall
 ‘He is not tall at all.’
 - b. On **voobščē** vysokiy.
 he VOOBŠČE tall
 ‘He is very tall.’

²³To explain why *kan* is unacceptable in positive sentences, Crnič (2011) proposes that the second component of this particle is a sort of anti-*even* (SOLO), which presupposes that its prejacent is the most likely of the alternatives. When these two components focus-associate with the same constituent, their presuppositions clash; they will only be satisfiable if EVEN scopes above an entailment-reversing operator and SOLO scopes below it. This is what gives *kan* the distribution of an NPI. Notice that this approach has desirable consequences for Iatridou & Tatevosov (2016); without this kind of decompositional analysis, it is mysterious how an NPI like *kan* would be allowed to scope outside of a question to get the right set of alternatives that Iatridou & Tatevosov’s (2016) analysis relies on for deriving the extreme ignorance effect. If the EVEN component of *kan* scopes over NPI licensing environments in general, we should not be surprised that it does so in questions too.

Crnič further claims that *kan* competes with *oute*, another NPI *even*-type particle, for insertion. He suggests that *oute* has a parallel semantics but is tagged with an uninterpretable [uNeg] feature, meaning that it is preferentially inserted under negation. However, note that this does not explain why *kan* frequently appears alongside *oute* under negation, as shown by Giannakidou (2007).

²⁴In principle, we could reproduce the debate that we saw for how to account for this property of *even* (via polarity sensitivity plus lexical ambiguity or via movement) for these items. I will not attempt to do so here.

²⁵Anderssen (2006) notes that the location of prosodic prominence matters; when the particle itself is stressed, it may receive a different translation than when it is unstressed. It appears that the presupposition-challenging uses we are interested in tend to be the unstressed uses.

(51) German

- a. Von solchen Leuten kann man selten (**überhaupt**) etwas lernen.
from such people can one rarely ÜBERHAUPT something learn
'It's rare that you can learn anything at all from such people.'
(Anderssen 2006: 60)
- b. Meine Mutter kennt (**überhaupt**) jeden in Mindelheim.
my mother knows ÜBERHAUPT everybody in Mindelheim
'My mother knows (absolutely) everybody in Mindelheim.'
(Anderssen 2006: 62)

Importantly, these particles do not simply mean *even*.²⁶ This raises an important question: given that the analysis of the English asymmetry drew directly on the particular presuppositions generated by *even*, should we be concerned that this asymmetry is also observed for particles that do not mean *even*? Is there a common core to the meanings of *even* and *kan* on the one hand and *überhaupt* and *voobščě* on the other, or do different languages use different resources to achieve the same ends?²⁷ To answer these questions, let us consider what has been said about *überhaupt* and *voobščě* in the literature.

Anderssen (2006) proposes that *überhaupt* is a generalized domain widener. Domain widening is an idea that has been used since Kadmon & Landman (1993) to account for the behaviour of expressions like *any*. The idea is that *any* conveys that the existential claim being made is true in a wider domain than would be invoked for a regular indefinite. For example, in (52), the sentence with the regular indefinite is supposed to convey that the speaker does not have potatoes in some contextually salient domain (e.g. cooking potatoes), while the domain widener response is supposed to convey that the speaker does not have potatoes even in some expanded domain (e.g. cooking and non-cooking potatoes).

²⁶The similarity between the switch in meaning that they exhibit in NPI-licensing vs. non-NPI-licensing contexts and what was observed for *even* in Section 1 (7) nevertheless suggests that while they do not mean *even* these particles at least have something in common with it. Indeed, anticipating somewhat the main point of this section: in the cases given here, we could think of these particles as contributing roughly the same thing that *even* focus associating with a degree *d* would give. In positive environments, the scalar presupposition of *even* will only be satisfied if *d* is a very high degree, whereas in negative environments, the scalar presupposition will only be satisfied if *d* is a very low degree.

²⁷It turns out that we could ask the same question in purely English-internal terms, for English appears to be able to use domain widening in a subset of presupposition-challenging contexts. Rawlins (2008) observes that questions like (i), trigger an inference of extreme ignorance, just as Iatridou & Tatevosov (2016) claim for English QF-*even*.

- (i) What on earth is taking Alfonso so long? (Rawlins 2008: 192)

Rawlins argues that the inference of extreme ignorance can be explained if *wh-on-earth* (and *wh-the-hell*, and *wh-ever*) *wh*-phrases carry a presupposition that they are interpreted relative to a wider domain than usual. With certain assumptions about how *wh*-phrases are incorporated into the meaning of questions, this leads to a presupposition that the context set that is partitioned by the question is wider than usual, so that it includes even very remote possibilities that might normally be ignored.

- (52) Could we make some French fries?
 a. I don't have potatoes
 b. I don't have any potatoes. (Kadmon & Landman 1993: 359-360)

Domain widening is supposed to be subject to a strengthening requirement; the use of *any* is only licensed when it makes a stronger contribution than a regular indefinite. An existential claim made about a given set of entities asymmetrically entails the corresponding existential claim about any superset of that set of entities; this means that the domain widener will be entailed by (and thus makes a weaker claim than) the regular indefinite in positive environments. Under entailment-reversing operators like negation, however, the situation is reversed.²⁸ Anderssen (2006) notes that under this view *any* involves two ingredients: a domain widening component and an existential quantifier. He proposes that these two components are not lexically fused in German; *überhaupt* spells out only the domain widening component, which leaves it free to combine with a variety of expressions. This is why it can be used in positive sentences like (51-b), where it combines with a universal quantifier. Universal claims made about larger domains of entities entail corresponding universal claims made of subsets of that domain, meaning that a domain-widened universal quantifier will make a stronger contribution than its non-domain-widened counterpart in positive sentences.²⁹ I am unaware of any existing analysis of Russian *voobščē*; however, given the parallels noted above, it is not unreasonable to think that it too has the semantics of a domain widener.

Is there a way to unify domain widening operators with *even*? This is in fact a prominent line of inquiry in the literature. Domain wideners are said to mark that a claim is being made about individuals that would not normally be considered; put differently, they indicate that an unlikely domain is being selected. *Even* presupposes that its prejacent is unlikely. As noted above, it has been argued since Kadmon & Landman (1993) that domain wideners can only be used when they yield a stronger meaning than their non-domain-widening counterparts. This was formalized by Chierchia (2006) as having a covert counterpart of *even* associate with the domain widener. Because *even* presupposes that its prejacent is unlikely, and because stronger propositions are less likely to be true than weaker propositions, this is a natural choice. Alternative approaches to the data in question that do not invoke domain widening still give *even* a central role. For example, Lee & Horn (1994) propose that the distribution and interpretation of *any* can be accounted for if we assume that this lexical item is composed of an indefinite associated with a covert *even*. Under this view, all NPIs are treated as minimizers in the tradition of Lahiri (1998). As differences

²⁸ Arregui (2008) has pointed out that there are very basic problems for theories that invoke domain widening to deal with this kind of data. More particularly, she notes that these theories rely on the assumption that regular indefinites can access a more restricted domain of quantification than domain widening indefinites, and shows that this assumption is not empirically supported.

²⁹ Anderssen (2006) further shows that *überhaupt* is cross-categorical, able to combine not only with quantifiers but also with, for example, gradable predicates, to invoke a wider comparison class (and thus a higher/lower threshold, depending on the polarity of the sentence) and yield the *to a minimal/maximal degree* readings mentioned above.

between minimizer NPIs and non-minimizer NPIs were discovered (see e.g. Heim 1984), this kind of analysis fell out of favour. However, Crnič (2014) has made a compelling case for revisiting it, showing that arguments against this unified approach to NPIs are not as strong as was once thought.

What matters for our purposes is that, whatever position we take on how best to analyze (so-called) domain widening, this phenomenon involves something like *even*. Returning to the crosslinguistic picture we have been sketching, if all of the particles that exhibit the asymmetry plausibly involve *even* in one way or another, we can subsume all of these instantiations of the asymmetry under our analysis for English.

4.2.2 A prediction

The two presuppositions of *even* play different roles in the accounts presented above. According to Iatridou & Tatevosov (2016), the scalar presupposition is responsible for *even* being felicitous in presupposition denials. The additive presupposition of *even* is responsible for our puzzling asymmetry. These two components of *even*'s meaning are in principle dissociable, which allows us to make a prediction: if a language had a lexical item with a scalar presupposition but not an additive presupposition, we would expect it to not exhibit our puzzling asymmetry in declarative presupposition denials.

I would like to suggest that Hebrew is such a language. In Hebrew, the particle that appears in Iatridou & Tatevosov (2016)-style presupposition-challenging questions is *bixlal*. Like the particles discussed above, *bixlal* triggers an inference of extreme ignorance in these questions; this suggests that this lexical item has a scalar component.

- (53) A: Let's meet at Oleana for dinner. Is that okay?
 B: Efyo ze **bixlal**?
 where it BIXLAL
 'Where is it even?'
- (54) A: Shall we ask Ruti to prepare something special for dinner?
 B: Ruti po **bixlal**?
 Ruti here BIXLAL
 'Is Ruti even here?'

In non-presupposition-denying contexts, Greenberg & Khrizman (2012) report that this item has a very similar profile to *überhaupt*, as shown in (55), although they argue that it is best understood as a generalized strengthener rather than a generalized domain widener.³⁰

- (55) a. Dani lo nexmad **bixlal**.
 Danny not nice BIXLAL
 'Danny is not nice at all.' (Greenberg & Khrizman 2012: 139)

³⁰This distinction need not worry us; it is the strengthening component of domain wideners that is alleged to resemble the scalar component of *even*.

- b. Hu **bixlal** nexmad.
 he BIXLAL nice
 ‘He is nice in general (to everyone).’ (Greenberg & Khrizman 2012: 144)

Crucially, this particle, unlike English *even*, is compatible with mutually exclusive alternatives, as demonstrated by (56) (cf. Greenberg & Khrizman 2012: 121, Greenberg 2016: 3).

- (56) [B is a journalist doing a feature on bronze medallists. A is trying to help think of people for B to interview.]
 A: Mary won a bronze medal. (So you should talk to her.)
 B: Lo! Hi (**bixlal**) zaxta (**bixlal**) be-medaljat [kesef]_F (**bixlal**).
 NEG she BIXLAL won BIXLAL in-medal silver BIXLAL
 ‘No! She actually won a silver medal.’

In presupposition-denying declaratives with *bixlal*, our prediction is satisfied: as (57) demonstrates, both positive and negative presupposition denials with *bixlal* are acceptable.

- (57) A: Did Kenji’s wife come to the picnic?
 B: Hu **bixlal** lo nasuj.
 he BIXLAL NEG married
 ‘He isn’t even married!’
 B’: Hu **bixlal** ravak.
 he BIXLAL bachelor
 ‘He’s even a bachelor!’

Thus, the crosslinguistic predictions of this proposal appear to be supported.

4.3 Prospects for a unified analysis

We have seen that several languages allow one and the same *even*-like item to appear in both questions and declaratives that challenge presuppositions. In light of this result, it is worth asking whether it is possible to provide a unified explanation for the presence of these items in these two environments.

Both types of sentences object to another speaker’s discourse move on the grounds that some precondition for its felicity is not met. However, the kind of precondition for felicity that is targeted differs between the two constructions. The declaratives that we have considered target a lexically triggered presupposition that must be satisfied for Speaker A’s sentence to be defined; in contrast, the questions that Iatridou & Tatevosov (2016) examine target a condition that must be met, not for Speaker A’s question to be defined, but for it to have its intended effect of soliciting information. Put slightly differently, both cases deny something that Speaker A presupposes, but only in the declarative case is this material also presupposed by the sentence that Speaker A utters. This distinction has consequences for the mechanics of the two analyses. The present paper argues that, in declaratives,

the alternatives that *even* invokes contain the trigger for the presupposition being denied; this motivates the presence of an A operator. According to Iatridou & Tatevosov's (2016) analysis, however, the alternatives do not carry the presupposition being denied, nor are they in danger of being undefined; hence, no appeal to the A operator is necessary.

Most importantly for our purposes, the relation between *even* and presupposition denial is different in the two accounts. The difference can be traced to the role played by the scalar presupposition of *even*. In Iatridou & Tatevosov's (2016) account, the scalar presupposition of *even* marks questions that host it as unlikely to be asked or askable in the context. They argue that these questions are least likely to be asked because their answers are most likely to be known (the Asking-to-Ignorance link). This is used to derive the extreme ignorance inference; Iatridou & Tatevosov (2016) argue that it is this inference that gives the questions hosting *even* the effect of a presupposition denial, because the presupposition being challenged is about Speaker B being well-informed. Because the presuppositions that are denied by the declaratives examined in the present paper are not about Speaker B being well-informed, and because these sentences do not trigger an inference of extreme ignorance, we obviously cannot extend this explanation to the presence of *even* in declarative presupposition denials.

There is an alternative line of reasoning that one could take. We could follow Iatridou & Tatevosov (2016) in taking *even* to mark the questions that it focuses as maximally unlikely, while diverging from their assumptions about what makes these questions unlikely. In addition to being unlikely to be sincerely utterable because they are likely to be known, these questions are unlikely to be sincerely utterable because they challenge a presupposition. In cooperative discourse, one does not presuppose what is not (mutually agreed to be) true; a sentence that shows that what has just been presupposed is not in fact true is thus maximally unlikely to be sincerely utterable if the discourse is proceeding normally. Importantly, this line of reasoning applies just as well to declaratives that deny presuppositions. Under this logic, *even* and its crosslinguistic kin would be natural choices to appear in presupposition denials of both types, because they mark them as unlikely discourse moves.

There is a wrinkle in this picture. In the account of declarative presupposition denials presented above, the scalar presupposition of *even* is tautological in the cases where this particle is acceptable; the prejacent entails the alternatives in these cases, meaning that the scalar presupposition is guaranteed to be satisfied no matter what the facts of the world are. We should therefore expect that the scalar presupposition will not contribute to the meaning of the declarative presupposition denials. This is in contrast to the questions investigated by Iatridou & Tatevosov (2016); there, the scalar presupposition is contingent, because the questions in alternative set are not in an entailment relation, and so we should expect the scalar presupposition to contribute meaningful information about the prejacent.

Perhaps there is another way of understanding what *even* is doing in these sentences. It is worth noting that their presupposition-challenging effect is not dependent on the presence of *even*. If *even* were removed from the QF-*even* questions that Iatridou & Tatevosov (2016) consider, they would still convey that the speaker is ignorant about the content of that question, in a way that might leave them unable to answer the QUD. Likewise, if *even*

These dialogues share an important property with those we have been considering up to this point: in each case, the sentences with *even* serve to object that some necessary precondition for Speaker A's discourse move to be felicitous does not hold. Does this mean that we should revise our analysis so that it can be extended to (60) and (61)? Not necessarily; there are at least two ways of dealing with these examples without altering our analysis. On the one hand, we could say that the similarity to our asymmetry is only apparent, and that the infelicity of the positive sentences here is due to something other than the mechanism that rules out positive presupposition denials with *even*. On the other hand, we could say that the alternatives in these *even* sentences do in fact contain presupposition triggers, making the resemblance to our asymmetry unsurprising.

In (60), it turns out that the similarity to our puzzle is only apparent. When talking about test scores, *ace*, *pass*, and (*not*) *fail* are scalar alternatives of each other, related by entailment. This logical relation encourages a parse where focus is restricted to the verb, as in (62)-(63):

- (62) He didn't even pass!
- a. LF: $\text{even}_C [\text{NEG} [\text{he} [\text{passed}]_F]]$
 - b. $C = \{\text{NEG} [\text{he passed}], \text{NEG} [\text{he aced it}], \text{NEG} [\text{he failed}]\}$
 $= \{\textit{He didn't pass (it)}, \textit{He didn't ace it}, \textit{He didn't fail (it)}\}$
- (63) #He even failed!
- a. LF: $\text{even}_C [\text{he} [\text{failed}]_F]$
 - b. $C = \{\text{he failed}, \text{he passed}, \text{he aced it}\}$
 $= \{\textit{He failed (it)}, \textit{He passed (it)}, \textit{He aced it}\}$

In (62), one of the non-prejacent alternatives (namely, *He didn't ace it*) is entailed by the prejacent, and so it will be true whenever the prejacent is true, thus guaranteeing that the additive presupposition of *even* is satisfied. The scalar presupposition will be satisfied just in case it is less likely that Dan didn't pass the test than that he didn't fail it – that is, just in case it is less likely that he failed than that he passed;³¹ this is compatible with a scenario where Dan is known to be a reasonably competent student. In (63), however, both of the non-prejacent alternatives are false when the prejacent is true, meaning that the additive presupposition cannot be satisfied. In this way, we can derive the asymmetry in this case without appealing to A operators or presuppositions in the alternatives.

It is worth noting that this account relies on the focus being restricted to the verb in these cases. If *even* focused a proposition-sized constituent, as argued above for the clear presupposition denials, we would instead expect the following alternatives to be available when these sentences are uttered in response to the polar question *Did Dan ace the test?*:

³¹Note that the prejacent will always be less likely than the other salient alternative *He didn't ace it*, because not passing a test entails not acing it. Thus, the satisfaction of the scalar presupposition in this case depends only on the relative likelihood of Dan passing vs. failing the test.

- (64) He didn't even pass!
- a. LF: $\text{even}_C [\text{NEG} [\text{he passed}]_F]$
 - b. $C = \{\text{NEG} [\text{he passed}], \text{NEG} [\text{he aced it}], \text{NEG} [\text{he didn't ace it}]\}$
 $= \{\textit{He didn't pass (it)}, \textit{He didn't ace it}, \textit{He aced it}\}$
- (65) #He even failed!
- a. LF: $\text{even}_C [\text{he failed}]_F$
 - b. $C = \{\text{he failed}, \text{he aced it}, \text{he didn't ace it}\}$
 $= \{\textit{He failed (it)}, \textit{He aced it}, \textit{He didn't ace it}\}$

In contrast to the first parse we considered, here *even* has access to a true alternative in the positive sentence, namely *He didn't ace it*. This is entailed by the prejacent, and so the additive presupposition is predicted to be satisfied, yielding felicity.

Why then is this parse not selected for the positive sentence, when the parse with the smaller focus-associate yields infelicity? One possibility is that this reflects a more general pressure to keep focus marking minimal in the grammar, such as Schwarzschild's (1999) AvoidF constraint. A second possibility is that the parse is not ruled out but the relevant alternative is difficult to access. The alternative that is true in the positive sentence is the negative answer to the polar question (*He didn't ace it*). There is evidence that negative answers are quite generally more difficult to retrieve from the context than positive answers when they are not mentioned explicitly.³² Consider the following minimal pair, pointed out to me by Sabine Iatridou (p.c.):

- (66) a. Do you want to live a long life? Then eat lots of vegetables and get regular exercise.
 b. Do you want to die young? #Then eat lots of vegetables and get regular exercise.

These examples differ in which answer to the polar question must be accommodated in order for the continuation to make sense. In (66-a), the positive answer (*Yes, I want to live a long life*) is easily accommodated; in (66-b), however, the roughly equivalent negative answer (*No, I don't want to die young*) is much more difficult to retrieve than the incongruent positive answer, yielding oddness.

Returning to the example in (60), directly supplying *even* with the relevant true alternative makes the positive *even* sentence felicitous.

- (67) A: Did Dan ace the test?
 B: No/He didn't ace it – he **even** failed!
 B': Not only did he not ace it – he **even** failed!

This suggests that the positive sentence in (60) is only unacceptable to the extent that it is difficult to access i) a parse and ii) the relevant alternative that allow the additive pre-

³²In the terminology of Inquisitive Semantics, the positive answer is “highlighted” by a positive polar question (Roelofsen & Farkas 2015).

supposition of *even* to be satisfied.³³ This makes (60) crucially different from the clearly presupposition-denying uses of *even*, which could not be salvaged even when supplied with an appropriate true alternative.

In (61) the situation is more complex. Here, as before, if we follow the logic of the proposal in Section 2 the alternatives should be *Ross went to Ruth's office and gave her a high five* and *Ross didn't go to Ruth's office and give her a high five*, neither of which seems to carry any relevant presuppositions.³⁴

(68) She isn't even here!

- a. LF: $\text{even}_C [\text{NEG} [\text{she is here}]_F]$
- b. $C = \{ \text{NEG} [\text{she is here}], \text{NEG} [\text{Ross went Ruth's office and gave her a high five}], \text{NEG} [\text{Ross didn't go to Ruth's office and give her a high five}] \}$
 $= \{ \textit{She isn't here, Ross didn't go to Ruth's office and give her a high five, Ross went to Ruth's office and gave her a high five} \}$

(69) #She's even away!

- a. LF: $\text{even}_C [\text{she is away}]_F]$
- b. $C = \{ \text{she is away, Ross went to Ruth's office and gave her a high five, Ross didn't go to Ruth's office and give her a high five} \}$
 $= \{ \textit{She's away, Ross went to Ruth's office and gave her a high five, Ross didn't go to Ruth's office and give her a high five} \}$

We can easily explain the acceptability of the negative sentence in (68); on the reasonable assumption that Ruth being absent makes it impossible for Ross to give her a high five in her office, the prejacent contextually entails one of the alternatives (namely *Ross didn't go to Ruth's office and give her a high five*), thus trivially satisfying the additive presupposition of *even*.³⁵ Unfortunately, exactly the same thing can be said for the positive sentence; we should therefore predict it to be just as acceptable as the negative sentence, contrary to fact. Unlike (60), in this case there is no reason to believe that a smaller focus is selected. Furthermore, unlike (60), but like the presupposition denials discussed in the main proposal, the positive sentence in (61) is not improved by adding an overt negative alternative that could be true in the context.

³³We can confirm that this is the correct diagnosis of the case we are interested in by testing whether the asymmetry goes away when the additive presupposition of *even* can be satisfied by the positive answer to Speaker A's polar question in both the positive and the negative responses. The dialogue in (i) demonstrates that this is indeed the case.

- (i) A: Did Dan pass the test?
- B: (Yes, he passed.) He didn't even get a single question wrong!
- B': (Yes, he passed.) He even aced it!

³⁴These alternatives do carry the presupposition that Ruth has an office, but this is not what is being denied.

³⁵The scalar presupposition will depend on the relative likelihood of the prejacent and the alternative that it does not entail (*Ross went to Ruth's office and gave her a high five*).

- (70) A: Ross just went to Ruth's office and gave her a high five.
 B: No/He didn't go to her office and give her a high five! She isn't **even** here!
 B': #No/He didn't go to her office and give her a high five! She's **even** away!

I am not certain why there is a contrast between positive and negative *even* sentences in (61), nor do I know why these examples are not improved by the presence of an explicit true alternative like (60) is. Before concluding this paper, however, I would like to sketch two ways of capturing these facts.

Intuitively, what the *even* sentences do here is deny that it is possible to go to Ruth's office and give her a high five (on the grounds that Ruth is not in her office), with this being a necessary precondition for what Speaker A asserts to be true. Unlike in the cases dealt with in Section 2, what is denied by the prejacent does not follow from both of the alternatives; more particularly, the alternative *Ross didn't go to Ruth's office and give her a high five* does not obviously entail or presuppose that it was possible for him to do so. The lack of incompatibility between the prejacent and this alternative is what makes it possible for the additive presupposition to be satisfied in both the positive and the negative *even* sentences. To derive the unacceptability of the positive *even* sentence, we need to exclude the true proposition *Ross didn't go to Ruth's office and give her a high five* from the set of alternatives that *even* has access to. If we could replace this alternative with something like *It was possible for Ross to go to Ruth's office and give her a high five but he didn't do so*, we would have a situation exactly like the cases we have successfully dealt with. There are in principle several ways of achieving this outcome.

One option is to encode the possibility claim as a presupposition. If *Ross (didn't) go to Ruth's office and give her a high five* presupposed that it was possible for him to do so,³⁶ both alternatives would be in danger of being presupposition failures. We could then import our analysis of presupposition denials directly from Section 2 to derive the asymmetry. Once the A operator is applied to these propositions, they will end up asserting that it was possible for Ross to go to Ruth's office and give her a high five. Without a supervening negation, these propositions will both be incompatible with the prejacent in the positive case, as desired.

- (71) She isn't even here!
- a. LF: $\text{even}_C [\text{NEG} [A [\text{she is here}]_F]]$
 - b. $C = \{ \text{NEG} [A [\text{she is here}]], \text{NEG} [A [[\text{Ross went Ruth's office and gave her a high five}]], \text{NEG} [A [\text{Ross didn't go to Ruth's office and give her a high five}]] \}$
 $= \{ \textit{She isn't here, It's not true that Ross could have gone to Ruth's office and given her a high five and he did so, It's not true that Ross could have gone to Ruth's office and given her a high five but he didn't do so.} \}$

³⁶I will remain agnostic here about where such a presupposition would be triggered.

(72) #She's even away!

- a. LF: $\text{even}_C [A [\text{she is away}]_F]$
- b. $C = \{A [\text{she is away}], A [\text{Ross went to Ruth's office and gave her a high five}], A [\text{Ross didn't go to Ruth's office and give her a high five}]\}$
 $= \{\textit{She's away, Ross could have gone to Ruth's office and given her a high five and he did so, Ross could have gone to Ruth's office and given her a high five but he didn't do so}\}$

This kind of presupposition has an intuitive appeal. If some eventuality is not possible (i.e. if there was no opportunity for it to obtain), it is odd to deny that it occurred. Dynamically speaking, if the context set contains no worlds where p is true, asserting $\neg p$ is vacuous because there are no p -worlds to rule out; perhaps, then, we could understand this presupposition as a way of banning vacuous discourse moves. One might well object that this kind of general pragmatic principle should not be encoded as a presupposition. Nevertheless, something along these lines would get us the right results for the case at hand.

Alternatively, we could achieve an equivalent result by making different assumptions about what propositions Speaker A's discourse move makes salient. Stephenson (2005) suggests that, in the absence of contrastive focus, the default alternatives that a sentence p makes salient are the sentence itself (p) and the proposition that p failed to obtain, where the latter is understood not as the simple negation of p but as the negation of p conjoined with the claim that p was possible (i.e. $\neg p \ \& \ \diamond p$). This suggestion is situated in a discussion of quantificational readings of indefinites (cf. Diesing 1992), but let us suppose that this suggestion can be extended to sentences that do not contain indefinites. That is, let us suppose that a declarative sentence makes salient the propositions $\{p, \neg p \ \& \ \diamond p\}$ rather than $\{p, \neg p\}$, as we have been assuming. This would directly supply us with the desired alternatives in (73)-(74).

(73) She isn't even here!

- a. LF: $\text{even}_C [\text{NEG} [\text{she is here}]_F]$
- b. $C = \{\text{NEG} [\text{she is here}], \text{NEG} [\text{Ross went to Ruth's office and gave her a high five}], \text{NEG} [\text{Ross didn't go to Ruth's office and give her a high five but he could have}]\}$
 $= \{\textit{She isn't here, Ross didn't go to Ruth's office and give her a high five, Ross went to Ruth's office and gave her a high five or he couldn't have}\}$

(74) #She's even away!

- a. LF: $\text{even}_C [\text{she is away}]_F$
- b. $C = \{\text{She is away, Ross went to Ruth's office and gave her a high five, Ross didn't go to Ruth's office and give her a high five but he could have done so}\}$
 $= \{\textit{She's away, Ross went to Ruth's office and gave her a high five, Ross didn't go to Ruth's office and give her a high five but he could have done so}\}$

The true alternative that made us predict acceptability for the positive sentence (*Ross didn't go to Ruth's office and give her a high five*) is no longer a part of the set of alternatives in (74). Instead, it has been replaced by *Ross didn't go to Ruth's office and give her a high five but he could have done so*. As before, this alternative will be false when the prejacent is true, because the prejacent contextually entails that Ross could not have gone to Ruth's office and given her a high five there.

I will not attempt to decide between these two approaches here.³⁷ In different ways, they both remove the problematic alternative *Ross didn't go to Ruth's office and give her a high five* from the set of alternatives for the positive *even* sentence and replace it with an alternative that is incompatible with the prejacent. What matters for our current purposes is that the problematic data in (60) and (61) can be accounted for without altering the core proposal made in Section 2.

6 Conclusions

To conclude this paper, let us take stock of what we have accomplished. We began with a puzzling observation: *even* can be used in declarative presupposition denials only if it is below negation. The central proposal of this paper is that the additive presupposition of *even* is responsible for the observed asymmetry: when *even* is used in a presupposition denial, the salient alternatives will contain the trigger for the presupposition that the prejacent denies, making the additive presupposition unsatisfiable. An independently motivated mechanism for negating presuppositions – Bochvar's (1939) A operator – allows the presupposition to be cancelled in the focus alternatives for negative but not positive presupposition denials with *even* to yield the observed asymmetry.

This result has consequences for how we think about presuppositions generated in alternatives. If the analysis presented here is correct, we do not only pay attention to the presuppositions of the sentences that we hear but also, in some cases, to presuppositions of alternative sentences that we do not hear. This connects the present work with other recent investigations of the presupposition projection properties of focus alternatives, such as Mayr & Romoli (2016) and Spector & Sudo (2017)'s work on how presuppositions project from the alternatives of the exhaustivity operator. What is unique about the puzzle presented here is that this is a case where a presupposition triggered in a focus alternative can have an effect on the acceptability of a sentence that does not itself contain the trigger for that presupposition. This raises important questions for how we think about the status of alternatives in the grammar. Presuppositions are usually understood as definedness conditions that the context must meet in order for a discourse move to have its intended effect. What kinds of constraints can alternatives place on the use of sentences that invoke them? To what degree are these effects dependent on the particular semantics of the operator that

³⁷I believe that they make different predictions about parallel examples where Speaker A's move was to ask a polar question (*Did Ross go to Ruth's office and give here a high five?*), depending on whether we choose to extend Stephenson's (2005) proposal to the propositions that a polar question makes salient as well.

generates the alternatives in question? These are questions that merit further investigation.

On the way to finding a solution to our puzzle, this paper has contributed to our understanding of the semantics of *even* and its crosslinguistic kin. This paper presents what is, to my knowledge, novel evidence that the additive presupposition of *even* is active even when it has no chance of being satisfied – that is, even when its alternatives are mutually exclusive. We have also seen that English is not the only language to use focus particles in both declaratives and questions to object to discourse moves. There is a wide possibility space for crosslinguistic variation that remains to be explored in relation to this behaviour. I leave this task to future research.

Appendix: The solution in an ambiguity theory of *even*

It is possible to translate the story presented in Section 2 into a lexical ambiguity theory of *even*, provided that there is a counterpart of the additive presupposition; however, such an analysis will involve the same ingredients as the movement theory analysis.

Recall that the lexical ambiguity and movement theories of *even* differ only in their treatment of *even* in NPI-licensing environments; this means that we can import the account of the unacceptability of positive presupposition denials with *even* directly into a lexical ambiguity account. Positive presupposition denials with *even* will have the LF and set of alternatives in (75), repeated from (20); because none of the alternatives can be true when the prejacent is true, the additive presupposition of *even* is not satisfied.

- (75) #He's even unmarried!
- a. LF: even_C [A [he is unmarried]_F]
 - b. $C = \{A$ [he is unmarried], A [his wife came to the picnic],
A [his wife didn't come to the picnic] $\}$
 $= \{He$ is unmarried, *He has a wife and she came to the picnic,*
He has a wife and she didn't come to the picnic $\}$

All that is left is to derive the acceptability of negative presupposition denials with *even*.

Recall that, in the ambiguity theory, even_{NPI} scopes below negation in negative sentences; this means that our flagship negative example will have the LF in (76-a) and the set of alternatives in (76-b).

- (76) He isn't even married!
- a. LF: NEG [even_{NPI} [A [he is married]_F]]
 - b. $C = \{A$ [he is married], A [his wife came to the picnic], A [his wife didn't
come to the picnic] $\}$
 $= \{He$ is married, *He has a wife and she came to the picnic,* *He has a*
wife and she didn't come to the picnic $\}$

Aside from the prejacent, the set of alternatives in (76-b) is identical to the one generated

for the positive sentence in (75-b). However, the presuppositions of *even*_{NPI} are the reverse of the presuppositions of the non-NPI-*even* found in positive sentences. Crucially, the additive presupposition of *even*_{NPI} requires that there is a non-prejacent alternative that is false, whereas non-NPI-*even* requires that there is a non-prejacent alternative that is true. As we have already seen, all of the non-prejacent alternatives in this set are false; this will result in a failure of the additive presupposition of non-NPI-*even* in the positive sentences, but the additive presupposition of *even*_{NPI} will be satisfied. The scalar presupposition will also be trivially satisfied, because *even*_{NPI} presupposes that its prejacent is the most likely of the alternatives, and the prejacent here is entailed by each of the non-prejacent alternatives. Thus, it is possible to derive the observed asymmetry under a lexical ambiguity theory of *even*. In light of this result, I will not attempt to argue for one theory of *even* over another here; I refer the interested reader to the literature cited in Section 1 for independent arguments on this topic.

One might wonder whether it is possible to derive the polarity-based asymmetry we have observed directly from the polarity sensitivity of *even* enshrined in the ambiguity account. For example, could we explain the asymmetry by saying that only the NPI *even* is able to participate in presupposition denial?

To make this work, we would need to prevent the non-NPI-*even* from appearing in presupposition denials. It is not clear why such a restriction would exist, but it could be stipulated; for example, we could ban the non-NPI-*even* from performing this function by i) having it presuppose that all of its alternatives are defined (i.e. that none of them receive the third truth value) while ii) banning a parse of these positive sentences that includes the A operator. This could be done by, for example, stipulating that the A operator is itself an NPI. Importantly, we would still need all of the machinery employed by the proposal in Section 2 to account for the acceptability of negative presupposition denials with *even*_{NPI}. This *even*_{NPI} will scope below negation, but its alternatives will still contain the trigger for the presupposition being denied; we must therefore still posit that this *even*_{NPI} is accompanied by an A operator to ensure that the alternative propositions are false rather than presupposition failures, exactly as sketched above.

Reducing our polarity-based asymmetry to polarity sensitivity of *even* is not desirable. Such an account would require more stipulations than either the original analysis or its direct translation into the lexical ambiguity framework. Secondly, it is not clear why on this account it should be the NPI *even* that does this job; without a principled reason for this, we might expect that other languages might choose the non-NPI *even* as their presupposition denier. In all of the languages examined in Section 4.2 that exhibit an asymmetry between presupposition-challenging uses of particles in positive and negative environments, the asymmetry is in the same direction as English. In contrast, on the account proposed in Section 2 there is a principled reason why it is only in negative presupposition denials that *even* can appear: it is only in these sentences that the alternatives can be prevented from being presupposition failures, thanks to the presence of negation and the A operator outside of the focused constituent.

Our puzzle is thus amenable to an explanation that involves polarity sensitivity of *even*,

but it is not amenable to an analysis that encodes the asymmetry in the polarity sensitivity of *even*. The fact that our asymmetry is tied to polarity is purely due to how the A operator functions: it can only cancel presuppositions when it is under negation, and so it should not surprise us that the presupposition-denying use of *even* is restricted to sentences that contain negation. No appeal to polarity sensitivity is necessary to derive the attested pattern.

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