

A minimal theory of verum focus and context dependent bias in questions*

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1. Introduction

I argue that verum focus (VF, Höhle 1992) is a focus effect that can be explained as polarity focus via a general theory of focus (e.g. Rooth 1992, Schwarzschild 1999, Büring 2016). This is in opposition to the view that VF is not actually a focus effect at all, but is instead a grammatical VERUM operator (Romero & Han 2004, Gutzmann & Castroviejo Miró 2011, Repp 2013, Gutzmann et al. submitted). There are three main empirical facts about VF that I will seek to explain (section 2). First, VF displays discourse licensing requirements, in particular it requires the right antecedent to be present, much like other focus effects. Second, VF emphasizes the truth of the proposition it appears with. Third, VF in polar questions gives rise to context dependent epistemic bias. I will argue that the third fact can be explained entirely by well-motivated assumptions about pragmatics without relying on any special meaning for VF (section 3). I will also argue that a focus account of VF provides a simpler and more complete account of the first two facts than operator accounts (section 4). Along the way, I will point out challenges facing operator accounts.

2. Empirical facts about verum/polarity focus to be explained

2.1 Discourse licensing

In English, the main phonological prominence of a sentence can be shifted to the auxiliary verb. Like other kinds of prominence shifting, this cannot be done out of the blue, as in (1). Instead it requires a certain kind of conversational context that provides an appropriate antecedent, as in (2) and (3).

(1) #Naomi DID buy yogurt.

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- (2) A: Did Naomi buy yogurt?
B: She DID buy yogurt.
- (3) A: Naomi didn't buy yogurt.
B: She DID buy yogurt.

I will claim in section 4 that (2) and (3) are examples of polarity focus, focus marking on a syntactically represented polarity head. Polarity focus in (2) seems to provide a congruent answer to the polar question, much as focus on a subject would provide a congruent answer to a subject WH-question. Polarity focus in (3) signals the contrast in polarity between A's and B's otherwise identical sentences. Regardless of one's analysis, the key empirical point here is just that prominence shifts to the auxiliary are not felicitous unless they are embedded in a context that provides the right kind of antecedent.

2.2 Emphasis on truth

Of course, prominence on the auxiliary does not only signal polarity focus.¹ Some researchers have claimed that there is a distinction to be made between polarity focus and verum focus, where only the latter emphasizes the truth of the proposition it appears with (Höhle 1992, Romero & Han 2004, Gutzmann & Castroviejo Miró 2011, Repp 2013, Gutzmann et al. submitted). Others have argued that VF just is polarity focus (Wilder 2013, Samko 2016). As the present work falls into the latter camp, any challenges faced by this view must be addressed. One is that, to the extent that we can detect emphasis on truth in utterances that I claim display polarity focus, it needs to be explained how such emphasis can arise from mere polarity focus. Consider the following examples.

- (4) A: Are you happy?
- a. B: I AM happy.
↔ B emphasizes the truth of the proposition *that B is happy*
- b. B: I'm happy.
↗ B emphasizes the truth of the proposition *that B is happy*

While B is committed to the truth of the asserted proposition *p* in both utterances, there is nevertheless an intuitive contrast in that only (4a) emphasizes the truth of *p*. An operator account can simply encode this emphasis into the semantics of VERUM. A focus-based account cannot claim that verum/polarity focus is “special”, otherwise the theory is not general. Emphasis needs to be derived from run-of-the-mill focus-marking and pragmatics.

2.3 Biased questions

Romero & Han (2004) observe that questions with verum focus can convey an epistemic bias, and this bias is quite similar to the bias found in high negation questions.

- (5) B: Ok, now that Stephan has come, we are all here. Let's go!
A: Wait, Jane's coming too.

¹For example, it can also be used to signal focus on tense or the content of the verb. For reasons of space, I won't discuss these possibilities further here, though I explore them in more detail in Goodhue 2018.

B: IS Jane coming?
↪ B believed that Jane isn't coming

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

Romero & Han give a unified account of the bias in the two question types by claiming that both introduce verum focus. This view necessarily divorces verum focus from general theories of focus since high negation questions like (6) are clearly not a focus phenomenon (evidence just below). Thus, Romero & Han argue for a VERUM operator that is either introduced by a prominence shift to the auxiliary or high negation. VERUM is given a semantics that enables a derivation of bias as well as an explanation for the emphasis on truth observation discussed above.² Several researchers since have taken there to be some connection between verum focus, high negation, and epistemically biased questions, though most of them only focus on a subset of these phenomena (e.g. Gutzmann & Castroviejo Miró 2011, Repp 2013, Frana & Rawlins 2015, AnderBois 2016, Samko 2016).

However, there are two important empirical asymmetries between verum focus questions and high negation questions. First, only verum focus questions require the kind of antecedent needed to license a prominence shift; high negation questions do not. For example, reconsider (6). If B tried to shift prominence to the auxiliary in that context, the result would be infelicitous.

- (7) B: # ISN'T Jane coming?

The cause of this asymmetry seems clear. If verum/polarity focus is a focus phenomenon, then it requires a focus antecedent (as discussed above). In (5) the right kind of antecedent is present, however in (6) it is not. The data shows that high negation is felicitous even when a prominence shift to the auxiliary is not. An operator account that is strict enough to explain the infelicity of VF in (7) will be too strict for high negation.

The second asymmetry is that high negation questions necessarily convey epistemic bias, while verum/polarity focus questions do not.

- (8) 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

²Romero & Han argue that the adverb *really* can also introduce VERUM. See Gutzmann et al. (submitted) and Goodhue (2018) for arguments that *really* is distinct from polarity/verum focus.

The context in (8) stipulates that B is unbiased with respect to whether or not Jill is a member. The verum focus question in (8a) is felicitous and does not convey a bias. On the other hand, the high negation question in (8b) is infelicitous in the context, seemingly because we have the intuition that it conveys that B is epistemically biased, which contrasts with the specification in the context that she is not biased. Thus, while the bias arising from verum focus questions appears to be context sensitive, the bias arising from high negation questions appears to be context insensitive.

These two asymmetries lead me to conclude that verum focus and high negation require separate theoretical accounts, despite the empirical similarity in the bias they can convey. If verum focus is to be explained as polarity focus, then it needs to be explained why polarity focus questions give rise to bias in some contexts, but not others.

3. Deriving the context dependent bias of VF in questions

I postpone a detailed account of verum focus as polarity focus until section 4. For now, it suffices to say that polarity focus on a proposition p at least requires p or $\neg p$ to be contextually salient. My claim is that the presence of verum/polarity focus in a question is incidental to the presence of epistemic bias. It just happens that some of the contexts that license polarity focus in a polar question also trigger epistemic bias, while others do not.

To see how epistemic bias arises from a question with polarity focus, let's consider (5). A asserts that Jane is coming, p . By the Gricean maxim of quality (Grice 1989), A therefore conveys that she believes p . I assume a proposition like p is modeled as a set of possible worlds, the worlds in which the proposition is true. Stalnaker (1978) conceives of the discourse context via the notion of a common ground, which is modeled as a set of propositions representing the public mutual beliefs of the interlocutors. By taking the generalized intersection of the common ground, the context set c is produced, the set of all possible worlds compatible with the interlocutors' public mutual beliefs. By asserting p , A intends for B to accept p , and thus for the common ground to be updated with p . Thus, if B were to accept p , the common ground would be updated and all possibilities in c in which $\neg p$ holds would be removed, $c \cap p$.

In (5), B does not accept p , but instead asks whether Jane is coming, $?p$. Roberts (1996/2012) proposes a constraint on felicitous questioning that is analogous to Stalnaker's informativity principle.³

(9) *The interrogativity principle:*

Ask a question $?p$ only if the context set c does not entail a complete answer to $?p$.

If B had believed and accepted p when A asserted it, then the common ground would have been updated with p , and the resulting c would have entailed p , rendering B's question in (5) infelicitous according to (9). By asking $?p$, B in effect signals that she does not take c to settle the question $?p$. Since A has just asserted p and therefore believes it, if c doesn't settle p , it must be because B has not accepted and does not believe p .

³Informativity principle: To assert p , p must be true in some but not all of the possible worlds in c .

What has been derived so far is a weak implicature: it's not the case that B believes p , $\neg\Box p$. After all, this is all that is required for the question to be felicitous according to (9). However, the epistemic bias in (5) is stronger, $\Box\neg p$.⁴ To get there, I rely on the notion of the opinionatedness assumption familiar from the neo-Gricean view of quantity implicatures (Sauerland 2005, Geurts 2010, see also Bartsch 1973 on neg-raising). If B is assumed to be opinionated about p , i.e. $\Box p \vee \Box\neg p$, then in combination with the weak implicature $\neg\Box p$, we conclude the strong bias implicature, $\Box\neg p$. This is how epistemic bias arises from a verum/polarity focus question such as (5).

If B is opinionated about p because she believes $\neg p$, then why is she asking $?p$ instead of just asserting $\neg p$ and directly contradicting her interlocutor A? My answer is politeness. Asking the question $?p$ avoids a direct confrontation while still conveying the epistemic conflict between A and B and giving them the opportunity to resolve it. In Brown & Levinson's (1987) terms, such a move avoids threatening A's negative face, which is to say, it does not challenge A's autonomy. If B asserts $\neg p$, she tries to force A to accept $\neg p$. Given that A has just asserted p , this would threaten A's negative face. Asking the question $?p$ avoids this by allowing A to respond to the question as they choose.

If we have some reason not to make the opinionatedness assumption, then the strong bias implicature does not arise, and at most we get the weak implicature.

- (10) A tells B about a new club she has joined. Both know that B knows little about it.
 A: And Jill is a member too.
 B: IS she? That's nice!
 ↗ B believed that Jill isn't a member.

Given B's lack of opinion, her VF question at most expresses that she hadn't known that Jill was a member, $\neg\Box p$, before revising her beliefs to accept p . Strong bias never arises.

Notice that polarity focus plays no direct role in the bias derivation. This leads to two predictions. The first is that if we can find a context that licenses verum/polarity focus without providing the necessary ingredients for the bias derivation, then we should get an unbiased polarity focus question. This is what we saw in (8), where no one asserts p (*that Jill is a member*), and B is not opinionated about p . Thus two of the crucial ingredients to the bias derivation are missing, and the question remains unbiased. However, verum/polarity focus is licensed. This is because the proposition p is salient in the antecedent of A's conditional. What we learn here is that verum/polarity focus requires a certain antecedent to be licensed, but only a proper subset of such contexts provide the necessary ingredients to trigger epistemic bias in a polar question. An interlocutor needs to assert or imply p and the questioner needs to be opinionated about p for the bias derivation to get off the ground. This is why epistemic bias in verum/polarity focus questions is context dependent.

⁴One might have thought that it was not (9) that regulates question asking in the relevant sense, but a constraint about speaker ignorance, i.e. in order to ask $?p$ the questioner must be ignorant about p , $\neg\Box p \wedge \neg\Box\neg p$. Such a requirement is a non-starter, since we are trying to derive an epistemic bias, i.e. B is biased for the negative answer, $\Box\neg p$. This obviously contradicts the second conjunct of ignorance, so it's hard to see how we could get from ignorance to epistemic bias.

The second prediction is that if the contextual ingredients necessary for epistemic bias are present even though the antecedent for polarity focus is not, then a non-polarity focus question should give rise to the same kind of epistemic bias. This is indeed what we find.

- (11) A context where Jane is not present:
A: Everyone's here, let's go!
B: Wait. Is JANE coming?
 \rightsquigarrow B believed that Jane is coming.

A contextually implies that Jane is not coming ($\neg p$). By asking $?p$, B conveys that she does not believe $\neg p$, which combined with the opinionatedness assumption leads to the epistemic bias, $\Box p$. Note that polarity focus would be infelicitous here. Also note that this is the only example we have seen in which the bias is for the prejacent of the question, p , rather than for its opposite, $\neg p$. The direction of the bias inference is conditioned by A's (implicit) commitment to $\neg p$. Note that B could have just as well said "Is JANE not coming?", and the bias would have been the same, bias for p .

Here is another example of a biased, non-polarity focus question. In this one A implies p , therefore the bias is for $\neg p$.

- (12) A and B are planning a potluck.
A: Mark is bringing a salad, and Jane baked a pie.
B: Wait. Is JANE coming?
 \rightsquigarrow B believed that Jane isn't coming.

I have accounted for the epistemic bias of verum/polarity focus questions entirely using well motivated pragmatic principles. Verum/polarity focus plays no direct role. An attempt to account for the preceding facts with a VERUM operator faces a few challenges. First, according to Romero & Han, the presence of VERUM in a question always triggers epistemic bias. Such an account must explain why prominence shifting to the auxiliary introduces VERUM in some contexts but not others. Second, the account should explain why bias can appear in questions that lack auxiliary prominence (and high negation) like (11) and (12). Do these questions contain VERUM, or is bias derived via independent principles as I have suggested? If the latter, then it's not clear why VERUM would be needed to explain bias in verum/polarity focus questions. Third, Romero & Han's VERUM account predicts bias to always be for the answer with opposite polarity of the prejacent of the question. Thus, if VERUM is to explain (11), it is unclear why the bias is toward the prejacent of the question. It's not clear whether VERUM could offer an account as simple the one given above.

4. Verum focus as polarity focus

4.1 The polar question as antecedent

Wilder (2013) and Samko (2016) both argue that verum focus is polarity focus (PF), and in particular they argue that the polar question $?p$ serves as antecedent to PF utterances.

Wilder (2013) handles this within Schwarzschild’s (1999) GIVENness framework, while Samko (2016) assumes that questions have null polarity and uses Rooth’s (1992) individual case presupposition. A discussion of these analyses is offered in Goodhue 2018.

Here’s how Rooth’s set case presupposition can be used to treat $?p$ as the antecedent for PF. Suppose sentence polarity is encoded in a polarity phrase (PolP) which c-commands the TP. Polarity is either positive or negative and has the following denotations:

$$(13) \quad \llbracket + \rrbracket = \lambda p_{st}. p$$

$$(14) \quad \llbracket - \rrbracket = \lambda p_{st}. \neg p$$

A PF utterance such as B’s in (2) has F-marking on the polarity head. I follow classic theories of polar questions such as A’s in (2) by analyzing their semantics as the set of answers $\{p, \neg p\}$ (Hamblin 1973, Groenendijk & Stokhof 1984). Rooth (1992) proposes that focus introduces a presuppositional operator, \sim , that adjoins to a structure ϕ along with a variable (Γ for sets of semantic objects, or γ for individual objects) that gets its content from a discourse antecedent. Rooth further proposes that in addition to ordinary semantic values $\llbracket \phi \rrbracket^o$, there are also focus semantic values, $\llbracket \phi \rrbracket^f$. $\llbracket \phi \rrbracket^f$ is calculated by replacing the F-marked constituent within ϕ with other constituents of the same semantic type, and allowing sets of semantic objects to combine via pointwise function application, producing a set of focus alternatives. \sim introduces the following disjunctive presupposition.

- (15) a. $\phi \sim \Gamma$ presupposes that a contextually given Γ is a subset of the focus semantic value of ϕ ($\Gamma \subseteq \llbracket \phi \rrbracket^f$), 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 ($\gamma \in \llbracket \phi \rrbracket^f$), and that γ is distinct from the ordinary semantic value of ϕ .

For PF, the idea is that Γ gets its content from A’s polar question, $\{p, \neg p\}$. Assuming the TP of B’s utterance has content p , and the focus alternatives for the F-marked polarity head are $+$ and $-$, the resulting focus semantic value will be $\{p, \neg p\}$. Thus Γ is a subset of the focus semantic value, and by (15a), B’s PF utterance in (2) is predicted to be felicitous.

4.2 The contrasting alternative as antecedent

The challenge for this view is that, unlike prominence shifting in responses to WH-questions, PF appears to be optional in response to a polar question, as we saw in (4) (see also Wilder 2013). Given the principle of maximize presupposition (Heim 1991), we expect focus marking to be obligatory when possible (see Goodhue 2018, for more discussion).

To handle this challenge, I argue that the antecedent for PF on p is not $?p$, but is instead the contrasting polarity alternative $\neg p$. If $\neg p$ is salient, then by (15b), PF on p will be felicitous. The following examples adapted from Wilder 2013 lend support to this idea.

- (16) B thinks Sue is writing a book, but when she asks Sue, Sue denies it. Then A says, “I’m glad that Sue is writing a book.”

a. B: So she IS writing a book.

(17) B can't find Sue. She asks C where Sue is, and C says that she is busy reading a book. A little later, A says, "I'm glad that Sue is writing a book."

a. B: # So she IS writing a book.

In both (16) and (17), p (*that Sue is writing a book*) is salient due to A's utterance, which in turn renders the question $?p$ salient as well. And yet, PF on p is felicitous only in (16). The reason is that only (16) makes the contrasting polarity antecedent $\neg p$ salient, the true antecedent for PF. By (15b), PF is felicitous. PF is optional in response to polar questions because the latter can make either p or $\neg p$ salient as antecedents. If the speaker takes p to be salient, they will use broad focus, if they take $\neg p$ to be salient, they will use PF. This account predicts PF to be strongly preferred to its non-F-marked broad focus counterpart when only the contrasting antecedent is available. This is indeed what we find: in direct contradictions such as (3), the speaker has to use PF rather than the broad focus utterance.

4.3 Explaining emphasis on truth

The remaining empirical fact to explain is why verum/polarity focus is associated with emphasis on the truth of the proposition. Richter (1993) makes the following proposal: PF emphasizes the propositional content of an utterance by drawing explicit attention to the falsity of its negative alternative. The question is, how does this work? After all, if B asserts p , B therefore claims that $\neg p$ is false. My claim is that the difference between a normal assertion of p and a PF assertion of p is that only the latter has an information structure that draws explicit attention to $\neg p$, the focus antecedent for PF. The propositional content then entails that that salient alternative is false. For example, both (4a) and (4b) entail that the proposition *that B is not happy* is false. But only the PF utterance in (4a) signals via PF that B takes $\neg p$ to be salient. (4b) does not use PF, thus lacks this signal. The combined effect of asserting p and using PF is that explicit attention is drawn to the contrast between the truth of the asserted p and the falsity of the alternative $\neg p$, which results in the intuition that the PF utterance emphasizes the truth of the proposition.

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

(18) 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 alternative highlighted by the focus structure of the utterance. The pragmatic effect is that B emphasizes the truth of her proposition in opposi-

tion to the sole, salient alternative. This effect is not intuitively different from the emphasis effect of PF, as expected since all of the same ingredients are present.

5. Conclusion

I set out to explain three empirical facts about verum focus: 1 It requires a discourse antecedent. 2 It emphasizes the truth of the proposition it appears with. 3 It gives rise to epistemic bias in polar questions. I explained 1 by analyzing verum focus as polarity focus. In particular, I argued that polarity focus requires its contrasting polarity alternative to be salient in the context. I explained 2 via the information structure of polarity focus. All assertions of p entail the falsity of $\neg p$, but only certain information structural contexts render $\neg p$ salient. If $\neg p$ is salient and referred to by the focus structure of the utterance, then the assertion of p is intuitively emphasized. Verum/polarity focus plays no role in the explanation of 3. Only a certain subset of contexts that license verum/polarity focus in polar questions provide the right ingredients to derive epistemic bias on the basis of general pragmatic principles. The independence of VF and bias makes predictions that I showed are borne out. The only claims I have made about high negation here are that it is empirically distinct from verum/polarity focus, and thus it requires a distinct theoretical account.

Operator based accounts of verum focus face two challenges. First, since we have independent justification for a general theory of focus as well as the pragmatic principles used in section 3, an operator account has to provide independent motivation for the existence of the operator given that explanations can be given without such an operator. Second, operator accounts have to explain why bias is context dependent, and why it can appear in non-verum/polarity focus questions. If VERUM is predicted to trigger bias whenever present in questions, then it must not be present in unbiased questions. But then an operator account needs to provide a principled explanation for when it is present and when it is absent.

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