

That IS a high-end convertible: polarity focus, contrastive focus, answer focus, givenness*

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Abstract

Polarity focus has rarely if ever been considered by researchers pursuing a general, unified theory of focus. I argue that an examination of polarity focus data pushes us to resolve several challenging topics central to the semantics and pragmatics of focus: truly contrastive focus and its relationship to answer focus, obligatory vs. optional focus and the mechanism that enforces focus marking (maximize presupposition), the relationship between contextually salient antecedents and evoked or accommodated antecedents, and the role of givenness deaccenting. I propose a theory of focus that, building on Katzir 2013, makes use of the notion of innocent exclusion from Fox 2007. But it also builds on Wagner 2006, 2012b and Büring 2016c, 2019 by taking focus to impose a true contrast requirement on antecedents, stricter than classically assumed. I also present new evidence for a distinct givenness deaccenting requirement, and show how a general theory of focus applied to polarity focus enables a pragmatic explanation of the inference that verum/polarity focus emphasizes the truth of an utterance. The paper ends with a comparison to previous accounts of verum/polarity focus, pointing out challenges for VERUM operator approaches.

1 Introduction

Polarity focus in English is characterized by prominence on the auxiliary verb, signaling focus marking on the polarity head of the sentence as in (1).¹

- (1) B just came home with groceries. A is looking through them.
A: You didn't buy yogurt.
B: (No,) I DID buy yogurt.

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¹Small caps indicate the word that bears the nuclear, or final, pitch accent. A few examples have crucial pre-nuclear pitch accents indicating separate F-marked words. These words will also be rendered in small caps.

Proposals for general theories of focus (e.g. Rooth, 1992; Schwarzschild, 1999; Büring, 2016b; Wagner, 2020; Kratzer & Selkirk, 2020, among many others) rarely if ever discuss polarity focus, while theories of verum focus (e.g. Höhle, 1992; Romero & Han, 2004; Gutzmann & Castroviejo Miró, 2011; Taniguchi, 2017, among many others) account for polarity focus data via a discourse operator VERUM that has nothing to do with focus. This seems to suggest that one of the following two statements are true: (i) polarity focus is a trivial phenomenon that can be accounted for by any general theory of focus without much ado; (ii) prima facie examples of polarity focus exhibit meaning effects that could never be accounted for within a general theory of focus.

Examples like (1) make statement (i) seem plausible. After all, (1) seem innocuous enough—there is a contrast between B’s focus-marked utterance and A’s antecedent utterance only at the location of focus prominence, as required by general focus theories. Alter the location of contrast as in (2), and the polarity focus utterance in (2a) becomes infelicitous, the alternative production in (2b) being the preferred intonational pattern, as a unified theory would predict.

- (2) B just came home with groceries. A is looking through them.
 A: You bought sour cream.
 a. B: # (No,) I DID buy yogurt.
 b. B: (No,) I bought YOGURT.

Despite the straightforwardness of (1) and (2), I will demonstrate that fitting polarity focus into a broader theory of focus is not as simple as it seems. The following challenges will be discussed: polarity focus is optional in some cases despite that theories of focus predict focus marking to be obligatory when possible; polarity focus emphasizes the truth of propositions it appears in, an effect that does not obviously follow from a general theory of focus; the unique nature of the alternatives in polarity focus leads to patterns of deaccenting in negative sentences that cannot be accounted for by a general theory of focus that does not include requirements specific to givenness.

These challenges make statement (ii) seem plausible, and indeed optionality and emphasis on truth have been invoked to motivate non-focus VERUM accounts. The idea is that, while the polarity of a clause can be focused, a fact that should be accounted for via a general theory of

focus, optionality and truth emphasis reveal that in many cases the pitch accent on the auxiliary is not focus marking at all, but the audible reflex of a VERUM operator that contributes non-at-issue information relating the propositional content to the common ground. With the empirical pie carved this way, we see that statements (i) and (ii) could be simultaneously true: actual examples of polarity focus are trivially accounted for via general focus theory while the more challenging examples are not to be explained as focus at all, but via a VERUM operator.

I will argue against (ii), instead showing that, even without a VERUM operator to handle the challenging cases mentioned above, polarity focus can be accounted for within a general theory of focus and givenness deaccenting. The result is a more parsimonious theory that avoids various challenges faced by VERUM operator accounts.

But I will also argue against (i): It turns out that the lessons learned from polarity focus interact with cutting edge work in the semantics and pragmatics of focus in interesting ways (Wagner, 2006, 2012b; Katzir, 2013; Büring, 2016c, 2019; Kratzer & Selkirk, 2020). Bringing polarity focus fully under the umbrella of a general theory of focus provides a window onto several challenging topics central to the semantics and pragmatics of focus: truly contrastive focus and its relationship to answer focus, obligatory vs. optional focus and the mechanism that enforces focus marking (maximize presupposition), the relationship between contextually salient antecedents and evoked or accommodated antecedents, emphasis, and the role of givenness deaccenting. These considerations lead me to propose a theory of focus that makes use of the notion of innocent exclusion from Fox 2007. The theory builds on work by Katzir (2013) who applies exhaustivity and innocent exclusion to focus, but it shares more with Wagner (2006, 2012b) and Büring (2016c, 2019), who don't make use of the EXH operator, but instead argue that focus imposes a stricter requirement on antecedents than assumed in e.g. Rooth 1992.

In section 2, I will briefly describe the most straightforward way to bring polarity focus into the Roothian fold, namely treating polar questions as the antecedents to polarity focus, and demonstrate challenges to that view. Then in section 3, I will suggest an alternative application of Rooth's theory in which the antecedent to polarity focus is always the contrastive polarity alternative. To

get a better handle on why polarity focus is always contrastive, I explore recent work on true contrastive focus in section 4, where I develop a novel theory of focus that builds on earlier work and can explain a wide array of facts, ranging from the famous convertible examples of true contrast to obligatory focus in answers to WH questions and optional focus in answers to polar questions. Then in section 5, I turn to novel examples of polarity focus in negative sentences, and show that the theory of focus alone is not equipped to explain them. I argue that they speak in favor of maintaining separate accounts of focus and givenness. In section 6, I explain how the emphasis on truth inference that is usually ascribed to verum focus can be made to follow from a general theory of focus as applied to polarity focus. Finally, in section 7, I compare accounts of verum focus to the one developed here, pointing out challenges for VERUM operator approaches.

2 Polar questions as antecedents to PolF utterances

(1) and (2) show that, like other kinds of focus prominence shifting, polarity focus (PolF) requires a salient antecedent. I will start by exploring a possibility that has been suggested in prior work (Wilder, 2013; Samko, 2016a), namely that polar questions provide the salient antecedent required by PolF. The problem for this view is that PolF appears to be unexpectedly optional in some responses to polar questions.

I assume with Laka (1990); Roelofsen & Farkas (2015); Holmberg (2016) and others that the polarity of a sentence is encoded in a polarity head, a functional projection which c-commands the TP. The polarity phrase (PolP) can only be headed by either positive polarity (+) or negative polarity (-). Positive polarity denotes the identity function from propositions to propositions, while negative polarity is negation (cf. Wilder 2013 for a similar assumption).

- (3) a. $\llbracket + \rrbracket = \lambda p_{st}. p$
 b. $\llbracket - \rrbracket = \lambda p_{st}. \neg p$

In agreement with Wilder (2013) and Samko (2016a), I take polarity focus to be F-marking on the

polarity head.

I will make use of Rooth's (1992) alternative semantics for focus: in addition to the ordinary semantic value of a structure ϕ , ϕ also has a focus semantic value, $[[\phi]]^f$. $[[\phi]]^f$ is calculated by replacing the denotation of the F-marked constituent within ϕ with the set of all objects of the same semantic type, and combining sets of semantic objects via pointwise function application, producing a set of focus alternatives. A presuppositional operator \sim adjoins to ϕ along with a variable (Γ for sets of semantic objects, or γ for individual objects), which gets its content from a discourse antecedent in the context. \sim requires that the set of focus alternatives $[[\phi]]^f$ relate to Γ/γ in one of the two following ways.

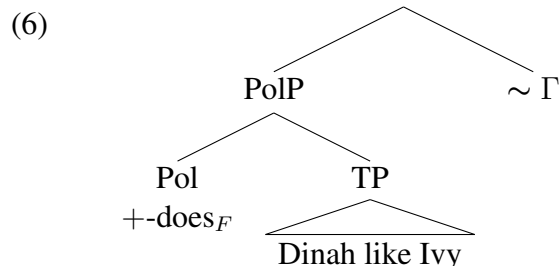
- (4) Rooth's (1992, p. 93) presupposition for \sim :
- a. $\phi \sim \Gamma$ presupposes that a contextually given Γ is a subset of the focus semantic value of ϕ ($\Gamma \subseteq [[\phi]]^f$), and that Γ contains both the ordinary semantic value of ϕ and an element distinct from it.
 - b. $\phi \sim \gamma$ presupposes that a contextually given γ is a member of the focus semantic value of ϕ ($\gamma \in [[\phi]]^f$), and that γ is distinct from the ordinary semantic value of ϕ .

To see how this can be applied to polarity focus, consider the dialogue below in which B's PolF utterance felicitously answers A's polar question.

- (5) A: Does Dinah like Ivy?
B: Dinah DOES like Ivy.

Both Wilder (2013) and Samko (2016a) argue that the antecedent for PolF is always a corresponding polar question, whether explicit or implicit. Here's how this could work using Rooth's theory: Suppose, following Hamblin (1973) among others, that the semantics of a polar question is a set of two propositions, the positive and negative answers, $\{p, \neg p\}$. Therefore by (4a), the focus semantic value of B's PolF utterance needs to minimally be the set $\{p, \neg p\}$. Let (5)B have the structure in (6):²

² To get linearization right, we need to assume that in the pronounced structure, the subject raises to spec-PolP. I assume that at LF the subject reconstructs to its lower position. This will allow structures containing functions



I assume that the set of focus alternatives for $+does$ is the domain of functions from propositions to propositions, $D_{\langle st, st \rangle}$, restricted down to just the polarity heads $+$ and $-$.³ Let p represent the proposition *that Dinah likes Ivy*. Composing the focus semantic value of TP with that of Pol via pointwise function application results in a set of focus alternatives at the PolP node, $\{p, \neg p\}$. This set is identical to the denotation of A’s polar question, and thus the presupposition in (4a) is met and (5) is predicted to be felicitous. This is how Rooth’s (1992) set case presupposition in (4a) can be applied to polarity focus.⁴

The problem for Wilder’s and Samko’s view that the antecedent for PolF is always a corresponding polar question is that there is an unexpected asymmetry between answers to polar questions and WH-questions. The use of focus to make an answer congruent to a WH-question appears

from propositions to propositions like negation to be interpreted such that the function takes a proposition denoting constituent ϕ as a complement, e.g. [*not* $[\phi]$].

³See Samko 2016a for an argument that modal focus and polarity focus are distinct phenomena, and therefore that modals should not be among the alternatives to focused polarity heads. Modals aside, it is clear that the set of alternatives to polarity heads cannot include just any function imaginable in $D_{\langle st, st \rangle}$, since many infelicitous dialogues would be incorrectly predicted to be felicitous. For example:

- (i) A: Who does Dinah like?
 B: # Dinah DOES like Ivy.

For each answer to A’s WH-question, there is a constant function mapping any proposition to it, so including any function in $D_{\langle st, st \rangle}$ as an alternative to the polarity head would incorrectly predict (i) to be felicitous. This is a general problem for F-marked constituents denoting higher types, as discussed previously by Fox & Katzir (2011), Büring (2016b, p. 117ff), and Bruno (2017). Focus alternatives minimally need to be restricted to those denoted by natural language expressions.

⁴Samko (2016a) also uses a Roothian framework, but assumes a third value for polarity heads, null polarity, which she assigns to polar questions. She then applies Rooth’s individual case presupposition in (4b), arguing that null and positive polarity contrast in the relevant way to satisfy the presupposition. Samko never provides semantic values for these polarity heads, but the assumption is clearly that the polar question antecedent is a member of the focus semantic value of the PolF utterance, distinct from the latter’s ordinary semantic value because it has null polarity. This approach faces technical issues: supposing positive polarity is the identity function and null polarity means that the polarity head is empty (this seems to be what Samko intends), the antecedent and the PolF utterance will each denote p . Thus they will not contrast semantically as required by (4b), and the focus presupposition will not be satisfied. Perhaps the account could be revised so that null polarity is instrumental in producing the denotation of a polar question, but then the account should rely on the set case presupposition, as described in the main text above.

to be obligatory, while PolF does not appear to be obligatory in response to polar questions.

- (7) A: Who submitted her paper?
a. B: IVY submitted her paper.
b. B: ?? Ivy submitted her paper.

In (7), focus prominence must be shifted to the constituent corresponding to the WH-word in the question. Compare this to a similar dialogue with a polar question.

- (8) A: Did Ivy submit her paper yesterday?
a. B: (Yes,) She DID submit her paper.
b. B: (Yes,) She submitted her paper. (based on Gutzmann et al., 2017, 17)

Gutzmann et al. (2017) report that (8b) is felicitous, while (8a) is not unless A's question conveys some bias for the negative answer. My own intuition is that (8a) is fine even without obvious negative bias in the question. However, the crucial point is that (8b) is acceptable, certainly much more so than (7b). Wilder also gives examples demonstrating this fact:

- (9) A: Does she work hard?
a. B: (Yes,) She DOES work hard.
b. B: (Yes,) She works hard. (based on Wilder, 2013, 169)

For comparison, I've constructed a similar WH-question dialogue:

- (10) A: Who works hard?
a. B: IVY works hard.
b. B: ?? Ivy works hard.

Again, (9b) is felicitous, certainly much more so than (10b). Unified theories of focus explain the obligatory prominence shifts in (7) and (10) by treating the preceding question as the focus antecedent (I'll rehearse how in a moment). Thus if the polar question is the antecedent for polarity

focus, we expect obligatory PolF in (8) and (9) as well, contrary to fact.

Beyond this unexpected asymmetry, Wilder (2013) agrees with Gutzmann et al. (2017) that the use of PolF in response to a polar question as in (9a) is either infelicitous or at least degraded. Both suggest that it needs to be motivated by a prior dispute over p . While I agree that making p contentious in the context increases the likelihood of a PolF response, I don't share the intuition that this is required. I think this dispute is caused by a perennial issue in the study of focus, the issue of how focus antecedents are made available in a context, which I'll return to in section 4. In the meantime, even if researchers disagree on the felicity of PolF in (8a) and (9a), there is agreement on the key fact that PolF is *not required* in response to polar questions, i.e. that (8b) and (9b) are felicitous, which is enough to cause concern for a theory that takes questions to trigger obligatory focus marking in their answers.

To see why the contrast between answers to WH-questions and polar questions is important, let's first consider a possible explanation for the judgments in (7) and (10) found in the literature (e.g. Schwarzschild, 1992, 1999; Truckenbrodt, 1995; Wagner, 2005, 2006; Sauerland, 2005; Mayr, 2010). Prominence shifting induces a presupposition. The idea is that the principle of maximize presupposition (Heim, 1991; Percus, 2006; Sauerland, 2008; Schlenker, 2012) in (11) makes focus marked utterances preferable to truth-conditionally equivalent but non-focus marked utterances, as long as the focus presupposition is met.

- (11) *Maximize presupposition:*
If a sentence S is a presuppositional alternative of a sentence S' and the context c is such that
- a. the presuppositions of S and S' are satisfied within c ;
 - b. S and S' are truth-conditionally equivalent relative to c ;
 - c. S carries a stronger presupposition than S' ,
- then S should be preferred to S' . (Schlenker, 2012, 393)

Maximize presupposition depends on a means of identifying which expressions compete with one another. Perhaps the right approach for generating alternatives for maximize presupposition calculation relative to focus marking is to compare all possible focus markings for a structure.

Schwarzschild (1992) basically makes this suggestion, with Truckenbrodt (1995) further arguing that all possible domains of focus need to be considered as well.⁵ If this is right, then two of the alternatives compared in a context like (7) will be (7a) and (7b). By Rooth’s set case presupposition in (4a), (7a) presupposes that the set of propositions representing A’s WH-question is a subset of the focus semantic value of (7a). (7b) lacks this presupposition, but otherwise the two utterances are truth-conditionally equivalent. Since (7a)’s presupposition is met in (7), maximize presupposition requires the speaker to use (7a) rather than (7b).

But if this is the account of the judgments in (7) and (10), and if polar questions are the antecedents to PolF utterances, then it is surprising that PolF is in fact optional in response to overt polar questions as in (8) and (9). This is a challenge to Wilder’s (2013) and Samko’s (2016a) accounts, as well as the one I just gave above using Rooth’s (1992) set case presupposition.

3 Contrasting alternatives as antecedents to PolF utterances

In search of a way forward, let’s consider Wilder’s (2013) examples in (12) and (13), which demonstrate uncontroversially felicitous uses of PolF answers to polar questions (CT stands for contrastive topic intonation, as discussed in Büring 2003).

- (12) A: I hear that he might not work hard. DOES he work hard?
 B: (Yes,) he DOES work hard. (Wilder, 2013, 169)

⁵It is worth wondering if there is a principled way of further limiting the alternatives to be compared. But it is not obvious how, as Kratzer & Selkirk (2020) note. For the empirical phenomena typically addressed in work on maximize presupposition, the alternatives are sometimes claimed to be determined by scales, e.g. $\langle a, the \rangle$, $\langle think, know \rangle$. In the case of focus in answers to WH-questions as in (7) and (10), we minimally need a scale of two maximize presupposition alternatives for focus marking, namely a focus-marked utterance, such as (7a), and its non-focus-marked counterpart, such as (7b). However, the alternatives should ultimately include other possible F-markings of the same structure, such as the overfocused answer IVY *submitted her* PAPER. One member of the scale would have to be null (lack of focus marking), which seems undesirable, though not unprecedented. Eckardt & Fränkel (2012) use maximize presupposition to analyze the competition between sentences with additive particles such as *too* and those that lack them. Another possibility is to avoid scales altogether, and, following Rouillard & Schwarz (2017), determine alternatives for maximize presupposition structurally à la Katzir 2007, however more work would be needed. Katzir’s algorithm generates stronger alternative structures by making substitutions or deletions, not additions. This works for overfocussing since the stronger alternative is the one with fewer F-markers. However, the weakest structure will be the non-focus-marked one as in (7b). Finding a presuppositionally stronger alternative to compare it against such as (7a) requires the *addition* of an F-marker and $\sim \Gamma$, not a substitution or deletion.

- (13) A: Is he a good candidate? Does he work hard?
B: (Yes,) he DOES [WORK HARD]_{CT} (but his results are miserable . . .)
(Wilder, 2013, 169)

What these examples have in common is the presence of a salient alternative to the PolF utterance with contrasting polarity. In (12), the possibility that he does not work hard is contextually salient thanks to A mentioning it and using polarity focus in the question. In (13), the combination of PolF with contrastive topic marking on *work hard* conveys that there is something else that the candidate does not do. In this case, he does not get good results. This commonality between (12) and (13) points to the following hypothesis.

- (14) *PolF licensing condition:*
Polarity focus is only licensed by contrast between the PolF utterance and an antecedent that is the opposing polarity focus alternative.

If (14) is correct, then (12) and (13) are predicted to be felicitous. (14) would also explain Wilder's (2013) and Gutzmann et al.'s (2017) intuitions that conflict over p with some bias toward $\neg p$ in the context renders PolF felicitous in response to polar questions. Gutzmann et al.'s VERUM operator account can be taken to have (14) as a consequence. I will address this in section 7.2.

For additional evidence that (14) is on the right track, consider that in cases where the contrastive polarity antecedent is the only obvious antecedent, PolF is strongly preferred to default prominence. For example:

- (15) A: Aida hasn't eaten breakfast.
a. B: She HAS eaten breakfast.
b. B: ?? She has eaten breakfast.

The PolF utterance in (15a) is strongly preferred to the default prominence of (15b) in this context. This is predicted by the salience of A's contrastive antecedent coupled with the focus presupposition and the principle of maximize presupposition.⁶

⁶The relevant contrast is between a PolF utterance with otherwise standard declarative intonation in (15a) and

We can also consider repetitions of assertions such as in (16).

- (16) A: Dinah likes Ivy.
a. B: ?? Dinah likes Ivy.
b. B: DINAH likes Ivy.
c. B: Dinah DOES like Ivy.

The sentence *Dinah likes Ivy* is somewhat odd when repeated with default prominence as in (16a). This is perhaps due to the fact that that proposition has just been asserted by A, so it is not clear what B's assertion contributes. Prominence shifts as in (16b) and (16c) save a re-assertion of *p* by making informative contributions via their focus presuppositions (Schlenker, 2012). They signal a relevant alternative that the focus utterance contrasts with, such as *Moira likes Ivy* or *Dinah does not like Ivy*. B informs A of the relevance of these alternatives, emphasizing the importance of their contrast with the focus utterance.

Samko (2016a) claims that examples like (16c) are infelicitous, however in Samko 2016b, she reports such an example:

- (17) A: He was 11-for-16 on field-goal tries last season [...]. He hit a career-long 53-yarder against Washington.
B: (That's right) He DID hit a career-long 53-yarder against Washington.
(Samko, 2016b, 8)

Samko claims that B's utterance is infelicitous because it doesn't contrast with the polarity of A's utterance, but it becomes felicitous if B has forgotten about the event, though she doesn't have an explanation for why B's forgetfulness matters. B's forgetfulness matters because it enables the inference that B has accidentally come to believe that he did *not* hit a career-long field goal against Washington, which is the proper contrastive antecedent for PolF. However, the antecedent could arise in other ways, for example if B intends to reinforce A's assertion of *p* by drawing attention to

a default prominence utterance with standard declarative intonation in (15b). A close variant of (15b) could bear other intonational tunes such as the contradiction contour (Lieberman & Sag 1974, [redacted]) which would render it felicitous despite lacking PolF.

its contrast with $\neg p$, like (16c) above.

Unlike optional PolF in response to polar questions as in (8) and (9), the preceding examples show that contexts that make the contrastive polarity antecedent $\neg p$ either highly salient or the only salient antecedent render PolF strongly preferred, as predicted by (14).

But we still don't know *why* (14) holds. Rooth's (1992) individual case presupposition in (4b) already correctly predicts a PolF utterance to be felicitous when there is an antecedent with the meaning of the opposite polarity alternative. But there is nothing in Rooth's theory that predicts PolF to *require* a contrastive antecedent, so (14) is not yet explained. My goal is for (14) itself to play no official role in the grammar, but to just fall out as a consequence of the general theory of focus.

Besides the question of why (14) holds, we have a second question: Why is PolF optional in responses to polar questions? On the assumption that (14) is correct, the fact that polar questions themselves do not make the contrastive antecedent available still does not immediately predict optionality.

The answer will be related to another case of optional focus marking:

- (18) A: Yesterday, Jolene and Dolly pitched the tent. What happened today?
a. B: JOLENE pitched the tent.
b. B: Jolene pitched the tent. (Klassen & Wagner, 2017, 310)

In (18), B's utterance can contrast with A's antecedent utterance in the subject position, leading to the prominence shift in (18a). On the other hand, B can take their utterance not to stand in contrast with A's, in which case default prominence is the preferred option as in (18b). Klassen & Wagner (2017) demonstrate experimentally that naïve speakers produce both prominence patterns in the context of (18). They also demonstrate experimentally that repeated sentences normally bear default prominence using examples like (19):⁷

⁷Default prominence is felicitous in (19) unlike in (16a) because *Jolene pitched the tent* is merely given, not asserted or presupposed. Moreover, the PolF utterance *Jolene DID pitch the tent* would be infelicitous in (19), unlike in (16a). If a contrastive antecedent is not available, then all-given sentences bear default prominence.

- (19) A: Yesterday, Jolene pitched the tent. What happened today?
B: Jolene pitched the tent. (Klassen & Wagner, 2017, 309)

Klassen & Wagner (2017, 310) make the following general remarks about focus marking:⁸

“[T]he use of prominence shifts reveals something about the alternatives entertained by the speaker, and hence about which type of meaning they try to convey. A prominence shift [as in (18a)] conveys a contrast to an alternative subject, while the lack of a prominence shift [as in (18b)] conveys that they consider the present utterance to not stand in contrast with the previous utterance. This should lead to different pragmatic inferences based on the pronunciations.”

I believe that something similar is happening with answers to polar questions.

4 A convertible theory of focus

So we have two questions of interest:

1. Why does polarity focus require a contrastive antecedent?
2. Why is polarity focus optional in response to polar questions while answer focus is obligatory in response to WH questions?

To answer question 1, I will argue that the hypothesis in (14) that polarity focus is necessarily contrastive holds because all focus marking requires true contrast. This argument will build on work on the proper characterization of contrastive focus by Wagner (2006, 2012b), Katzir (2013), and Büring (2016c, 2019). Careful consideration of the data that motivates this work as well as new data will help to clarify how focus antecedents are made available, and the relationship between salient and identifiable or evoked antecedents. This, in combination with the logical relationship between answers to polar questions and WH questions will help us to answer question 2.

⁸Klassen & Wagner’s (2017) observation that default prominence conveys that the utterance does not stand in contrast with an antecedent may be thought of as an antipresupposition along the lines of Percus 2006 by applying maximize presupposition to focus as discussed in section 2 above.

4.1 Background on convertibles and true contrast

Consider the following examples from Wagner 2006, 2012b, which suggest that focus marking requires not only contrast, but *true* contrast, with the proper characterization of “true” contentious in the literature.

- (20) A: Mary’s uncle, who produces high-end convertibles, is coming to her wedding. I wonder what he brought as a present.
- a. B: He brought a CHEAP convertible.
 - b. B: # He brought a RED convertible.
 - c. B: He brought a red CONVERTIBLE. (Wagner, 2006, 297)

Suppose that A’s utterance makes available the antecedent *that Mary’s uncle brought a high-end convertible*, because that answer to A’s embedded question seems likely given the context, and because all of the expressions needed to produce that propositional content are given. Given the availability of this antecedent, Rooth’s (1992) individual case presupposition in (4b) is met by (20a), thus it is accurately predicted to be felicitous. However, if (20a) is predicted to be felicitous, then so is (20b), contrary to fact. The problem is that Rooth’s \sim requirement is too permissive: *high-end*, *cheap*, and *red* are all of type $\langle et \rangle$, which is enough for the antecedent to satisfy the focus requirement for both (20a) and (20b). Other general theories of focus marking are also too permissive (e.g. Kratzer, 1991; Schwarzschild, 1999; Rooth, 2015; Kratzer & Selkirk, 2020). Moreover, a theory that allows pure givenness deaccenting in the absence of any focus marking would also predict (20b) to be felicitous contrary to fact, since *convertible* is given in the context.

To account for (20), Wagner (2006, 2012b) strengthens the focus requirement to one that requires a true contrast between the focus utterance and the antecedent in that each are a distinct cell in a single partition. For example, the set of cheap convertibles and the set of high-end convertibles are each cells in a partition of convertibles, but the sets of red and high-end convertibles overlap and so are not. Thus, (20a) meets Wagner’s contrastive focus requirement while (20b) does not. I will follow Wagner in positing a strengthened focus requirement.

Katzir (2013) argues, contra Wagner, that Rooth’s original formulation does not need to be

strengthened if we understand the focus utterance to be exhaustified via an EXH operator like that in Fox 2007, which filters out non-innocently excludable alternatives. Here is the definition of EXH used by Katzir:

- (21) *Exhaustivity and innocent exclusion:*
- a. $\llbracket \text{EXH} \rrbracket^o(p)(A)(w) \Leftrightarrow p(w) \ \& \ \forall q \in \text{IE}(p, A). \neg q(w)$
 - b. $\text{IE}(p, A) := \bigcap \{ \text{MaxAlts} \subseteq A \mid \text{MaxAlts} \text{ is a maximal set in } A \text{ s.t. } \neg \text{MaxAlts} \cup \{p\} \text{ is consistent} \}$
 - c. $\neg \text{MaxAlts} := \{ \neg p \mid p \in \text{MaxAlts} \}$

The observation is that *high-end* is an innocently excludable alternative to *cheap* because it is present in every maximal set of alternatives to (20a) that, when negated, can be consistently combined with the meaning of (20a). (20a) is parsed with EXH (roughly meaning *He only brought a CHEAP convertible*), and therefore implies that the antecedent *He brought a high-end convertible* is false. As for (20b), both *cheap* and *high-end* are alternatives to *red*. On the assumption that all convertibles are either *cheap* or *high-end*, clearly not both of these alternatives can be present in a maximal set of alternatives that, when negated, is consistent. So some *MaxAlts* sets will contain *cheap*, and the others *high-end*. Thus neither is an innocently excludable alternative to *red*. Therefore, the exhaustified (20b) does not entail the falsity of the antecedent, and so we can't understand how (20b) relates to the prior discourse, leading to infelicity. I will follow Katzir by applying the notion of innocent exclusion to focus.

Büring (2016c, 2019) builds on Katzir 2013 by recasting innocent exclusion in terms of “proper questionhood”, but also builds on Wagner 2006, 2012b by proposing a strengthened true contrast focus requirement, rather than using the EXH operator.

- (22) $\phi \sim \Gamma$ is well-formed only if there is a value α , the FOCAL TARGET, for Γ s.t.
- a. α contains at least one element that is a member of the focus semantic value of ϕ , and that is distinct from the ordinary semantic value of ϕ . (**Root's condition**)
 - b. α is a **proper question**
 - c. α is **relevant** to the participants at the time of the utterance of ϕ
 - d. the participants can unambiguously **identify** α given the utterance of ϕ

(22a) is roughly the individual case presupposition from Rooth 1992.⁹ (22b) and (22c) are meant to flesh out the sense in which a contrast is “true”. (22d) replaces the requirement that a focus antecedent be “salient” with the requirement that it merely be “identifiable”. I will consider this theory in detail because the account I propose will build on it in some key ways, and contrast with it in other key ways.

Here is Büring’s definition of “proper question”:

- (23) A set of propositions Q is a **proper question** iff for any $p \in Q$, $p \setminus \bigcup(Q \setminus \{p\}) \neq \emptyset$
 (‘ p and none of the others in Q ’ is coherent) (Büring, 2019, 23)

Focusing on (20a), the idea is that the focal target α that participants can identify is $\{that\ he\ brought\ a\ cheap\ convertible,\ that\ he\ brought\ a\ high-end\ convertible\}$. Clearly, “He brought a cheap convertible and not a high-end convertible” (and vice versa) is coherent, as required by (23). So far so good. However, (23) does not yet rule out (20b). The problem is that the identifiable focal target for (20b) is $\{that\ he\ brought\ a\ red\ convertible,\ that\ he\ brought\ a\ high-end\ convertible\}$, which also meets (23). Intuitively, the difference between the two focal targets is that (20a)’s is a complete question about car quality, while (20b)’s is a random subset of answers to two different questions, one about quality and another about color. Büring (2019, 26) strengthens (23) by requiring that questions that are incomplete in this sense be completed with propositions that are found by exhaustifying the disjunction of all of the focus alternatives to the focus utterance and the focus antecedent. So the identifiable focal target for (20b) is actually $\{that\ he\ brought\ a\ red\ convertible,\ that\ he\ brought\ a\ non-red\ convertible,\ that\ he\ brought\ a\ high-end\ convertible,\ that\ he\ brought\ a\ non-high-end\ convertible\}$.¹⁰ This question is not coherent in the sense of (23), since e.g. if the

⁹Büring (2016c, 2019) restates Rooth’s presupposition in terms of his novel theory of focus semantics, unalternative semantics. However, as noted in Büring 2019, issues related to the pragmatic licensing of focus marking are independent of the particular theory of focus un/alternatives, so I abstract away from these details here.

¹⁰Focus alternatives to “He brought a high-end convertible,” are calculated as if *high-end* were F-marked despite that it actually isn’t F-marked anywhere in the context. Büring’s formal definition isn’t implemented in terms of focus alternatives, but term answers; see Büring 2019, 23ff. for details. My goal here is merely to provide an intuitive

car were not high-end and not non-high-end, then there would be no remaining possibilities for the way the car might be. So the apparent focal target for (20b) is not a proper question, explaining the infelicity of that focus utterance.

Despite the seeming success of the proper question requirement in explaining (20), (22b) turns out to not carry much weight in Büring's (2019) theory. The reason is that Büring assumes that, given the focus utterance, it is always possible to unambiguously identify a proper question α by combining the denotation of the focus utterance with the exhausted disjunction of its focus alternatives. That is, in the context of (20a), the identifiable proper question *{that he brought a cheap convertible, that he brought a non-cheap convertible}* can serve as α , while for (20b), the identifiable proper question *{that he brought a red convertible, that he brought a non-red convertible}* can serve as α . Given this assumption, neither the identifiability constraint (22d) nor the proper question constraint (22b) in fact predict (20b) to be infelicitous.

The condition that bears most of the weight in (22) beyond Rooth's requirement is the notion of relevance in (22c). The idea here is that a question α counts as relevant if the true answer would matter to the discourse participants. Given that Mary's uncle produces high-end convertibles, whether he brought a high-end convertible or a cheap convertible matters, as bringing a cheap convertible would be surprising. Thus (20a) meets all of the criteria for a successful prominence shift. But it is less clear how it matters whether he brought a red or a non-red convertible, thus (20b) fails to meet the relevance requirement in (22c) and is infelicitous. Büring points out that the notion of relevance here must be stronger than informativity, since saying that he brought a red convertible as in (20c) is informative enough to be felicitously asserted. It's the contrastive focus that isn't acceptable. "The point is that [the color of the convertible] is not *crucial*. Nothing else of interest would follow if the convertible had been non-red." (p. 21) But if it had been non-high-end, something of interest follows (her uncle is stingy, her uncle has a grudge against her parents and he finally got back at them, etc.). Note also that Büring's relevance requirement is stronger than Gricean relevance, since (20c) apparently doesn't run afoul of the maxim of relation. Büring's ac-

understanding of the theory.

count of true contrast then mostly boils down to making proper question focus antecedents trivially identifiable, and strengthening Rooth's requirement via a non-Gricean (or perhaps extra-Gricean) notion of contextual relevance.

Büring applies his account to answer focus as well.

- (24) A: Who likes Ivy?
B: DINAH likes Ivy.

B's focus marked utterance makes a proper question identifiable, *{that Dinah likes Ivy (and no one else does), that someone other than Dinah likes Ivy}*. The answer to this question is clearly relevant to A, as it is a proper subquestion of A's WH question. Thus answer focus is correctly predicted by this account.

Given that this theory unifies true contrastive focus with answer focus, could it also enable an explanation of contrastive polarity focus and its optionality in response to polar questions? Unfortunately, no. To see why, consider the following modified convertible example:

- (25) A: Mary's uncle, who produces high-end convertibles, is coming to her wedding. I wonder what he brought as a present.
B: # He brought a HIGH-END convertible.

The question *{that he brought a high-end convertible, that he brought a non-high-end convertible}* is identifiable, proper, and relevant, so the theory in (22) predicts (25)B to be acceptable contrary to fact. Note that a change to the context would render B's utterance intuitively felicitous.

- (26) A: Mary's uncle, who is known for giving people cheap convertibles despite producing high-end convertibles for a living, is coming to her wedding. I wonder what he brought as a present.
B: He brought a HIGH-END convertible.

Adding that Mary's uncle usually gives cheap convertibles sets up a contrast with B's focus utterance in (26), making it felicitous. An identifiable, proper, and relevant question is not enough; a

salient, contrastive antecedent seems to help.

The theory in (22) runs into the same problem with optional polarity focus in response to polar questions, discussed in sections 2 and 3. The issue is that a relevant proper question is easily identifiable from a polarity focus answer to a polar question, namely the polar question itself, and so all of the requirements in (22) are met. With the assumption of a mechanism to force focus marking, such as maximize presupposition in section 2, polarity focus is incorrectly predicted to be required. Again, what seems to matter is whether or not the contrastive alternative antecedent is salient, as I suggested in section 3, but Büring’s theory makes no provision for the role of salience in identifying a focus antecedent.

Büring (2019) suggests that it is possible that his theory “can ultimately be simplified by unifying some of its sub-clauses.” (p. 18) In the next section, I propose that the focus condition only requires the antecedent to be an innocently excludable focus alternative. I agree that antecedents can be identified in some cases, but this is not part of the focus condition proper, just an elaboration of how antecedents are made available.

4.2 True contrastive focus

Here is the key definition of innocent exclusion given in (21) above, redefined to operate directly on the focus alternatives to the utterance ϕ :

- (27) *Innocent exclusion*

$$\text{IE}(\phi) := \bigcap \{ \text{MaxAlts} \subseteq \llbracket \phi \rrbracket^f \mid \text{MaxAlts} \text{ is a maximal set in } \llbracket \phi \rrbracket^f \text{ s.t. } \neg \text{MaxAlts} \cup \{ \llbracket \phi \rrbracket^o \} \text{ is consistent} \}$$
 a. $\neg \text{MaxAlts} := \{ \neg p \mid p \in \text{MaxAlts} \}$

Here is a first pass at the proposed focus requirement:

- (28) *Focus condition (preliminary)*
 $\phi \sim \gamma$ is felicitous only if there is an antecedent with meaning γ s.t.
 $\gamma \in \text{IE}(\phi)$

The focus requirement imposed by (28) is that γ is a member of the innocently excludable alternatives to ϕ . This means that, if ϕ were exhaustified, then it would entail the negation of the antecedent γ .

From the discussion of Katzir 2013 above, we already know that (28) can explain the convertible examples in (20). However unlike Katzir, I do not assume that the focus utterance is parsed with EXH. Rather, focus directly requires the antecedent to be a member of $\text{IE}(\phi)$. The focus antecedent is a member of $\text{IE}(\phi)$ for (20a), but not for (20b), so (28) predicts the intuitions.

However, given that just assuming that the focus utterance is actually exhaustified achieves the same result for these and other examples, why have I baked innocent exclusion into the requirement imposed by \sim ? Consider the following:

- (29) A: Her uncle brought a high-end convertible.
B: Yeah, and he brought a CHEAP convertible.

We might think of B's use of focus here as additive (note that *too* could easily be added to the end of B's utterance, though it doesn't have to be). B is agreeing with A and adding another fact. Focus prominence on *cheap* seems to be obligatory. Katzir's account says that an EXH operator associates with focus, and only if the exhaustified utterance successfully excludes the antecedent is the focus utterance felicitous. But clearly "he brought a CHEAP convertible" is not intended to exclude A's antecedent utterance here. The account I offer in (28) makes no such prediction; it only requires that the antecedent is among the innocently excludable alternatives of the focus utterance.¹¹

Next consider the following example, due to [redacted] (p.c.):

- (30) A: Mary's uncle brought a convertible.
B: Yeah, he brought a RED convertible.

¹¹Perhaps a defense of Katzir's account could be offered if we assume that B's utterance simply isn't parsed with EXH. Katzir doesn't claim that focus utterances have to be exhaustified, just that if the specific example of "RED convertible" in (20b) is exhaustified, then we understand why the utterance is intuitively infelicitous. This is only the beginning to a defense of Katzir's view, as it leaves unexplained why (20b) can't be parsed without EXH, which should render it felicitous, contrary to fact.

Borrowing terminology from Büring 2016b, B’s utterance in (30) doesn’t really contrast with A’s, but elaborates on it. Of course, if some other color convertible were saliently expected in the context, say blue, then that could serve as the antecedent, satisfying (28). But (30) is perfectly felicitous without such a context. In such cases, (30) is explained just like Büring’s explanation of answers to WH questions like (24) above. B’s focus utterance makes its contrastive antecedent identifiable, here *that he brought a non-red convertible*. Note that this proposition is not actually a focus alternative of B’s utterance, just as the proposition *that someone other than Dinah likes Ivy* is not a focus alternative to “DINAH likes Ivy” in (24). Thus, neither of these propositions can be innocently excludable alternatives to their corresponding focus utterances according to (27). However, these propositions do bear a relationship to $IE(\phi)$. Suppose that there are only two innocently excludable alternatives in (30): *that he brought a blue convertible* and *that he brought a yellow convertible*. In this case, the hypothesized antecedent *that he brought a non-red convertible* is equivalent to the generalized union of the set $IE(\phi)$. Likewise, the hypothesized antecedent to (24) *that someone other than Dinah likes Ivy* is the generalized union of the set $IE(\phi)$. (28) can be revised to allow such antecedents, but first consider one more example.

- (31) A: Mary’s uncle either brought a blue convertible or a yellow convertible.
 B: No, he brought a RED convertible.

Suppose a realistic context for (31) in which there are many possible colors that a convertible could be. The focus antecedent for B’s utterance appears to be A’s utterance, which is the union of a subset of $IE(\phi)$. I will redefine the focus requirement (28) to allow the focus antecedent to be the generalized union of any member of the power set of $IE(\phi)$. Any member, that is, except for the empty set, which I remove to avoid predicting that focus is satisfied when there is no antecedent.

- (32) *Focus condition (final)*
 $\phi \sim \gamma$ is felicitous only if there is an antecedent with meaning γ s.t.
 $\gamma \in \{\bigcup X \mid X \in [\mathcal{P}(IE(\phi)) \setminus \{\emptyset\}]\}$

Note that $\text{IE}(\phi)$ is itself a proper subset of $\{\bigcup X \mid X \in [\mathcal{P}(\text{IE}(\phi)) \setminus \{\emptyset\}]\}$, so (32) covers previous examples in which γ is a member of $\text{IE}(\phi)$, as well as the new examples just discussed. In the following, I will still speak of “the innocently excludable alternatives” with the understanding that this includes not just individual members of $\text{IE}(\phi)$ but also the generalized union of any subset of $\text{IE}(\phi)$.

(32) answers question 1 from the beginning of this section, that is, it explains why a polarity focus utterance requires its contrastive polarity alternative as antecedent, as hypothesized in (14). The only innocently excludable alternative to a polarity focus utterance is its contrastive polarity alternative. Thus (14) falls out as a consequence of the theory of true contrastive focus developed here.

4.3 Salient antecedents vs. identifiable antecedents

Though different in some details, the moves I have made so far are similar to those made by Büring (2019) discussed above: I have strengthened the focus requirement via innocent exclusion (similar to proper questionhood), and I have assumed that, at least in some contexts, an antecedent that meets that requirement is available because it is merely identifiable, not salient.¹² As we saw before, the combination of these assumptions led to a challenge: if true contrastive alternatives are identifiable given a focus utterance, why can't *that he brought a non-red convertible* be identified as antecedent in the context of (20b), thus incorrectly predicting it to be felicitous? Büring's solution depends on a novel notion of relevance (I'll call it F-relevance), claiming that, while the proposition *that he brought a red convertible* is informative and relevant enough to assert, as in (20c), it is nevertheless not F-relevant because it is not crucial information in the sense that nothing else of interest follows from it, and thus focus prominence cannot be shifted to *red* as in (20b).

I part ways with Büring on F-relevance in part because, given that F-relevance must be distinct

¹²Technically, (32) is not strictly stronger than Rooth's (1992) individual case presupposition in (4b), since it is possible for an antecedent γ to meet the requirement in (32) without actually being a focus alternative to ϕ , that is, it's not necessarily the case that $\gamma \in \llbracket \phi \rrbracket^f$. But, (32) still relies on the focus alternatives $\llbracket \phi \rrbracket^f$ because $\text{IE}(\phi)$ relies on them. In fact, since $\text{IE}(\phi)$ is a subset of $\llbracket \phi \rrbracket^f$, γ is necessarily equivalent to the generalized union of a subset of $\llbracket \phi \rrbracket^f$, though not just any subset of $\llbracket \phi \rrbracket^f$, only the innocently excludable ones as captured by (32).

from the more familiar Gricean relevance, the new F-relevance requirement isn't completely clear. Büring suggests that it is not specific to focus, but a more general requirement on questions under discussion. However, Roberts's (1996/2012) classic work on that topic makes use of the Gricean notion of relevance. Moreover, whatever it is about F-relevance that blocks (20b), we obviously don't want it to also block (30), but it isn't clear that anything of interest follows from the convertible being red in (30) that wouldn't also follow in (20b). So the only criterion for F-relevance that Büring gives fails to distinguish (20b) from (30). Perhaps F-relevance could successfully be made more precise, but that is not the route I will pursue.

Instead, I explain the contrast between (20b) and (30), as well as other contrasts above, by arguing that the context of (20), but not (30), provides a highly salient, unignorable antecedent. For example, (20) sets up the expectation that the answer to A's question will be *that he brought a high-end convertible*. This is the salient antecedent. When B goes on to utter "He brought a RED convertible," we expect the antecedent to be among the innocently excludable alternatives. But it isn't, and apparently we are not free to identify a different, innocently excludable antecedent for (20b), so it is infelicitous. In (30), there is no such salient antecedent, and listeners are free to identify the most general contrastive antecedent, *that he brought a non-red convertible*.¹³ (25) also posed a problem for Büring's theory, and will also yield to the explanation I just gave for (20b): in (25), the salient antecedent *that he brought a high-end convertible* is not an innocently excludable alternative to the focus utterance, and it blocks a different antecedent from being identified, so (25) is infelicitous. Meanwhile, (26) demonstrates that changing the context to make the innocently excludable antecedent *that he brought a cheap convertible* salient renders the focus utterance "He brought a HIGH-END convertible" felicitous, as predicted by (32).

Let me make the interaction between salient and identifiable antecedents more precise:

- (33) The two sources of antecedents for focus marking
 a. *Salience*: The context makes a meaning γ salient.

¹³It is reasonable to ask why A's utterance in (30) is not itself an unignorable, salient antecedent. I will return to this at the end of this subsection, once we have a better handle on the relationship between salient and identifiable antecedents.

- b. *Identifiability*: The focus utterance itself enables the most general contrastive antecedent γ to be identified.

Büring (2016c, 2019) suggests that identifiability in (33b) should replace the more traditional notion of salience in (33a). I agree that focus antecedents can be identified on the basis of the focus utterance, or “evoked” as in Wagner’s (2020) terminology. But, the presence of a salient antecedent can derail or block this process of identification. To fully excavate the nuanced way in which these two sources for antecedents in (33) interact, it will be helpful to complete the original convertibles pattern in (20) with one more data point in (35b). I make the various antecedents explicit.

(34) A: Mary’s uncle, who produces high-end convertibles, is coming to her wedding. I wonder what he brought as a present.

Salient antecedent γ : *that he brought a high-end convertible*

(35) a. B: He brought a [CHEAP]_F convertible.

Identifiable antecedent γ' : *that he brought a non-cheap (high-end) convertible*

b. B: # He brought a [cheap CONVERTIBLE]_F.

Identifiable antecedent γ' : *that he brought something other than a cheap convertible*

c. B: # He brought a [RED]_F convertible.

Identifiable antecedent γ' : *that he brought a non-red convertible*

d. B: He brought a [red CONVERTIBLE]_F.

Identifiable antecedent γ' : *that he brought something other than a red convertible*

What we see in (35) is that, when the salient antecedent γ is an innocently excludable alternative to the focus utterance, narrow focus on the adjective as in (35a) is felicitous while NP focus as in (35b) is not. But when γ is not an innocently excludable alternative, the pattern flips: narrow focus on the adjective as in (35c) is not felicitous while NP focus as in (35d) is.

If only the salient γ were available as antecedent, then the contrast between (35a) and (35b) would be straightforwardly predicted on the account I’ve developed. (35a) truly contrasts with γ according to (32). (35b) also truly contrasts with γ , but it is overfocused, that is, it encodes a strictly weaker focus presupposition than (35a) and so is ruled out by maximize presupposition.

But we can still ask why the identifiable antecedent γ' can’t be used instead of γ . If it could,

we would expect (35b) to be felicitous, since it is not overfocused relative to γ' . I propose that the salient antecedent γ blocks this because it is itself an innocently excludable alternative to (35b). Given this, and the fact that γ entails (35b)'s γ' , it makes little sense to identify an antecedent γ' for B's focus utterance to contrast against. So we have to understand B's utterance as contrasting against the salient γ , but then maximize presupposition renders the presuppositionally stronger (35a) preferred, and (35b) is infelicitous. This is one way that a salient antecedent γ blocks the use of an identifiable antecedent γ' : when γ itself is an innocently excludable alternative to the focus utterance, γ can't be ignored in favor of γ' .

Unlike (35b), γ is not an innocently excludable alternative to the focus utterance in (35d), and so nothing I've said so far blocks (35d) from being evaluated relative to its identifiable antecedent γ' . This is good, since (35d) is intuitively felicitous, and if it had to be evaluated relative to the salient γ , it would be incorrectly predicted infelicitous. But this now raises a puzzle: γ is also not an innocently excludable alternative to (35c), so nothing I've said so far blocks (35c) from being evaluated relative to its identifiable antecedent γ' . But this is bad, since (35c) is intuitively infelicitous. We want to force (35c) to be evaluated relative to the salient γ .

Here is the key difference in how the salient antecedent γ relates to each of (35c) and (35d): If γ had satisfied the innocent excludability requirement in (32) for each of these focus utterances, then (35d) would be overfocused while (35c) would not. That is, (35c) is F-marked as if it were supposed to truly contrast with γ while (35d) is not. In this sense, we can think of γ as a strong focus alternative to (35c) but not (35d), despite that it isn't an innocently excludable alternative to either. Let's make the notion of "strong focus alternative" precise:¹⁴

- (36) Strong focus alternative:
 γ is a strong focus alternative to a focus utterance $\phi \Leftrightarrow$
 a. $\gamma \in \llbracket \phi \rrbracket^f$, and

¹⁴Note that the formulation of (36) is very similar to the contrast constraint in Schwarzschild (1992) and Truckenbrodt (1995), despite that it is put to very different use. There, the contrast constraint is meant to play the role that I have given to maximize presupposition here, namely enforcing that the strongest possible focus presupposition is marked. Here, the definition of strong focus alternative in (36) is a means of precisely identifying a relationship between a focus utterance ϕ and a non-innocently excludable salient antecedent γ such that γ cannot be ignored.

- b. there is no ϕ' such that $\gamma \in \llbracket \phi' \rrbracket^f$ & $\llbracket \phi' \rrbracket^f \subset \llbracket \phi \rrbracket^f$

Salient antecedent γ being a strong focus alternative to the focus utterance ϕ is another way that the use of the identifiable antecedent γ' is blocked. Because γ is a strong focus alternative to (35c), we feel as if the two should truly contrast. Since they don't, the use of F-marking is confusing and infelicitous. Note that upon hearing (35d), on the other hand, it is natural to assume that the red convertible is also high-end, that is, that γ is true. Because γ is not a strong focus alternative to (35d) (and also isn't innocently excludable), (35d) manages to signal that no contrast with γ was ever intended. So we assume B is signaling the contrast with γ' .

Here are the two conditions on how the salient antecedent affects the availability of the identifiable antecedent collected together.

(37) *Condition on focus antecedents:*

An antecedent γ' cannot be identified from the focus utterance ϕ if there is a contextually salient antecedent γ that is either:

- a. among the innocently excludable alternatives, or
- b. among the strong focus alternatives

For (35a), γ is both an innocently excludable alternative and a strong focus alternative, so it can't be ignored. It also satisfies (32), so (35a) is predicted to be felicitous. For (35b), γ is an innocently excludable alternative, so it can't be ignored. It satisfies (32), but (35b) imposes a weaker presupposition than (35a), and so maximize presupposition renders (35b) infelicitous. For (35c), γ is a strong focus alternative, so it can't be ignored. But it doesn't satisfy (32), so (35c) is predicted to be infelicitous. For (35d), γ is neither an innocently excludable alternative nor a strong focus alternative, so it can be ignored. γ' is identified, and it satisfies (32), so (35d) is predicted to be felicitous. Finally, we can now see why A's utterance in (30) can be ignored: it is neither an innocently excludable alternative, nor a strong focus alternative to B's focus utterance.

The result is that we have a simple theory of the requirement imposed by focus in (32), one that makes use of alternative semantics for focus, and imposes a strengthened true contrast requirement

on focus antecedents based on innocent excludability. Focus antecedents can be found both among contextually salient meanings, and by identifying or evoking them based on the focus utterance itself. (37) takes some first steps in exploring how contextually salient antecedents constrain the use of identifiable antecedents. These components come together to explain the problem with (20b): The problem isn't that whether or not he brought a red convertible isn't relevant—it is perfectly relevant, as (20c) shows. The problem is that (20b) is focus marked as if it should truly contrast with the salient antecedent. Because of this, (37) blocks an identifiable antecedent from being used. But according to (32), (20b) does not truly contrast with the salient antecedent, and so it is correctly predicted to be infelicitous.

4.4 Obligatory and optional focus in answers

Now that we have a theory of truly contrastive focus, we're ready to return to question 2 from the beginning of this section. Why is focus marking in answers to WH questions obligatory, while it is optional in answers to polar questions?

Recall Büring's (2019) explanation of answers to WH questions, restated in my terms: Questions themselves are not antecedents for focus marking. Rather, the focus marking in the answer is used to identify the most general contrastive antecedent by taking the generalized union of the set of innocently excludable alternatives. Here again is (24) with an added improperly focused answer:

- (38) A: Who likes Ivy?
a. B: DINAH likes Ivy.
b. B: # Dinah likes IVY.

For (38a), the identified antecedent is *that someone other than Dinah likes Ivy*. The contrast between this antecedent and (38a) is relevant since when combined, they produce a subquestion of the QUD set up by A's WH question. Focus on the object as in (38b) does not produce such a subquestion, so is irrelevant to the QUD and therefore infelicitous.

So far so good. However, my explanation needs to go beyond this. The reason is that all of this holds for polarity focus answers to polar questions as well: The identifiable antecedent is just the contrastive polarity alternative, which is relevant to the QUD set up by the polar question. Therefore, polarity focus in answers to polar questions should be just as obligatory as answer focus in (38a), and this explanation does not yet answer our question about obligatory vs. optional answer focus in these two cases.

The difference depends on the differing logical relationships between answers to WH questions and polar questions. Answers to WH questions do not immediately imply anything about the other possible answers to the question. For example, *that Dinah likes Ivy* does not tell us anything about whether other possible answers to the question in (38) are true or false. The subject focus in (38a) draws attention to the contrast between the content of the answer and the alternative answers to the question. Then, I propose that the intonational contour plays a further role in specifying how B takes their utterance to relate to the alternatives. The answer with falling intonation is likely to convey an exhaustivity implication, entailing that the contrasting alternatives are false. A continuation rise on the other hand strongly implies that B is about to go on and list at least one other alternative to Dinah who also likes Ivy. A rise-fall-rise contour conveys that B isn't sure about other possible answers, and leaves them open (e.g. Constant, 2012; Wagner, 2012a; Büring, 2016a). No matter which contour is used, the subject still needs to be focused to draw attention to the contrastive alternatives relevant to the QUD, so that their relationship to the current utterance can be specified. Thus the proper focus marking is obligatory in answers to WH questions.

The logical relationship between answers to polar questions are different. Either answer immediately implies the falsity of the other answer by virtue of the fact that they are semantically contradictory. Because of this, signaling the contrast with the polarity focus alternative via focus marking does not add any information, and so is not required. Whether the answer bears polarity focus depends on whether there is an unignorable, salient contrastive antecedent. If there is one, then F-marking is preferred. We saw that this is indeed the case with (12) and (13), where the context makes a contrastive polarity antecedent salient, and polarity focus is preferred. In answers to

polar questions in unbiased contexts such as (8) and (9), there is no salient contrastive antecedent. The result is that polarity focus does not have to be marked. If the speaker takes there to be a contrastive polarity focus antecedent, then they mark PolF, and we hearers can easily identify what they intend to contrast against. But if the speaker does not mark PolF, we don't bat an eye. We only notice a lack of focus marking if the context makes the contrastive antecedent salient.

The explanation of example after example here has depended on the salience vs. mere identifiability of focus antecedents. If there is a salient antecedent, focus needs to be marked. In the absence of a salient antecedent, the relevance of the relationship between the focus utterance and its alternatives can clinch a prominence shift as in answers to WH questions. But absent that, the prominence shift seems to be up to how the speaker views the context. If they view their utterance as contrastive then they mark focus; if not, they don't.

The ability to identify an antecedent when it is not blocked by a salient antecedent raises a question: Why can't focus antecedents just be identified when there is no salient antecedent present? The theory so far seems to suggest that they can, incorrectly predicting all sorts of focus markings that aren't satisfied by the context. The answer is that there is an independent condition on givenness deaccenting that requires deaccented expressions to be salient. As I show in the next section, it turns out that polarity focus provides novel evidence for such an independent requirement.

5 Polarity focus provides a novel argument for a distinct restriction on givenness deaccenting

There is a set of examples that the account developed so far cannot explain.

- (39) A: Does Dinah eat cheese?
- a. B: Dinah DOESN'T eat cheese.
 - b. B: Dinah does NOT eat cheese.
 - c. B: # Dinah DOES not eat cheese.

The ordinary semantic value of each of B's utterances in (39) is $\neg p$, and their focus semantic values are $\{p, \neg p\}$, as I will demonstrate below. According to the theory developed above, the antecedent has to be the contrastive polarity alternative, p . (39) demonstrates that this configuration allows the pitch accent to land on *doesn't* and *not*, but not *does*.

However, if there is an overt *not* in A's question, the pattern changes:

- (40) A: Does Dinah not eat cheese?
- a. B: Dinah DOESN'T eat cheese.
 - b. B: Dinah does NOT eat cheese.
 - c. B: Dinah DOES not eat cheese.

The addition of *not* to A's question enables *not* to be deaccented in (40c), with the pitch accent landing felicitously on *does*. However, the ordinary and focus semantic values of B's utterances are the same in (40) as in (39), and the theory I proposed above again requires the polarity focus antecedent to be the contrastive polarity alternative, p . Thus the theory developed so far does not yet explain the contrast between (39) and (40). These examples will necessitate a further complication in the nature of antecedents for information structural prosody, namely that givenness deaccenting imposes its own distinct requirement.

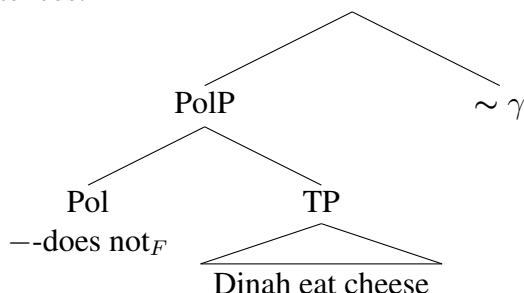
5.1 Unpacking how the theory misses, and why the simplest revisions don't resolve the problem

The requirements of \sim (whether Rooth's in (4) or mine in (32)) usually have the ancillary effect of requiring the material that is not focused but in the scope of \sim , the backgrounded material, to be given, and so we might think that this explains the infelicity of deaccenting *not* in (39c). However, thanks to the nature of the alternatives for polarity focus, the technical implementation misses the contrast here. To see why, note that my theory, like Rooth's, can only make different predictions for a pair of examples if they differ from one another along at least one of three dimensions: the ordinary semantic value of the focus utterance ϕ , the focus semantic value of ϕ , and the focus

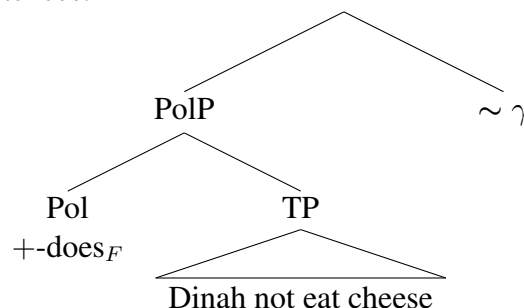
antecedent (the value of γ). However, none of these three factors vary across these examples, and so can't predict the contrast between (39c) and (40c).

This is so despite the fact that I assume that the structure of the (a) and (b) sentences differs from that of the (c) sentences.

(41) Syntactic structure for the (a)/(b) sentences:



(42) Syntactic structure for the (c) sentences:



In the (a)/(b) sentences there is an F-marked negative polarity head $-$, which contributes propositional negation at logical form, while the (c) sentences have an F-marked positive polarity head $+$, and a lower, constituent negation *not* that modifies the VP directly.¹⁵

¹⁵There is independent evidence from polar particle responses in support of the structures (41) and (42).

- (i) A: Does Dinah not eat cheese?
 - a. B: Yes, she does NOT eat cheese.
 - b. B: No, she does NOT eat cheese.
 - c. B: Yes, she DOES not eat cheese.
 - d. B: #No, she DOES not eat cheese.

On the assumption that the (a)/(b) examples in (i) feature sentential negation, while the (c)/(d) examples feature constituent negation, recent theories of polar particles such as Krifka 2013 and Roelofsen & Farkas 2015 accurately predict the intuitions in (i). A complete description of these theories would take us too far afield, especially since the difference between the two structures in (41) and (42) will not resolve the intuitive asymmetry between (39) and (40). However the interaction between polar particles and polarity focus may be of independent interest, so here is a brief explanation just focusing on (id): Krifka (2013) argues that sentences with constituent negation only introduce one propositional discourse referent with content $\neg p$. *No* in (id) can only pick this up and assert its negation, $\neg\neg p$ (i.e. p). Thus, *no* is infelicitous in (id) because it contradicts the meaning of the clause that follows it, $\neg p$. [Redacted] more directly predict the infelicity of (id) by modifying Krifka's theory so that *no* requires its complement clause to contradict the antecedent. For Roelofsen & Farkas (2015), *no* spells out both $[-]$ and $[\text{REVERSE}]$ features that require it to c-command a clause that either has negative polarity, or has opposite polarity and content from the antecedent clause respectively. Neither requirement is met in (id) ($[-]$'s requirement isn't met because the following clause has a positive polarity head with a lower constituent negation), so it is predicted to be infelicitous. (ia)-(ic) are accurately predicted to be felicitous by each theory. Since the accurate prediction of the intuitive interactions between polar particles and polarity focus in (i) depends on the correspondence between the prominence patterns in (39)/(40) and sentential vs. constituent negation in (41) and (42), this provides some independent evidence that these structures are

However, the differences between (41) and (42) do not predict the empirical asymmetry between (39) and (40). First, the ordinary semantic values of the (a)/(b) sentences and the (c) sentences are identical on these structural assumptions. Each of them convey contradictory negation, $\neg p$, regardless of the syntactic position of *not*. For the (c) sentences, assuming the VP denotes a function $\lambda x_e. x \text{ eats cheese}$ that characterizes the set of individuals who eat cheese, constituent negation takes it as input and returns a function that characterizes its complement, the set of individuals who do not eat cheese. Once this negated property composes with the subject argument *Dinah*, the result will be the same proposition as is produced by applying propositional negation in the (a)/(b) sentences, namely $\neg p$.

Second, while the focus semantic value is calculated differently for these two structures, they nevertheless both result in $\{p, \neg p\}$ because the only two focus alternatives are $+$ and $-$. The result is obvious for the (a)/(b) sentences. For the (c) sentences, since the TP denotes $\neg p$, the alternatives $+$ and $-$ each receive the proposition $\neg p$ as input, producing the propositions $\neg p$ and $\neg\neg p (= p)$ respectively as the resulting members of the focus alternative set. So for both (41) and (42), the ordinary semantic value is $\neg p$, and the focus semantic value is $\{p, \neg p\}$.

Third, given that the polarity focus utterances in (39) and (40) all denote $\neg p$, the focus presupposition of \sim in (32) requires the same antecedent for each of them, p . So even with the assumption that the structures of the (a)/(b) sentences differ from that of the (c) sentences, the asymmetry cannot be explained by the theory developed so far.

Finally, one might wonder if the asymmetry between (39) and (40) might not be better handled by a VERUM operator account. Perhaps the (a)/(b) examples are genuinely PolF while the (c) examples are verum focus, and the details of a VERUM theory could be worked out in such a way as to predict the requirement of an overt negation in the antecedent. However, this approach appears to be a nonstarter, since the prominence patterns we're exploring here can be replicated in embedded contexts:

on the right track.

- (43) A: Does Dinah eat cheese?
 a. B: I don't know. But if she does NOT eat cheese, we're in trouble.
 b. B: # I don't know. But if she DOES not eat cheese, we're in trouble.
- (44) A: Does Dinah not eat cheese?
 a. B: I don't know. But if she does NOT eat cheese, we're in trouble.
 b. B: I don't know. But if she DOES not eat cheese, we're in trouble.

Given that VERUM is supposed to be a common ground management operator high in the left periphery of the matrix clause, it will not be a viable approach for explaining these deaccenting facts. VERUM focus accounts will be discussed in more detail in section 7, including further discussion of embedding facts in section 7.2.

5.2 A solution: Givenness is marked independently of focus

The contrast between (39c) and (40c) is due to the lack of overt negation in A's question in (39) and its presence in (40). Perhaps the deaccenting of *not* requires the word to be salient. That is, the contrast would be explained if givenness deaccenting in general signals the salience of the deaccented expression in the context. If the expression is not salient, the deaccenting is infelicitous. To account for this, givenness deaccenting needs to be enforced by a requirement separate from focus marking. This conclusion is reached due to all of the challenges observed in section 5.1. However, the conclusion that givenness deaccenting may have its own requirements distinct from focus marking has been reached on the basis of several other empirical phenomena in recent work (e.g. Rooth, 2015; Büring, 2016c; Rochemont, 2016; Kratzer & Selkirk, 2020).

A simple implementation will suffice here. I assume that given constituents are syntactically G-marked. G-marks impose a definedness condition on ordinary semantic values.¹⁶

- (45) $[[\alpha_G]]^{o,c}$ is defined only if c provides an antecedent a such that $[[\alpha]]^o = a$.

¹⁶This implementation is a simplified version of that found in Kratzer & Selkirk 2020. See Rooth 2015 for an interesting unification of the theory in Rooth 1992 with a givenness requirement. The result can explain examples like (39) and (40), as demonstrated in [redacted].

(45) says that a G-marked constituent α_G presupposes a contextually given a such that a is identical to the ordinary semantic value of α . On this approach, G-marking works in tandem with F-marking. The same drive to maximize presuppositions by F-marking constituents that contrast also causes the G-marking of given constituents. In (39c) and (40c), the negative adverb *not* is G-marked (along with *Dinah*, *eat*, *cheese*, and larger sub-constituents, all of which I won't discuss further since their licensing does not vary across the two examples). The definedness condition in (45) thus requires that the context provide an antecedent meaning a that is identical to that of $\llbracket \text{not} \rrbracket^o$. This antecedent is available in A's question in (40), but not (39), thus predicting the intuitions.¹⁷

On this view, the antecedents for polarity focus marking and givenness marking can be distinct, and moreover, seem to be made available in different ways. As argued in sections 3 and 4, the antecedent for polarity focus is always the contrastive polarity alternative, even when that alternative is not overtly uttered. Thus, the antecedent for PolF in (46a) is $\neg p$, *that Dinah does not like Ivy*, despite that that proposition has not been uttered. Meanwhile, the PolF antecedent for (46b) and (46c) is p , *that Dinah likes Ivy*. However, one of the antecedents needed for givenness deaccenting in (46c) is *not*. Since that antecedent isn't available, (46c) is infelicitous.

- (46) A: Does Dinah like Ivy?
- | | | |
|----|----------------------------|--|
| a. | B: She DOES like Ivy | F-antecedent = $\neg p$ |
| b. | B: She does NOT like Ivy | F-antecedent = p |
| c. | B: # She DOES not like Ivy | F-antecedent = p , G-antecedent = <i>not</i> |

What we learn from these examples is that F-antecedents and G-antecedents can be distinct from one another, and that F-antecedents can be identified or evoked in a way that G-antecedents perhaps cannot. In particular, despite that $\neg p$ is available to license PolF in (46a), apparently that does not

¹⁷(45) assumes that identity is the relevant relation between G-marked expressions and antecedents, but for discussion on whether or not entailment is more appropriate, see Schwarzschild 1999; Keshet 2013; Büring 2016b; Rochemont 2016; Wagner 2020. The distinction doesn't matter for the issues at hand, so I won't discuss it further here.

mean that the denotation of *not* is available for givenness deaccenting in (46c). It seems that *not* cannot be deaccented for givenness unless it is linguistically salient. Perhaps this is because non-linguistic context cannot make an expression denoting negation salient. Compare this to examples demonstrating cases in which non-linguistic salience is enough to license givenness deaccenting.

- (47) B sees A with a new pack of cigarettes.
B: I thought you QUIT smoking. (Büring, 2016b, 18)
- (48) A and B are eating a kale salad.
A: We always eat the same things.
B: I LIKE kale salad.
- (49) A: Why do you think he hasn't played soccer before?
B: He THREW the ball into the goal. (Wagner, 2020, 22)

In all of these examples, prominence would normally fall on the final word, but it doesn't, at least in part due to givenness deaccenting. However, in none of these examples are the deaccented expressions linguistically given. Instead, their meanings seem to be non-linguistically salient in the context as in (47) and (48), or even just accommodated or evoked as in (49). It seems intuitive that non-linguistic objects or events can make expressions denoting those objects and events salient. It is harder to imagine an aspect of non-linguistic context that could make the negation-denoting *not* salient, hence an antecedent for the givenness deaccenting of *not* in (39)/(40) does not seem to be available unless *not* is overtly uttered in the context.

Dissociating givenness from focus allows us explain the givenness deaccenting facts in this section while retaining the theory of focus developed in sections 3 and 4. Thus, polarity focus provides novel evidence that some amount of theoretical independence between focus and givenness marking must be maintained. In particular, we have to allow givenness to impose its own separate requirement, and to have antecedents distinct from the focus antecedent. Moreover, it was claimed in section 4 that focus antecedents can be identified when they aren't salient. The distinct givenness requirement blocks this assumption from overgenerating focus marking out of the blue.

6 Explaining the emphatic effect of polarity focus

Höhle (1992) and others since (Richter, 1993; Romero & Han, 2004; Gutzmann & Castroviejo Miró, 2011; Wilder, 2013; Gutzmann et al., 2017; Taniguchi, 2017) have claimed that polarity focus utterances give rise to the intuition that the speaker emphasizes the truth of their propositional content. Some researchers have taken this as evidence that polarity focus data cannot be explained by a general theory of focus, claiming that focus theory has nothing to say about this emphasis on truth inference. Instead, polarity focus must signal the presence of an operator whose semantics is responsible for this emphasis (Höhle, 1992; Romero & Han, 2004; Gutzmann & Castroviejo Miró, 2011; Gutzmann et al., 2017; Taniguchi, 2017). Given this line of argument, it is incumbent on a theory of polarity focus as focus to offer an explanation for this pragmatic effect. My explanation is a specific instance of a more general fact about focus marking: Using focus marking to signal a contrast between the focus utterance and its antecedent has pragmatic effects. That is, information structural packaging has an impact on meaning.

Here is an example of the intuitive asymmetry to be accounted for:

- (50) A: Are you happy?
a. B: I AM happy.
 \rightsquigarrow B emphasizes the truth of the proposition *that B is happy*
b. B: I'm happy.
 $\not\rightsquigarrow$ B emphasizes the truth of the proposition *that B is happy*

If polarity focus is reducible to a more general theory of focus, then the inference in (50a) cannot be hardcoded into “the meaning of polarity focus”. It has to be derived via the pragmatics. Since the only difference between (50a) and (50b) is PolF, PolF must provide some extra input to the pragmatics that produces the contrast. Richter (1993, 18) suggests the following: “[T]he proposition of a sentence with verum focus [...] is not merely confirmed but especially emphasized by expressing the opinion that it is false to confirm its negation.” In other words, PolF *somehow* emphasizes the propositional content of an utterance by claiming the falsity of its negative alternative.

The question is, how? After all, if a speaker asserts p , it follows that they take $\neg p$ to be false, so there is no predicted asymmetry in emphasis between a PolF utterance like (50a) and a regular assertion like (50b). Wilder's (2013) explanation of emphasis has a similar problem. Wilder claims that the antecedent of PolF is the polar question $?p$, and emphasis arises because the PolF utterance answers $?p$ with p , thereby eliminating its negative alternative $\neg p$. Again, this predicts no asymmetry between (50a) and (50b), since (50b) also answers $?p$ with p , thereby eliminating its negative alternative $\neg p$.

Polarity focus emphasis can be explained as follows: On my account of polarity focus, PolF requires a contrastive polarity antecedent. So what a PolF utterance with content p adds, above and beyond a non-PolF utterance, is that it draws *explicit attention* to $\neg p$ via focus marking. PolF emphasis arises because a PolF assertion of p like (50a) contradicts the contrastive polarity antecedent $\neg p$ that it has drawn attention to. A non-PolF assertion of p like (50b) also contradicts $\neg p$, but it has not drawn explicit attention to $\neg p$ via information structure. Using focus to signal that your assertion of p contrasts with the focus antecedent $\neg p$ produces the intuition that the truth of p is emphasized.

This account predicts that emphasis is not restricted to polarity focus. All that is required is that one utterance entails the falsity of a contrasting alternative, and focus draws explicit attention to the contrast between the assertion and the false alternative. For example:

- (51) A and B are arguing about whether Dinah or Moira likes Ivy more.
 A: Moira likes Ivy more.
 B: DINAH likes Ivy more.
 \rightsquigarrow B emphasizes the truth of the proposition *that Dinah likes Ivy more*

B's utterance entails the falsity of the sole, salient alternative highlighted by the focus structure of the utterance, thereby emphasizing the truth of the content of her utterance. This effect is not intuitively different from the emphasis effect of PolF:

- (52) A: Dinah doesn't like Ivy.

B: Dinah DOES like Ivy.

↪ B emphasizes the truth of the proposition *that Dinah likes Ivy*

Emphasis does not necessarily depend on assertion. Consider Wilder’s demonstration of PolF on a proposition that is presupposed.

(53) A: If only Sue hadn’t left her husband.

B: I was surprised that she DID leave her husband.

(Wilder, 2013, 153)

In (53), A and B presuppose the proposition *that Sue left her husband*, this presupposition entails the falsity of the proposition *that Sue did not leave her husband*. Despite that this information is presupposed, the information structure of B’s utterance draws attention to the falsity of this alternative relative to the truth of the presupposed proposition, producing the pragmatic effect of emphasis.

In summary, focus marking conveys information structure, and information structure has pragmatic effects. We saw this in the discussion of Klassen & Wagner’s (2017) example (18), as well as in my explanation for obligatory focus marking in answers to WH questions in section 4.4. The pragmatic effect of claiming p while drawing explicit attention to the opposing $\neg p$ via information structure is to emphasize the truth of p . Emphasis on truth *just is* drawing attention to a focus alternative via information structure, and claiming the truth of a proposition that (contextually) entails the falsity of that alternative. There may be other arguments in favor of a theory that analyzes polarity focus as a special operator, but the goal of explaining emphasis on truth is not one of them.

7 Comparison to VERUM focus accounts

7.1 Romero & Han (2004), and a challenge for unifying verum focus and high negation

Romero & Han’s (2004, R&H) account is based in part on the empirical observation that polar

questions with polarity focus such as (54) and high negation questions such as (55) both convey epistemic bias.

- (54) B: Ok, now that Stephan has come, we are all here. Let's go!
 A: Wait, Jane's coming too.
 B: IS Jane coming?
 \rightsquigarrow B previously believed that Jane isn't coming

The epistemic bias of B's polarity focus question in (54) can be characterized as a speaker belief that the answer with opposite polarity from the question is true.

- (55) A: Ok, now that Stephan has come, we are all here. Let's go!
 B: Isn't JANE coming?
 \rightsquigarrow B previously believed that Jane is coming (Romero & Han, 2004, 610)

B's polar question in (55) has preposed negation, and I will call it a high negation question. B seems to be epistemically biased here as well, this time toward the positive answer.

Romero & Han (2004) analyze both kinds of questions as containing verum focus, and propose a VERUM operator that is meant to explain the distribution of both high negation and verum focus, as well as epistemic bias in questions containing them. Here is the operator's semantics:

- (56) $\llbracket \text{VERUM} \rrbracket = \lambda p_{s,t}. \lambda w_s. \forall w' \in \text{Epi}(w) [\forall w'' \in \text{Conv}(w') [p \in \text{CG}_{w''}]]$
 (Romero & Han, 2004, 627)

(56) has the semantics of an epistemic modal with a conversational twist. According to (56), VERUM takes a proposition p as complement, and says that in all worlds w' compatible with what is known in w ($\text{Epi}(w)$), the worlds w'' compatible with the conversational goals in w' ($\text{Conv}(w')$) are such that p is in the common ground in those w'' worlds ($\text{CG}_{w''}$).

This semantics is designed in part to explain Höhle's (1992) observation that verum focus emphasizes the truth of the proposition it appears with. The idea is that an assertion of $\text{VERUM}(p)$ goes beyond a regular assertion of p by making explicit reference to the speaker's epistemic state

and conversational goals, thus insisting on the truth of p . R&H take this to be a crucial feature distinguishing verum focus from polarity focus. As I argued in section 6, I take emphasis on truth to be a secondary pragmatic effect of using polarity focus, and so don't see the two as separate phenomena.

In order to explain the restricted distribution of verum/polarity focus, R&H argue that by making reference to conversational goals, utterances with VERUM are meta-conversational moves, which makes them subject to the following constraint:

- (57) Principle of Economy:
Do not use a meta-conversational move unless necessary (to resolve epistemic conflict or to ensure Gricean Quality).
(Romero & Han, 2004, 629)

Due to the constraint in (57), VERUM can only be used when p conflicts with an interlocutor's epistemic state, or when the speaker's evidence for p is not strong enough to satisfy Gricean Quality. (57) blocks VERUM from being used out of the blue as in (58).

- (58) Out of the blue
B: # Jane DID discover the theorem.

The conversation in (59), however, is in a state of epistemic conflict over p , so by the first half of (57) VERUM is licensed, and by (56), B is saying that p is in the common ground in all worlds compatible with B's conversational goals, given her epistemic state.

- (59) A: Jane didn't discover the theorem.
B: Jane DID discover the theorem.

The second half of the constraint in (57) is designed to explain the felicity of high negation questions in suggestion contexts. For example:

- (60) A: Who discovered the theorem?

B: Didn't JANE discover it?

The bias of B's question conveys that she believes that Jane discovered the theorem, which would answer A's question. R&H argue that B didn't assert *Jane discovered it* because her evidence was not good enough to respect Gricean Quality. The use of VERUM in the form of the high negation question enables B to suggest an answer while avoiding asserting something she doesn't have strong enough evidence for.

Now I will show that Romero & Han's theory of VERUM neither supplies sufficient nor necessary conditions on the use of polarity focus. Note that R&H don't take verum focus and polarity focus to be the same phenomenon, and assume that only some instances of what I would call polarity focus include the VERUM operator. Nevertheless, seeing exactly how the theory fails to account for PolF will help us to compare it to the positive proposal I made above, while revealing the drawbacks of treating verum and polarity focus separately.

First, to see that VERUM does not supply a sufficient condition for PolF, reconsider suggestion contexts. While VERUM is predicted to be felicitous in (60), note that polarity focus is not felicitous:

- (61) A: Who discovered the theorem?
a. B: # DIDN'T Jane discover it?
b. B: # DID Jane discover it?

Neither (61a) nor (61b) are felicitous in this suggestion context. Though R&H's theory predicts that the context is sufficient to license the use of VERUM, the context is apparently not sufficient to license the prominence shift that marks verum focus. The reason is that verum/polarity focus, like other kinds of prominence shifting, requires focus and givenness antecedents in order to be licensed, as I proposed above.

Here is another example of a suggestion context that licenses high negation but not polarity focus:

- (62) Dialog between two editors of a journal in 1900:
 A: I'd like to send this paper out to a senior reviewer, but I'd prefer somebody new.
- a. B: Hasn't FREGE not reviewed for us? He'd be a good one. (Romero & Han, 2004, 619)
 - b. B: # HAS Frege reviewed for us? He'd be a good one.

R&H use this example to demonstrate the felicitous use of a high negation question like (62a) in a suggestion context. This question expresses bias toward the negative answer *that Frege has not reviewed for us*, and is claimed to meet the constraint in (57) by ensuring Quality. However, note that the polarity focus question in (62b) is supposed to convey the same bias but is intuitively infelicitous. The reason cannot be that VERUM is not predicted to be licensed here, since it is predicted to be licensed in (62a).¹⁸ Again, the explanation is that the prominence shift is not licensed because the proper antecedent is missing.

So far the evidence that (57) is not sufficient to explain the distribution of polarity focus has come only from suggestion contexts. However there are also epistemic conflict contexts that license high negation but not PolF:

- (63) A: Ok, now that Stephan has come, we are all here. Let's go!
- a. B: Isn't JANE coming too? (Romero & Han, 2004, 610)
 - b. B: # ISN'T Jane coming too?

¹⁸R&H argue that only certain verum focus questions can be used in suggestion contexts like (62). The key condition is that B cannot ask A about a proposition that A has just claimed to be ignorant about. For example, A's utterance in (62) raises the implicit QUD "Who hasn't reviewed for us?". By raising this question, A conveys that she doesn't know the answer to it, namely she doesn't know any (relevant) individuals such that they did not review for them. Let's refer to propositions representing such answers as $\neg p$. This leaves open the possibility that A does know some propositions of the form p , namely A may know some individuals who have reviewed for them. R&H observe that it would be infelicitous for B to ask "Hasn't Frege reviewed for us?" in this context, and their proposed explanation is that this question asks A to confirm an answer $\neg p$, *that Frege has not reviewed for us*, to the implicit QUD, a proposition A has just implied that she is ignorant of. (62a) on the other hand is felicitous because B is asking A to confirm $\neg\neg p$, *that it's not the case that Frege has not reviewed for us*, i.e. *that Frege has reviewed for us*, a proposition of the form p that A may possibly know. I'm skeptical of this explanation since it is in opposition to my intuition that with (62a), B asks A to confirm *that Frege has not reviewed for us*. We can set this intuition aside however, since my point here is that R&H's proposed explanation for the asymmetry between these two high negation questions can't be extended to explain the infelicity of (62b). By R&H's own lights, this question should pattern with (62a) as it asks A about a proposition p , which she may well know. The asymmetry between (62a) and (62b) will have to be explained by other means. I suggest it is that (62b) is a kind of focus, thus requires focus and givenness antecedents, while (62a) is not and so does not.

(63a) is felicitous, and R&H's theory explains this by claiming that VERUM is licensed by epistemic conflict between B's belief that Jane is coming, and A's contextually implied belief that she is not. However, the same question with a polarity focus prominence shift in (63b) is not felicitous. Clearly, the proper antecedent is lacking to license the prominence shift.

R&H do not say whether they expect every context in which VERUM is felicitous to also be one in which polarity focus is felicitous. The preceding examples demonstrate that they aren't. The economy constraint in (57) that is meant to regulate the use of VERUM does not provide a sufficient condition for the use of polarity focus. When the constraint is met, PolF may still be infelicitous. A possible solution to this issue might be to say that verum/polarity focus has extra licensing requirements in addition to those imposed by the presence of the meta-conversational operator VERUM. Perhaps it is also subject to the requirements of a general theory of focus marking.

However it turns out that Romero & Han's economy principle in (57) also does not impose a necessary condition on the use of polarity focus. There are felicitous examples of PolF that do not seem to meet the restrictions laid out in (57).

(53) A: If only Sue hadn't left her husband.
B: I was surprised that she DID leave her husband. (Wilder, 2013, 153)

(64) A: Yesterday, Jolene didn't pitch the tent. What happened today?
B: Jolene DID pitch the tent.

In neither of these examples is there any epistemic conflict between A and B. Moreover, since ensuring Quality only applies to verum/polarity focus in questions, it is irrelevant here. Thus, the constraint in (57) does not provide a necessary condition on the use of verum/polarity focus.

As I mentioned above, R&H do not take all instances of prominence shifting to the auxiliary to be verum focus. So one explanation for (53) and (64) is that they aren't subject to (57) because they do not include a VERUM operator. A serious problem for this possible rebuttal is that R&H's VERUM operator is meant to explain why prominence shifts to the auxiliary have the effect of emphasizing the truth of the proposition. Examples such as (53) and (64) display this emphatic

effect, which can be explained via the pragmatic derivation of emphasis that I gave in section 6. If it is claimed that (53) and (64) do not feature the VERUM operator, then R&H's account is unable to explain why these examples nevertheless exhibit emphasis on truth.

Taking the above challenges together, and given that I developed an account that provides complete explanations for the phenomena associated with both PolF and verum focus without any appeal to a special VERUM operator, I believe that the VERUM operator is not needed. A theory purely in terms of focus semantics and general pragmatic principles provides a more empirically accurate and parsimonious account.

There is the remaining issue of epistemic bias in polar questions such as (54) and (55), for which R&H provide a unified account. While a complete discussion of epistemic bias is beyond the scope of this paper, it will be helpful to consider empirical asymmetries that speak against a unified account. We have already seen one asymmetry: polarity focus questions require antecedents in a way that high negation questions do not. There is another asymmetry: bias in PolF questions is context dependent, whereas bias in high negation questions is necessary and triggered by the preposing of negation.

- (65) B wants to know whether Jill will be at a meeting for members of a club. But B lacks an opinion about whether Jill is a member.
B: Will Jill be at the meeting?
A: If she's a member, she will.
- a. B: IS she a member?
↗ B believed she isn't a member
 - b. B: # ISN'T she a member?
↘ B believed she is a member

The context in (65) stipulates that B is unbiased with respect to whether or not Jill is a member. The verum/polarity focus question in (65a) is compatible with this stipulation. The high negation question in (65b) is not compatible with it. It seems that (65b) *must* convey a bias and so is infelicitous in the context. The two asymmetries lead me to conclude that the bias of verum/polarity focus questions and that of high negation questions require separate theoretical accounts. See

[redacted] for further discussion.

While I have argued that the theory of polarity focus should be entirely independent of R&H's VERUM operator, this claim is consistent with the view that the VERUM operator plays a role in the analysis of high negation questions. However, since the VERUM operator's conversational-epistemic semantics seems to be designed in part to explain the truth emphasizing effects of PolF, it is worth asking whether the phenomenon of high negation is better served by an operator with a different semantics. These questions are left to future work.

7.2 Gutzmann & Castroviejo Miró (2011); Gutzmann et al. (2017), and a challenge for non-focus, operator accounts

Gutzmann & Castroviejo Miró (2011, G&C) analyze verum focus as a use-conditional operator that takes a proposition p as input and conveys that the speaker wants to “downdate”, or answer, the question $?p$ so that it is no longer the QUD. Officially:

(66) $[[\text{VERUM}(\phi)]] \approx$ The speaker wants to downdate $?p$ from QUD.
(Gutzmann & Castroviejo Miró, 2011, 160)

This explains the fact that verum/polarity focus cannot be used out of the blue since the question $?p$ already needs to be the QUD in order to use VERUM. Moreover, treating VERUM as a use-conditional operator explains why verum/polarity focus does not affect the at-issue content of an utterance, much like the presuppositional focus account I developed above.

G&C also argue that (66) explains why verum focus emphasizes truth, since asserting p while also using a special operator to signal the desire to downdate $?p$ results in a “double assertion” that has the effect of emphasizing that p is true. However, it's not clear that assertions of p without VERUM are any less explicit about signaling a desire to downdate a salient question $?p$. As I argued in section 6, pragmatic derivations of emphasis require some extra input from verum/polarity focus that would not be present otherwise. Just like Wilder's (2013) account of emphasis, G&C's does

not clearly explain what PolF adds above and beyond a non-PolF utterance.

G&C's account of verum/polarity focus faces other challenges. Note that the account makes similar if not indistinguishable predictions from accounts such as Wilder 2013 or Samko 2016a, since both claim that verum/polarity focus requires a polar question $?p$ as antecedent. The first problem this creates for G&C is that it is unclear why a special VERUM operator is needed if an independently motivated general theory of focus delivers the same results. The second problem is that, just like focus accounts that take $?p$ to be the antecedent, while G&C's account explains why verum/polarity focus cannot be used out of the blue, it does not explain why it is optional in response to overt polar questions.

Gutzmann et al. (2017, GHM) recognize that G&C's account is more or less indistinguishable from a focus account that takes $?p$ as antecedent. To improve on it, GHM say that VERUM should impose a stronger felicity condition than the one in (66). The guiding idea is that verum/polarity focus requires that an interlocutor has previously sought to downdate $?p$ with $\neg p$, or has at least implied this possibility. They propose the following semantics:

(67) $\llbracket \text{VERUM}(\phi) \rrbracket = 1$, if the speaker wants to prevent that the QUD is downdated with $\neg p$.
(Gutzmann et al., 2017, 42)

Depending on how “prevent” is understood, it's not clear that (67) actually delivers on GHM's guiding idea. A speaker could want to prevent the QUD from being downdated with $\neg p$ even if no one has previously suggested that $?p$ be downdated with $\neg p$. For example, if A asks $?p$ and B wants to downdate it by answering with p , this could be taken to imply that B wants to prevent $?p$ from being downdated with $\neg p$, given that p and $\neg p$ are contradictory. On this way of understanding “prevent” in (67), G&C's condition in (66) is actually stronger than (67), since when (66) is met, (67) is met, but not vice versa. After all, if a speaker believes that neither the truth of p nor $\neg p$ has been established, then they could want to prevent $?p$ from being downdated with either proposition, thus meeting the condition set out in (67) but not (66).

But perhaps GHM intend “prevent” in (67) to be understood differently, with the prevention of

an action requiring that a previous attempt to perform the action has been made. These technical issues can be resolved by revising (67) to more directly implement GHM's guiding idea.

- (68) $\llbracket \text{VERUM}(\phi) \rrbracket = 1$, if an interlocutor has previously sought to downdate $?p$ with $\neg p$, or has at least implied this possibility (and if the speaker wants to downdate $?p$ with p).

The parenthetical in (68) is perhaps already implied by the at issue content of a verum/polarity focus assertion of p . The rest of the requirement in (68) places a stronger requirement on the context than G&C's (66) along the lines that GHM seem to intend. Note that the requirement that (68) places on the context is very similar to the focus presupposition of the account I developed in sections 3 and 4. So GHM's proposal faces a challenge already mentioned for G&C's above, namely it is unclear why a special VERUM operator is needed if an independently motivated general theory of focus delivers the same results. An operator account needs to recreate the focus requirement that $\neg p$ is an available antecedent, which seems unparsimonious.

The following examples of embedded verum/polarity focus pose an even greater challenge for the VERUM operator accounts of G&C and GHM.

- (69) A: Jane doesn't like cheese.
B: I didn't say that she DOES like cheese.

- (70) A: Did Jill do her homework?
B: I don't know. But if she DID do her homework, she can have a treat.

In (69), the clause embedded under *say* has verum/polarity focus, while in (70), the clause embedded in the antecedent of the conditional bears verum/polarity focus. However, it is quite clear that speaker B is not trying to downdate $?p$ with p as predicted by G&C's proposal in (66), nor is B trying to prevent $?p$ from being downdated with $\neg p$ as predicted by GHM's proposal in (67). Thus these accounts cannot explain the presence of verum/polarity focus here.

However, the focus account does, since the proper antecedents for F-marking of the polarity heads of the embedded clauses are available. Moreover, there is obviously no emphasis on truth

in the embedded clauses here, since in each case, B clearly is not committed to the truth of the verum/polarity focus clause. This demonstrates that the label “verum” focus is a misnomer. According to the account I developed in section 6, emphasis on truth only arises in contexts in which the speaker asserts or otherwise commits to p while drawing attention to $\neg p$ via information structure. Since B does not commit to p , my account predicts that emphasis on truth cannot arise, despite that polarity focus itself is felicitous. Emphasis on truth is not central to the phenomenon, contrary to the implications of calling it “verum”. These examples provide further evidence that verum/polarity focus should be handled within the broader theory of focus.

Examples of embedded verum/polarity focus reveal a problem for the general approach that undergirds VERUM operator accounts like Gutzmann & Castroviejo Miró 2011 and Gutzmann et al. 2017, as well as Romero & Han 2004, Repp 2013, and Taniguchi 2017. Such accounts all treat the effects of verum/polarity focus as managing the common ground or updating contexts with the content of the verum/polarity focus utterance.¹⁹ That is, they analyze verum/polarity focus as being about the pragmatic effects of the speaker’s view that the argument of VERUM is true (or false). Embedding examples like (69) and (70) challenge this view. VERUM operator accounts can be shielded from such data if it is assumed that these embedded clauses do not exhibit verum focus, but rather polarity focus, and the two are distinct phenomena. This is perhaps a viable route to take, but then much of focus theory needs to be recreated within the felicity conditions of the VERUM operator for matrix verum focus, as I have shown repeatedly above. Moreover, I have shown that treating polarity focus as focus already provides all the tools needed to offer a unified account, including a context sensitive analysis of emphasis on truth, thus the replication of focus effects by a VERUM operator seems superfluous.

¹⁹In the case of Repp’s FALSUM operator, the content of the clause embedded under negation is denied admission to the common ground. An example parallel to (69) demonstrates that FALSUM faces the same challenge as VERUM:

- (i) A: Jane likes cheese.
B: I didn’t say that she DOESN’T like cheese.

7.2.1 Gutzmann et al.'s (2017) crosslinguistic argument

GHM's main contribution is to make a crosslinguistic argument in favor of using a VERUM operator instead of focus. GHM demonstrate that the sorts of contexts that elicit verum/polarity focus in English and German elicit non-focus, overt operators in Gitksan, Chadic (Bura, South Marghi, and Hausa), and Kwak'wala. GHM take this as evidence that all languages employ a VERUM operator. They claim that in English and German, VERUM is realized by a pitch accent on the auxiliary that just accidentally happens to look like focus prominence shifting.

GHM's crosslinguistic evidence is very interesting and must be taken seriously. At the same time, we shouldn't conclude too quickly that verum/polarity focus in English and German should not be handled within the broader theory of focus marking. After all, it is possible for different languages to make use of different grammatical constructions to achieve similar functional ends. Even within English, contexts that elicit verum/polarity focus may also elicit other grammatical constructions and intonations. For example, [redacted] demonstrate experimentally that contexts in which one interlocutor directly disagrees with another reliably elicit both verum/polarity focus and the contradiction contour (Lieberman & Sag, 1974). For another example, consider the relationship between verum/polarity focus and the adverb *really*. Romero & Han (2004) argue that both of these contribute a VERUM operator. However, the two phenomena exhibit the following asymmetries:

(71) A: Did you buy yogurt?

a. B: I DID buy yogurt.

b. B: # I really DID buy yogurt/I really bought yogurt.

(72) B wants to know whether Jill will be at a meeting that is for members only. But B lacks an opinion about whether Jill is a member.

B: Will Jill be at the meeting?

A: If she's a member, she will.

a. B: IS she a member?

b. B: # Is she really a member?

While answering a polar question as in (71) allows for the use of verum/polarity focus, *really*

is strange in this context. If we keep in mind that in the context in (72), B has no opinion about whether or not Jill is a member, then the use of *verum/polarity* focus in (72a) is perfectly felicitous, while the use of *really* in (72b) is quite strange. The latter seems to necessarily convey that B has some previous reason to doubt that Jill is a member, which clashes with the context.

Moreover, GHM themselves note the asymmetry. Consider (73), which doesn't license *verum/polarity* focus. Interestingly, *really* appears to be felicitous here:

- (73) A: Hey Blair, I have to ask you something:
a. #ARE morphemes a part of syntax?
b. Are morphemes really a part of syntax? (Gutzmann et al., 2017, 17, fn. 7)

Verum/polarity focus is infelicitous in (73a) because the proper antecedent is not present in the context. (73b) does not seem to impose such a requirement. Nevertheless, *really* does seem to impose its own requirements. In particular, we infer that A is skeptical that morphemes are a part of syntax (negative bias), and we accommodate that A has heard someone make this claim. Interestingly, Blair doesn't need to have heard the claim being made, but can accommodate it too. (73a) on the other hand isn't licensed by this accommodation. What these asymmetries reveal is that, despite the similarity in function between *verum/polarity* focus and *really* in English, the two are nevertheless distinct grammatical phenomena that come apart when examined more closely. Thus it is not obvious that the crosslinguistic evidence adduced by GHM should immediately lead us to conclude that *verum/polarity* focus in English and German is not a focus phenomenon.

In future work, it would be fruitful to see how Gitksan, Chadic, and Kwak'wala behave with respect to embedding examples like (69) and (70). If they make use of the same strategies reported in matrix contexts by Gutzmann et al. (2017), that suggests that whatever these operators contribute, it cannot be the semantics proposed in (67). On the other hand, perhaps these embedded contexts will produce behavior very different from that seen in the matrix contexts. If so, this might mean that a special operator really is appearing in matrix clauses high in the C domain in these languages. And if that is so, it is worth considering further exactly what that operator is, whether

it also exists in English and German, and whether it perhaps even interacts with focus marking. These questions are left to future research.

8 Conclusion

This paper began by considering the prospects for explaining polarity focus phenomena within a general theory of focus. Bringing polarity focus into the fold has forced us to face many challenging issues in focus theory. One is that focus in answers to WH questions is obligatory, while polarity focus in answers to polar questions is not. Further data suggested that polarity focus is always contrastive, and that its optional use in answers to polar questions is caused by uncertainty over the presence of the required contrastive antecedent.

But this tentative explanation raised questions that go to the heart of a general theory of focus such as Rooth 1992. Why would polarity focus be required to be understood contrastively, that is, why can't it be subject to the set case presupposition in (4a)? Do we need to retain the set case presupposition, or can we simplify the theory of focus? What is the nature of focus antecedents such that they could be optionally available in some cases? What makes focus marking obligatory in the first place?

The approach I took to getting a handle on the seemingly contrastive nature of polarity focus was to expand the empirical landscape under consideration to include examples from the literature on true contrast (Wagner, 2006, 2012b; Katzir, 2013; Büring, 2016c, 2019). This led me to propose a strengthened focus condition, and to explore the relationship between salient and identifiable or evoked antecedents. The result rethinks Rooth 1992, doing away with the set case presupposition and treating all focus marking as requiring true contrast. The theory explains why polarity focus is always contrastive, why focus in answers to WH questions is obligatory while in answers to polar questions it is optional, and it takes some initial steps in uncovering the complicated provenance of antecedents for focus marking. I also showed that polarity focus provides novel data motivating a distinct requirement on givenness deaccenting.

Finally, I turned my attention to challenges from the verum focus literature. I showed how a general theory of focus as contrastive focus could be used to explain why polarity focus seems to emphasize truth in many cases. The explanation is a novel instantiation of a general fact, which is that choosing to mark an utterance as standing in contrast with an antecedent in a particular way has pragmatic implications. Then I showed that theories of verum focus fall short in their ability to explain polarity focus phenomena, and that they duplicate much of focus theory within the felicity conditions for the proposed VERUM operators. I believe that once we have a proper general theory of focus, and its application to polarity focus is clearly demonstrated, we don't need VERUM operators in order to explain the phenomena associated with polarity focus discussed in this paper.

There are clearly avenues for future work here. One is that focus association has remained entirely beyond the scope of this paper. However, if the theory of truly contrastive focus offered here is correct, it should be able to be extended to association with focus. Second, I believe there is more room for work on the nature of antecedents for focus. How a speaker understands the context affects what they say and how they say what they say. The principle of maximize presupposition should force speakers to mark presuppositions when they can. Cases of optional presupposition marking therefore raise questions. I have attempted to address those questions for polarity focus here. But further progress can be made on understanding why exactly some contexts allow speakers freedom in marking presuppositions while others do not. Finally, more work is needed on the crosslinguistic picture. The crosslinguistic data unearthed by Gutzmann et al. (2017) is important, and raises further questions about the existence of VERUM operators in the languages they discuss, and what that means for English and German verum/polarity focus.

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