

## Deriving the evidence asymmetry in positive polar questions\*

Kyle Rawlins  
*Johns Hopkins University*

**Abstract** This paper explores a famous puzzle about English positive polar questions introduced by Büring & Gunlogson 2000: while in many contexts these questions seem to indicate nothing whatsoever about what the speaker takes for granted or thinks likely, in contexts that provide evidence against the content proposition of the question, they are infelicitous. This pattern, which I term the *evidence asymmetry*, has been particularly troubling for standard accounts of polar questions that treat the positive and negative answers on par with each other. Given that polar questions are felicitous and intuitively neutral in neutral contexts, the puzzle doesn't have an easy solution: polar questions in general don't seem to place strong constraints on evidence or context. I propose that polar questions have a fairly weak presupposition requiring just the content alternative to be possible (saying nothing about its negation), and (building on Trinh 2014) that this together with Maximize Presupposition-based reasoning about competitor questions, specifically *or not* alternative questions, can derive the evidence asymmetry. The account does not require a covert evidential marker as in Trinh 2014, and essentially proposes that the evidence asymmetry follows from the norms of English polar questions.

**Keywords:** semantics, pragmatics, questions, polar questions, bias, evidence

### 1 Overview

The classic Hamblin view of questions takes the denotation of an interrogative used as a question to consist of a set of propositional alternatives corresponding to possible answers to that question. On this view (and many related ones), the interpretation of polar interrogatives give them a 'symmetric' semantics and therefore pragmatics, in the sense that the positive and negative alternatives are treated equally in the representation:<sup>1</sup>

---

\* For discussion of this topic and related issues I'm grateful to participants at SALT 33 at Yale, the audience at the 2023 workshop on non-canonical questions at the University of Toronto, the 2023 LSA Summer Institute Advance Pragmatics course, as well as María Biezma, Justin Bledin, Ilaria Frana, Karl Mulligan, the JHU semantics lab, Dan Goodhue, Jenn Hu, Manfred Krifka, and Josh Tenenbaum.

<sup>1</sup> In the inquisitive semantics account in (1c), the  $\downarrow$  operator is the *downward closure* operator (Ciardelli, Groenendijk & Roelofsen 2013, 2019 a.m.o.), and alternative sets are construed in terms of

Deriving the evidence asymmetry in positive polar questions

- (1) Is it sunny?
- a.  $\llbracket \text{Is it sunny?} \rrbracket = \{ \lambda w . \llbracket \text{it is sunny} \rrbracket^w , \lambda w . \neg \llbracket \text{it is sunny} \rrbracket^w \}$   
(Hamblin semantics: Hamblin 1973)
- b.  $\llbracket \text{Is it sunny?} \rrbracket = \lambda w . \lambda w' . \llbracket \text{it is sunny} \rrbracket^w = \llbracket \text{it is sunny} \rrbracket^{w'}$   
(Partition semantics: Groenendijk & Stokhof 1984)
- c.  $\llbracket \text{Is it sunny?} \rrbracket = \left\{ \{ w : \llbracket \text{it is sunny} \rrbracket^w \} , \overline{\{ w : \llbracket \text{it is sunny} \rrbracket^w \}} \right\}^\downarrow$   
(Inquisitive semantics: Ciardelli et al. 2019 etc)

However, a wide range of not-so-symmetric effects have been observed when polar interrogatives are used as root questions. This paper concerns what I will call the *evidence asymmetry*, originally noticed by Büring & Gunlogson 2000 (see Roelofsen, Venhuizen & Sassoon 2013 for recent experimental work):

- (2) **Evidence asymmetry**  
English positive polar questions are compatible with ‘compelling contextual evidence’ for the positive alternative, but not the negative alternative.

This pattern can be observed in Büring and Gunglogson’s famous windowless office scenario (their exx. 17-18):

- (3) *Scenario (neutral context)*: S and H are talking long-distance on the phone.  
a. S: What’s the weather like out there? Is it raining?  
b. S: What’s the weather like out there? Is it sunny?
- (4) *Scenario (contextual evidence for  $p = \text{‘it is raining’}$ )*: H enters S’s windowless computer room wearing a dripping wet raincoat.  
a. S: What’s the weather like out there? Is it raining?  
b. S: What’s the weather like out there? #Is it sunny?

At first glance, this is an extremely puzzling situation given the effectiveness of the classic symmetric semantic accounts. In neutral contexts, it is hard to find any sort of difference between the positive and negative alternatives for a positive polar question (e.g. in terms of speaker expectations, contextual evidence, etc.) –

---

resolution conditions (Ciardelli 2017), not (complete) answer licensing per se. An alternative set is downward closed in the relevant sense if every non-empty subset of every element is also a member. Given an arbitrary alternative set,  $\downarrow$  gives back the downward-closed version of it. For example,  $\{\{w_1, w_2\}, \{w_3\}\}^\downarrow = \{\{w_1, w_2\}, \{w_1\}, \{w_2\}, \{w_3\}\}$ . It is also worth noting at the outset that while the ‘vanilla’ inquisitive semantics account is symmetric, it is standard to add an extra ‘highlighting’ dimension that is asymmetric (Roelofsen & van Gool 2010; Roelofsen & Farkas 2015 a.o.). I return to highlighting below.

supporting a symmetric account, or at least, mitigating strongly against building any sort of direct evidence constraint into the meaning of a polar question. However, this apparent ‘biasing’ effect pops up, leading to infelicity, in contexts that do provide some sort of evidence in just one direction – the sort of thing that might lead one to exactly expect that polar questions place constraints on evidence.

At second glance, this has remained an extremely puzzling situation. A number of asymmetric accounts of the semantics/pragmatics of polar questions have emerged (several of which I discuss in §2.2), but because of the contrast between neutral and biased contexts above, the derivation of any version of the evidence asymmetry in particular must remain indirect. (See Bolinger 1978 and subsequent literature for a number of other cases that have motivated non-symmetric accounts.) In this paper I give a new account of the evidence asymmetry, proposing that it follows from a much weaker semantic asymmetry proposed by Biezma & Rawlins 2012, 2017a, in combination with Maximize Presupposition-style reasoning. The account builds off of a Maximize Presupposition account due to Trinh 2014 but addresses several challenges that that account faces. In a nutshell, I propose that a positive polar question presupposes that its content proposition (the proposition derived from the interrogative’s TP) is possible (following generally from the pragmatics of questions), and this competes with forms that presuppose both the content proposition and its negation are possible. The competition leads to deriving the inference that the speaker is unable to rule out that the negation is impossible, an inference incompatible with evidence for that negation.

In what follows, I first lay out some more detailed background on the semantics and pragmatics of questions (§2) and on accounts of the evidence asymmetry, and then develop my competition-based account in detail (§3). I then discuss possible extensions to incorporate the behavior of certain kinds of negative polar questions, as well as return to the comparison to previous accounts in §4.

## 2 Questions and polar questions

Perhaps the most influential view in the current understanding of questions is the idea, originating from Hamblin 1958, 1973, that question denotations consist of alternatives that correspond to possible *answers* to those questions.<sup>2</sup> Since positive

<sup>2</sup> The primary modern competitor to this view is the idea that questions should be thought of in terms of ‘resolution’ conditions as in Inquisitive Semantics, not answerhood conditions; see Ciardelli 2017 a.o. for a recent discussion. The differences between these two approaches will not matter in any substantive way for the present project; both the standard symmetric representation and asymmetric representations can be stated in both approaches. Some specific inquisitive semantic approaches do use an asymmetric account, involving an extra tier of meaning where the content proposition is ‘highlighted’ (Roelofsen & van Gool 2010 a.o.), and my account here can be extended to this kind of question meaning.

polar questions, at a very intuitive level, seem to have two answers corresponding to the particles *yes* and *no*, this leads to Hamblin’s famous denotation exemplified in (1a) and schematized in (5):

$$(5) \quad \llbracket \varphi? \rrbracket = \{ \lambda w. \llbracket \varphi \rrbracket^w, \lambda w. \neg \llbracket \varphi \rrbracket^w \}$$

That is, a polar question with content  $\varphi$  denotes an alternative set consisting of two propositions, one determined by the interpretation of  $\varphi$ , and one determined by its negation.

While much of the Hamblin semantics literature leaves any more pragmatic notion of ‘answerhood’ quite intuitive, it is useful for our purposes to pair this kind of semantic denotation with an explicit statement of how responses are licensed in context. I will here adopt a classic one adapted from [Roberts 1996](#):<sup>3</sup>

(6) **Roberts 1996-style response licensing.**

- a. A response settles a proposition  $p$  if it entails either  $p$  or  $\neg p$ .
- b. An interrogative denoting some alternative set  $\alpha$ , when used to ask an information-seeking question, licenses responses that settle at least one proposition in  $\alpha$ .

Since both “(yes,) it is sunny” and “(no,) it is not sunny” meet this criteria with respect to the question in (1) they straightforwardly count as answers and are licensed as responses. Of course, just as straightforwardly, this leads immediately the prediction that these responses should be licensed in a contextual evidence scenario like that of (4), and the question should (all things equal) itself be licensed. Though I have demonstrated this prediction here with a specific set of assumptions, the prediction generalizes to a wide range of assumptions one could make about the semantics and pragmatics of polar questions, as long as they also have a symmetric semantic representation, and license positive and negative responses equally based on that representation. As discussed in §1, this runs into a number of problems, among them the evidence asymmetry. I return to the evidence asymmetry in more detail next.

## 2.1 More on the evidence asymmetry

The examples in (7) and (8), based on examples from [Trinh 2014](#) recap the *evidence asymmetry* with a different case. Here again, questions targeting contradictory content propositions (e.g. constructed with contradictory terms such as *single*

<sup>3</sup> This could alternatively be taken as an exhaustification strategy applied in the pragmatics:  $\text{ExhR}(\alpha) = \bigcup_{p \in \alpha} (\{p\}^\downarrow \cup \{\neg p\}^\downarrow)$ , where  $\downarrow$  is inquisitive semantics downward closure as defined earlier. If this operator could appear in LFs, it could also be used to handle embedded interrogative cases where [Biezma & Rawlins 2012](#) propose a coercion operator.

and *married*) are acceptable in neutral contexts, but show an asymmetry in contextual evidence contexts, where a positive polar question is incompatible with evidence against the content proposition:

- (7) *Scenario (neutral context):* S has just met Alfonso, a friend of H.  
 a. S: Is Alfonso married?  
 b. S: Is Alfonso single?
- (8) *Scenario:* S has just met Alfonso, and S and H can both see a photo with Alfonso wearing a gold ring on his fourth finger.  
 a. S: Is Alfonso married?  
 b. S: #Is Alfonso single?

To recap the descriptive generalization in a somewhat different way, after Sudo 2013, English positive polar questions are compatible with neutrality and positive evidence, but have a [-NEGATIVE] evidential bias:

- (9) **Evidential Bias (-)** (Sudo 2013)  
 If a PQ is incompatible with contextual evidence for the positive (resp. negative) answer, the PQ is said to carry a [positive] (resp. [negative]) evidential bias.
- (10) **Contextual Evidence** (Büring & Gunlogson 2000; Sudo 2013)  
 Evidence that has just become mutually available to the participants in the current discourse situation.

As Sudo observes, there is some variation in the evidential bias associated with polar questions cross-linguistically. In particular, Sudo shows that Japanese positive polar questions have [-NEGATIVE,-POSITIVE] evidential bias, i.e. are only felicitous in the lack of contextual evidence either way. I will not directly address the full analysis of Japanese here, but there are two important takeaways: (i) there must be room for cross-linguistic variation, and (ii) as Sudo puts it (p. 13), “these two biases are not logically incompatible with each other”.

This descriptive generalization does not seem to be absolute. There are two cases I am aware of where positive questions can be used in cases where positive polar questions can be used in the face of evidence against the content proposition. The first is when the proposition is aligned with the speakers goals or desires (see Tabatowski 2022 for a recent account of polar questions that tries to reduce polar question bias more generally to speaker desire), and classic examples with a minimizer (e.g. *lift a finger*) which are biased *against* the content proposition.

- (11) (Scenario: S is in a restaurant and sees everyone eating meat)  
 Do you have something vegetarian?<sup>4</sup>

<sup>4</sup> This example due to an anonymous SALT reviewer.

- (12) Will Joanna lift a finger to help? (Ladusaw 1979; Guerzoni 2003 a.o.)

The lesson from the first kind of case is that we must provide room to defeat the inference in some conditions, in particular, there may be biased contexts where agents can still not take competition to be in play. The lesson from the second (following much other work, see e.g. discussion in AnderBois 2011) is that minimizer questions need more research; I will set them aside as a distinct case here.

I have focused on positive questions so far, but a closely related set of puzzles emerges when considering the interaction of negation and classic symmetric accounts. Since we are taking negation to be classical, on a Hamblin view:

$$\begin{aligned}
 (13) \quad \llbracket [\text{not } \varphi] ? \rrbracket &= \{ \lambda w. \llbracket [\text{not } \varphi] \rrbracket^w, \lambda w. \neg \llbracket [\text{not } \varphi] \rrbracket^w \} \\
 &= \{ \lambda w. \neg \llbracket \varphi \rrbracket^w, \lambda w. \neg \neg \llbracket \varphi \rrbracket^w \} \\
 &= \{ \lambda w. \neg \llbracket \varphi \rrbracket^w, \lambda w. \llbracket \varphi \rrbracket^w \} \\
 &= \llbracket \varphi ? \rrbracket.
 \end{aligned}$$

A naive prediction, then, is that the same set of responses should be licensed in the same contexts for positive and negative questions. Of course, there is a substantial literature (beginning in large part also with Büring & Gunlogson 2000) demonstrating that this is not so, in various ways. There are two cases to consider for English: polar questions with non-preposed (‘low’, or ‘inner’) negation, and polar questions with preposed (sometimes called ‘high’ or ‘outer’) negation. Both are quite complicated and this paper will mostly not do justice to the complications. However, we can observe a similar pattern with non-preposed negation in biased contexts to what we have seen with positive polar questions, but inverted. That is, a non-preposed negative polar question with prajacent “not  $\varphi$ ” is compatible with contextual evidence against  $\varphi$ , but not for it (again following Trinh’s examples):<sup>5</sup>

- (14) *Scenario*: S has just met Alfonso, and S and H can both see a photo with Alfonso wearing a gold ring on his fourth finger.
- a. S: Is Alfonso not single?
- b. S’: # Is Alfonso not married?

<sup>5</sup> Some speakers have access to what I will treat as another reading of these questions, following AnderBois 2011, who calls them *Gladiator-LNQs*. On the gladiator reading, which I take to be archaic, (14-S’) may be good after all. AnderBois ex. 220 (from the so-named movie):

- (i) (*Scenario*: *The gladiator protagonist, Maximus, effortlessly kills yet another competitor. The crowd reacts with stunned silence at Maximus ruthless efficiency, rather than applause.*)  
 Maximus: Are you not entertained? Are you not entertained? Is this not why you are here?

This by itself seems like the sort of thing that might simply follow from in interaction of the original phenomena with negation, but an extra complication comes in in neutral contexts. For the most part, negative polar questions are infelicitous in neutral contexts (Trinh 2014; Roelofsen et al. 2013):

- (15) *Scenario (neutral context)*: S has just met Alfonso, a friend of H.  
 a. S: #Is Alfonso not single?  
 b. S: #Is Alfonso not married?

This observation about neutral contexts may not be an absolute: van Rooy & Safarova 2003; Romero & Han 2004; AnderBois 2011; Roelofsen & Farkas 2015 all suggest that there are cases that are neutral (at least in terms of contextual evidence) where negative questions can be used. Moreover, Roelofsen et al. 2013 (the only experimental work I am aware of on the topic) do not find that negative questions absolutely require compelling contextual evidence against for the negative proposition. Here are some examples of non-preposed negative questions from the literature that involve at least neutrality in terms of contextual evidence:

- (16) Website/ad contexts (van Rooy & Safarova 2003)  
 a. Do you not have any friends? Then click on this button...  
 b. Have you not been able to receive credit from your financial institution to back up your business activities? Then...  
 (17) Please tell us more about those poetic gaps, and about what exactly caused them. For example, did [Rosa Montero] not write poetry in the 70s?  
 (Romero & Han 2004)

In the ad contexts, the author may have no assumptions whatsoever about likelihood of the content proposition. In the Romero and Han example, while there may be an expectation that Rosa Montero had poetic gaps, the example is set up so that there is no specific evidence or expectations that this would have involved the 70s.

In summary, though negative questions in many contexts do seem to be inescapably incompatible with neutrality, there are examples and experimental data supporting that even this is not an absolute.

Preposed negative questions (see among others Ladd 1981; Romero & Han 2004; Asher & Reese 2005; Reese 2007; AnderBois 2011; Gutzmann & Miró 2011; Krifka 2017, Dayal 2016 ch. 9, Frana & Rawlins 2016, 2019; Goodhue 2018, 2022; Gutzmann, Hartmann & Matthewson 2022), I will assume, are different beasts altogether:

- (18) Isn't Alfonso single?

While preposed negative questions descriptively can interact with contextual evidence, they also have been characterizing as placing constraints on agent expectation. One can also observe that they appear to have a different answer licensing behavior and therefore different alternative structure than non-preposed questions, e.g. *yes* and *no* behave as if the question is a regular positive polar question. Despite the somewhat overwhelming range of accounts in the literature, there is moderately widespread agreement that the role of negation in these questions is illocutionary (e.g. scoping above speech act operators, or having an illocutionary semantics itself). See Goodhue (this volume) for a recent set of arguments that preposed and non-preposed negative questions should be treated separately.

## 2.2 Previous accounts of the evidence asymmetry

First, there are a number of accounts that address biasing effects in positive polar questions more generally that I will not address here, as (to my knowledge) they do not aim to specifically derive the evidence asymmetry. For example, [AnderBois 2011](#) proposes that positive polar questions have a ‘weak’ positive bias, emerging from projecting sub-alternatives of the positive, and not the negative alternative, in the discourse future. This accounts for some of the peculiarities of positive polar questions in contrast with ‘or not’ questions alluded to above (see [Bolinger 1978](#)), but not specifically the evidence asymmetry.<sup>6</sup>

A useful starting point account that does try to capture the asymmetry is [van Rooy & Safarova 2003](#), who propose that polar questions indicate that the probability of the content proposition is greater than that of its negation. (This paper deals with many other aspects of biased questions that I will not address here.) This proposal involves blanket non-neutrality, and it does quite straightforwardly make the prediction that in contexts with strong evidence against the content proposition, a polar question will be infelicitous. However, it is entirely unclear that polar questions indicate anything about the answer probability in neutral contexts; because of this it has not been widely adopted. One argument that is helpful to help see the challenge is due to [AnderBois 2011](#), who observes that if polar questions were biased as this view suggests, they would typically not be usable as fair exam questions

---

<sup>6</sup> One might try to develop the AnderBois account along the following lines to do this: discussion is likely to continue in line with the more probable answer, and if there is evidence for the negative answer that answer is the more probable one; a positive polar question explicitly blocks this more probable line of discussion by not projecting subalternatives for that answer. A better choice, therefore, would have been a question whose positive alternative aligned with the evidence, projecting the most likely set of subalternatives. This idea seems broadly plausible to me, but it is unclear how exactly it predicts the observed infelicities (i.e. what the specific pragmatic principles are that moves the question from simply poor wording to an infelicity judgment). This has a similar logical structure, at least, to Trinh’s account. I will leave off developing this further here.

(see discussion on AnderBois p. 127):

- (19) Scenario: question on a fair exam. (AnderBois ex. 226)
- a. Is [b] a fricative?
  - b. Is [s] a fricative?

The structure of this proposal reveals the challenge of the evidence asymmetry in a nutshell: we do not (it seems) want to assume that positive polar questions require any assumptions on the part of the speaker at all in neutral contexts (where agents may have few or no assumptions about the outcome of the question), but we do want to predict their behavior correctly in biased contexts. Whatever bias (if any) is built in to positive polar questions must be quite weak. Subsequent accounts, therefore, have tended to rely on more complicated pragmatic reasoning, rather than building in something that more directly derives the biased context behavior.

More recently, Farkas & Bruce 2010; Roelofsen & Farkas 2015 propose that the evidence asymmetry follows from pragmatic reasoning about possible responses to polar questions. A *no* response in English is analyzed as a [REVERSE] move (rejecting the content proposition of an antecedent polar question), which is marked. Agents choosing a question form will prefer to avoid one that is likely to force a marked response on the part of a hearer, a context where there is evidence for the negative alternative is more likely to do this, and so therefore, a polar question that would do this is itself marked in such a context. I will not argue against this as a possible line of pragmatic reasoning, and in fact my proposal is compatible with this idea, but I do suggest that as an account of the evidence asymmetry, it is very indirect (it is unclear to me why this derives infelicity *per se*), and that it doesn't really predict that the effect rests on contextual evidence specifically.

The most immediate predecessor to the present account is what I will call the *covert evidential analysis*, due to Trinh 2014.<sup>7</sup> On this account, polar questions may have a covert evidential marker 'E' that presupposes evidence for the positive alternative, where evidence is implemented in terms of von Stechow & Gillies's 2010 account of English epistemic *must*: the presupposition involves certainty relative to indirect evidence. That is, if E is present, a polar question "is it sunny?" would presuppose that "it must be sunny". This, of course, is too strong a thing to presuppose generally, so the account takes the covert marker to be optional, with its distribution determined by Maximize Presupposition-style reasoning. In particular, the weaker (non-presuppositional) meaning is ruled out in scenarios where there is a logically equivalent but presuppositionally stronger question whose presuppositions would be satisfied. In scenarios where there is evidence against the content proposition,

<sup>7</sup> See also Goodhue, this volume, and Trinh, this volume, who develop related accounts. I will leave discussion of these two works for the future.

this would be satisfied by a polar interrogative asking about the negation of the content proposition whose LF contains E, and so in these contexts the weaker, non-presuppositional meaning can't be used. However, the evidential-marked meaning would presuppose evidence for the content proposition. Trinh takes the notion of evidence here to require logical consistency (see his fn. 35), and so this presupposition also can't be satisfied – and therefore there is no route to interpret a polar question in this sort of context.

The covert evidential analysis has two key elements that I will take away: (i) interpreting positive polar questions in biased contexts involves reasoning about what other related questions a speaker could have asked, and (ii) the reasoning involves some modal content. However, as it stands, I think there are reasons not to adopt the proposal. First, we would ideally have independent motivation for this sort of non-trivial covert element, but an evidential marker is extremely hard to motivate on the basis of what is known about evidential marking in English. English does not have any morphosyntactic evidential system as far as I am aware, though what it does have are various forms of slifting ('sentence-lifting') that have been described as evidential (Rooryck 2001; Haddican, Holmberg, Tanaka & Tsoulas 2014; Murray 2017; Talmina & Rawlins 2021) as well as syntactically unmarked uses of certain embedding verbs that have also been described this way (Simons 2006; Talmina & Rawlins 2021 a.o.); and of course epistemic modals have been treated in an evidential fashion as well (von Stechow & Gillies 2010). Out of all this, it's very hard to find a basis for a covert evidential marker with the morphosyntax Trinh 2014 argues for. Moreover, we don't seem to get interactions, at all, with the covert marker. For example, one might expect that an overt interrogative slift (Haddican et al. 2014) or a Simons-style embedding verb would replace the covert evidential and obviate the Maximize Presupposition reasoning, but this doesn't seem to happen:

- (20) *Scenario*: S has just met Alfonso, and S and H can both see a photo with Alfonso wearing a gold ring on his fourth finger.
- a. S: Do you think Alfonso is married?
  - b. S': Is Alfonso married, do you think?
  - c. S'': #Do you think Alfonso is single?
  - d. S''': #Is Alfonso single, do you think?

The strongest thing we can say then, is that if there is a covert evidential marked in polar questions, it is not part of the overt evidential systems that have been documented for English.<sup>8</sup>

<sup>8</sup> There is one other relevant possibility. Frana & Rawlins 2019 recently propose that the VERUM and FALSUM operators from Romero & Han 2004; Repp 2013, used in among other things polarity focus

Second, the assumption that the type of evidence in question requires logical consistency (Trinh 2014 fn. 35) seems at an intuitive level much too strong, but without this assumption, polar questions in the crucial biased evidence contexts should be felicitous (because they only presuppose evidence *for* the content proposition). As Sudo 2013 points out for Japanese (see §2.1) positive and negative evidential biases need to be logically compatible with each other. There are certainly examples that involve evidence against a content proposition that would be hard to overcome, and the classic Büring & Gunlogson 2000 windowless office case is perhaps one of these. However, even for my variant of the marriage evidence scenario above, it seems a bit hard to say that the evidence of seeing an apparent wedding ring is logically inconsistent with him being single. It is easy to construct even weaker examples that illustrate the asymmetry:

- (21) *Scenario: We see Alfonso shamelessly flirting with someone he has just met.*  
 a. Is Alfonso single?  
 b. #Is Alfonso married?

The evidence type in question often does support it being reasonable to take it the strong conclusion for granted, i.e. it can often support a ‘must’ statement as Trinh 2014 suggests; but it can also support much weaker conclusions:

- (22) Alfonso must be single.  
 (23) I guess Alfonso might be single.

The issue here seems to center around what Büring & Gunlogson’s 2000 category of ‘compelling’ evidence really involves. I will not try to fully settle this here, but I do think it is in general weaker than the evidence required to license an English epistemic necessity.

### 3 Deriving the evidence asymmetry

In this section I show how the evidence asymmetry can be made to follow from Maximize Presupposition without assuming a covert evidential marker. I develop this in three steps. First, in §3.1 I give background on the account of polar interrogatives I am assuming, and argue that this motivates an asymmetric, but weak,

---

and preposed negative questions, are best thought of as presuppositional evidential markers, and so perhaps Trinh’s ‘E’ could be identified with some form of VERUM. However, I am not aware of any evidence that VERUM can ever be covert (and see also Goodhue 2022 for recent arguments that VERUM in particular is not a viable account of polarity focus data in English, further taking away some of the potential motivation).

possibility presupposition. Second, in §3.2 I introduce the specific version of Maximize Presupposition (building on ‘presuppositional implicature’ accounts) that I will be using, and discuss how it should be interpreted with respect to the felicity conditions of questions. Finally, in §3.3 I put these pieces together and show how the Maximize Presupposition-based derivation works for the core cases of English positive polar questions.

### 3.1 Monopolar questions

My starting point is an asymmetric account of polar questions introduced by Roberts 1996, and developed by Biezma & Rawlins 2012, 2017a, with related accounts due to Krifka 2013, 2015. On this view (termed ‘monopolar’ by Krifka), polar interrogatives denote a singleton set consisting of just the content proposition. Earlier, I noted that Roberts’ response licensing condition is overpowered for the standard view and this is exactly because it originally paired with a monopolar semantics. A polar interrogative used as a question puts forward a single proposition to be settled, one way or the other, and positive and negative answers are licensed accordingly.

Biezma and Rawlins, in order to account for contrasts with various types of alternative questions, further proposed that questions in general require, as part of their felicity conditions, that all alternatives be possible in context (i.e. for each alternative there be at least one world in the context at which that alternative is true).<sup>9</sup> This, in combination with the monopolar account of polar questions leads to a systematic difference between polar and *or not* questions that is intended to account for certain contrasts introduced by Bolinger 1978. For example, when using a question as a plea or request, a polar question is much preferred over an alternative question; the explanation is that it is better to choose a form that requires only that the alternative aligned with the speakers goals is possible over one that makes both possible. (Biezma & Rawlins 2012’s account of this and related data also involved a proposal about how the two question types are allowed to relate to the current Question Under Discussion, which I will not go into here.)

- (24) a. Can you help me carry this box? (vR&S)  
b. #Can you help me carry this box or not?

Setting aside prior motivation, let us distill the idea down into the following characterization, where a context is taken to simply be a Stalnakerian context set (the set of worlds compatible with what the speakers mutually believe the world to be like; Stalnaker 1978, 2002, etc).

---

<sup>9</sup> Weaker versions of this would be fine for present purposes, e.g. that there be at least two viable alternatives for an information-seeking question.

- (25)  $\llbracket \varphi? \rrbracket = \{ \llbracket \varphi \rrbracket \}$   
 $\llbracket \varphi? \rrbracket^c$  is defined only if  $\diamond_c \llbracket \varphi \rrbracket$  (where  $\diamond_c \varphi$  iff  $c \cap \llbracket \varphi \rrbracket \neq \emptyset$ )
- (26)  $\llbracket \varphi \text{ or not } \varphi? \rrbracket^c = \{ \llbracket \varphi \rrbracket, \neg \llbracket \varphi \rrbracket \}$   
 defined only if  $\diamond_c \llbracket \varphi \rrbracket \wedge \diamond_c \neg \llbracket \varphi \rrbracket$

We can take this to be, in a way, a norm of information-seeking questions: they have to provide some contextually viable path to resolution. These felicity conditions are extremely weak and, though asymmetric, do not derive the evidence asymmetry. In particular,  $\diamond_c \llbracket \varphi \rrbracket$  is perfectly well satisfied in a neutral or biased context, though it does make the (extremely basic) prediction that a polar question can't be used when its content proposition is completely impossible.<sup>10</sup>

In what follows, I use only the presuppositional aspect of the Biezma & Rawlins monopolar analysis. In fact, the proposal here for deriving the evidence asymmetry is compatible with many alternative approaches to the question meaning itself, as long as the (asymmetric) presupposition is preserved. For example, in inquisitive semantics approaches with a highlighting dimension, one could introduce the presupposition that the highlighted alternatives must be possible in context, which on the standard inquisitive semantics account of polar and alternative questions, would lead to the same effects I derive here. To take another example, even a non-alternative-semantics analysis such as Krifka 2017 could plausibly derive a presupposition as above from the monopolar semantics there, leading to similar effects; in fact, Manfred Krifka (p.c.) has suggested to me that an analogue of the possibility presupposition I am using here likely follows from a monopolar commitment space semantics for polar questions.

### 3.2 Competition

The basic intuition of the competition component of the proposal is that when a speaker asks a positive polar question, we may reason about what else they could have asked. In particular, let us assume for the moment that they might have instead asked an *or not* question. To formalize the necessary reasoning, I will use a version of Heim's 1990 *Maximize Presupposition* principle taken in a neo-Gricean way (see Schlenker 2012; Lauer 2016 for much more extensive discussion). Here,  $K_S$ :

<sup>10</sup> Notice that  $\diamond_c p$  is compatible with  $\Box_c p$ : this case arises with rhetorical questions, which (either seriously or sarcastically) do take the content proposition to be entailed by the context (see Rohde 2006; Caponigro & Sprouse 2007; Biezma & Rawlins 2017b):

- (i) a. (*Scenario, hearer has agreed to be dept chair*) Are you crazy?  
 b. (*Scenario, child asking for expensive things*) Am I Santa Claus? (Manfred Krifka, p.c.)

some flavor of epistemic/knowledge (necessity) operator for agent  $S$ , which I will paraphrase as ‘take for granted’. (Following Schlenker, this could be a form of Stalnakerian common belief.)

- (27) *Maximize Presupposition ( $K_S$  variant)*: If agent  $A$  chooses a form with a presupposition  $\varphi$  over a related, contextually equivalent, form with presupposition  $\psi$ , where  $\psi$  is stronger than  $\varphi$ , a hearer can conclude that  $\neg K_S(\psi)$ .

What does ‘related form’ mean here? Following Schlenker 2012 I take it that the forms must be *contextually equivalent*, i.e. have the same meaning in context. For our purposes, since we are considering question moves, I identify the meaning that must be contextually equivalent with the literal semantics of an interrogative filtered through the Roberts 1996 response licensing condition introduced in (6) (or equivalently, the exhaustification operator introduced in fn. 3). On this assumption, then, all three of positive, non-preposed negative, and *or not* questions are contextually equivalent – the setup is different, but the outcome is the same as in Trinh 2014.<sup>11</sup> This version of the principle, in contrast to much of the literature, does not assume that related alternatives generated by ‘locally’ replacing lexical items. However, the status of this requirement remains debated (see Lauer 2016 for a summary, though Lauer ultimately adopts a lexical version). I do require a weaker constraint; in Lauer’s terms, where  $e'$  is a stronger related form to  $e$ : “use of  $e$  automatically makes  $e'$  salient as an alternative.”

This principle derives what is sometimes called a ‘presuppositional implicature’. What does it do for our specific case?

### 3.3 Results: the evidence asymmetry

Suppose that  $A$  asks (in  $c$ ): “is it sunny?”, but could have asked: “is it sunny or not sunny?” These meet the criteria introduced above for contextually equivalent forms, and, on the view I have developed one has a presupposition<sup>12</sup> that is strictly stronger than the other. That is, from the asked question, we predict the felicity condition that the content proposition is possible ( $\diamond_c \text{sunny}'$ ), and the alternative form would have the stronger felicity condition that both alternatives are possible ( $\diamond_c \text{sunny}' \wedge \diamond_c \neg \text{sunny}'$ ). By the Maximize Presupposition rule in (27) we should

11 Alternatively, one could, as Trinh 2014 does, take these interrogative types to have a standard Hamblin semantics, which would also make them contextually equivalent. This removes my motivation for the asymmetric possibility presupposition, but one possible way of restoring it would be to adopt an inquisitive semantics highlighting view (Roelofsen & van Gool 2010; Roelofsen & Farkas 2015 a.o.) with the further assumption that a question is felicitous just in case all highlighted maximal alternatives are viable in context. I don’t currently know a good way to motivate this assumption.

12 I treat felicity conditions of questions as presuppositions for purposes of Maximize presupposition.

therefore predict that the speaker can't take it for granted that both alternatives are possible. In combination, therefore, a hearer can conclude (28). This formula is a bit involved, but can be straightforwardly simplified as in (29):

$$(28) \quad K_S \diamond_c \text{sunny}' \wedge \neg K_S (\diamond_c \text{sunny}' \wedge \diamond_c \neg \text{sunny}')$$

$$(29) \quad \begin{aligned} & K \diamond p \wedge \neg K (\diamond p \wedge \diamond \neg p) \\ &= K \diamond p \wedge \neg (K \diamond p \wedge K \diamond \neg p) \\ &= K \diamond p \wedge (\neg K \diamond p \vee \neg K \diamond \neg p) \\ &= (K \diamond p \wedge \neg K \diamond p) \vee (K \diamond p \wedge \neg K \diamond \neg p) \\ &= \perp \vee (K \diamond p \wedge \neg K \diamond \neg p) \\ &= K \diamond p \wedge \neg K \diamond \neg p \end{aligned}$$

Note that these alternatives are in a sense 'meta-contextual', and I assume that agents can have uncertainty about what the context might be like (after Lewis 1979 a.m.o. and specifically Rawlins 2010) – that  $K_S$ -accessible worlds can differ as to what worlds are members of the context set. (In Rawlins 2010, while explicit linguistic moves that are accepted deterministically narrow the context set, all other background inferences may lead to uncertainty as to what is or isn't common ground; speakers have moves that can explicitly help resolve this uncertainty. See also Bledin & Rawlins 2020.)

The crucial conjunct in (29) is the second one:  $\neg K_S \diamond_c \neg \text{sunny}'$ . A paraphrase for this is that  $S$  is not in a position to take it for granted that  $\neg \text{sunny}'$  is possible in context  $c$ . Given what they know about  $c$ , they can't rule out the possibility that  $\diamond_c \neg \text{sunny}'$  is false. This, I claim, is what derives the evidence asymmetry.

There are two subcases to consider. First, this presuppositional implicature could be satisfied if it is necessary for any accessible  $c$  it is sunny in  $c$ , i.e. the context entails that it is sunny. Or, more likely,  $A$ 's  $K$ -accessible worlds differ as to whether  $\neg \text{sunny}'$  is possible in  $c$ . I claim that either of these cases could arise exactly when there is contextual evidence against the content proposition (depending on the strength of the evidence). Even the weaker of these two is incompatible with evidence that points to  $\neg \text{sunny}'$ , which I suggest would (at a minimum) require all accessible contexts to allow at least for the possibility of non-sun. That is, contextual evidence available to  $S$  in  $c$  against  $p$  is, either way you cut it, incompatible with the inference that  $S$  can't take it for granted that  $\neg p$  is at least possible.

One final note: this competition is only in play as long as an *or not* question is a salient alternative, and I do not assume that it always is. In particular, drawing attention to the negative alternative may force it as a competitor, but in neutral contexts, it may not be considered at all. Apparent counterexamples to the evidence asymmetry then (such as 11) are exceptional cases where contextual evidence is not sufficient to draw attention to the negative alternative. This cries out for a more mechanistic theory of alternative computation, but I will not do that here.

## 4 Followups and extensions

In this final discussion section, I provide two followup discussions. First, I discuss how the present account might be extended to handle non-preposed negative questions, suggesting (following much other literature) that their extra properties are due to the markedness of negation. Second, I return to a more detailed comparison with the covert evidential analysis in [Trinh 2014](#).

### 4.1 Negative polar questions

If we assume that non-preposed negation is ordinary, then a polar question “[not  $\varphi$ ]?” denotes a singleton alternative set  $\{\lambda_{w_S} . \neg \llbracket \varphi \rrbracket^w\}$  and has felicity condition (where  $\varphi$  denotes proposition  $p$ )  $\diamond_c \neg p$ . This question is also contextually equivalent (by my assumptions in §3.2) to an *or not* question, and has a weaker presupposition. By exactly similar Maximize Presupposition reasoning, we can then conclude  $K_S \diamond_c \neg p \wedge \neg K_S \diamond_c p$  – the speaker is unable to take it for granted that  $p$  is at least possible in  $c$ . The flip side of the evidence asymmetry (see ex. 14) is straightforwardly derived, and we expect negative polar questions around  $p$  to be incompatible in biased contexts with contextual evidence for  $p$ . What is not derived however, is the resistance to neutral contexts seen in (15), repeated below.

- (30) *Scenario (neutral context):* S has just met Alfonso, a friend of H.
- a. S: #Is Alfonso not single?
  - b. S: #Is Alfonso not married?

Given that we have derived half of the puzzle automatically, we can then ask whether this resistance to neutral contexts follows from some further property of negative questions.

In the literature on negative questions (and beyond – see [Horn 1989](#) for classic discussion) there is widespread agreement that negation is marked, and that this markedness is a likely candidate for deriving these facts somehow. [Trinh 2014](#) derives neutrality from reasoning about there being a simpler alternative form, e.g. negation is marked in terms of complexity/brevity. While the exact details of this derivation don’t work in the present context (due to the lack of a covert evidential marker), the basic idea is adaptable.

In particular, I suggest that in a neutral context, a positive polar question is only optionally in competition with an alternative question, but in such a context, a negative polar question may also be in competition with at least a positive polar question by virtue of Brevity (distinct from the Maximize Presupposition competition seen so far). By using a marked negative form, the speaker signals more directly that they are unable to take for granted the felicity conditions of the positive form, generating

the biasing inference in multiple ways. Biased contexts in particular trigger competition with an *or not* form, but any context may trigger competition of a negative question with a positive question. It is tempting to say that this effect is obligatory in all contexts for negative questions (in contrast to the competition with *or not*, which I take to be optional in general, and only required in biased contexts that draw attention to the negative alternative), but experimental work from [Roelofsen et al. 2013](#) suggests otherwise (see §2.1). What I think is safe to say is that use of the negative form very naturally triggers inferences about the positive form in a relatively context-independent way, and so it is observable in neutral contexts.

One further extension suggests itself, given the above point. It is, perhaps, more intuitive<sup>13</sup> to imagine positive questions themselves in (optional) competition with negative questions, rather than alternative *or not* questions. Putting them in competition this way, on the present count, also generates the inference that  $\neg K_S \neg \diamond_c p$ , exactly what I have argued we want. On a Maximize Presupposition, the way I have motivated things, this isn't viable, because neither positive nor negative question is a stronger alternative to each other. (In fact, one of the merits of Trinh's E operator, though I have argued it is unmotivated in independent terms, is that it allows exactly this competition.) However, a possibility is that the competitor set we have here consists of multiple interrogative types that form a partly ordered scale – something seen in the implicature literature more broadly (see e.g. [Hirschberg 1985](#)). I will leave an exploration of this to future work.

## 4.2 Revisiting the evidential account

I return finally to a brief comparison of the ultimate analysis here and the covert evidential account of [Trinh 2014](#). The two are very similar in structure: questions have a modal presupposition that leads to a non-symmetric meaning, and competition between different interrogative forms with different variants of this presupposition leads to the evidence asymmetry. However, I have argued that (a) the presupposition in question is much weaker than what the covert evidential account proposes, (b) it is non-optional and derives from very general principles about how questions are interpreted in context, rather than a covert evidential marker, and (c) the competition between forms involves potentially all three of positive, (non-preposed) negative, and *or not* alternative questions. Regular polar questions then, are only

<sup>13</sup> To be clear: I do not believe that speakers have reliable introspective access to the competitor sets for this kind of inference. However, it is also an inescapable fact that *or not* questions are quite rare. A possibility that I will leave for the future is that the competition here really isn't about forms at all, but about possible alternative structures compatible with the move and the current Question Under Discussion. That is, agents may be considering bipolar alternative structures as an alternative to monopolar ones, when reasoning about a polar question meaning.

inherently evidential in the way that all speech acts in context interact with the kind of ‘evidential’ reasoning involved in updating the common ground. This is of course something that has been heavily discussed in the literature on assertions (e.g. in literature on norms of assertion; see [Weiner 2007](#) for an overview), but less so for questions. To the extent that a norm of questions is that at least some alternatives must be viable in context, I have therefore argued that the evidence asymmetry itself, despite its seeming arbitrariness, is a consequence of a very general norm of questions and its intersection with English polar questions.

This brings us back to a question, raised by [Sudo 2013](#), about how cross-linguistic variation can be accounted for in the view developed here. I will not explore the full predictions in any kind of detail. However, there is an immediate prediction: that a polar question with a ‘bipolar’ denotation (e.g. the denotation you find in English with *or not* questions) would have different norms than what I have claimed an English positive or negative polar question does. In particular,  $K_s(\diamond_c p \wedge \diamond_c \neg p)$  is incompatible with strong evidence either way, and thus the positive polar question data in Japanese described by Sudo can potentially be captured in the present system simply by allowing for this sort of variation in polar question meaning. Of course, this is the tip of the iceberg both for the Japanese data, and more broadly, polar question meanings cross-linguistically, which have barely been explored in the level of detail needed to assess analyses of bias; this felicity condition may still be empirically too weak. I will, therefore, leave this point as not much more than speculation, and call for further cross-linguistic work.

## 5 Conclusion

In this paper I have explored the *evidence asymmetry* in English polar questions ([Büring & Gunlogson 2000](#)): a polar question with content proposition  $p$  can be used in contexts that provide no evidence either way or evidence for  $p$ , but not in contexts that provide evidence against  $p$ . The specific account I have proposed is a Maximize Presupposition-based account of this inference, building on [Trinh 2014](#) but changing many of the details and motivation. In particular, I have proposed that polar questions such as “is it sunny?” are *monopolar* and have a felicity condition requiring the content proposition (that it is sunny) to be possible in context, and that they can be in competition with *or not* questions (e.g. “is it sunny or not sunny?”) that require both the content proposition and its negation to be possible in context. When this competition is in play, this derives the inference that a speaker can’t take for granted that the negative alternative is possible; I claim that this captures the evidence asymmetry. I have also suggested that this competition, in negative questions, can co-exist with brevity-based reasoning that obligatorily derives this inference even in neutral contexts.

## References

- AnderBois, Scott. 2011. *Issues and alternatives*: UC Santa Cruz Ph.D. dissertation.
- Asher, Nicholas & Brian Reese. 2005. Negative bias in polar questions. In Emar Maier, Corien Bary & Janneke Huitink (eds.), *Sinn und Bedeutung (SuB) 9*, 30–43. doi:10.18148/sub/2005.v9i0.716.
- Biezma, María & Kyle Rawlins. 2012. Responding to alternative and polar questions. *Linguistics and Philosophy* 35. 261–406. <https://doi.org/10.1007/s10988-012-9123-z>.
- Biezma, María & Kyle Rawlins. 2017a. Or what? *Semantics & Pragmatics* 10. <http://dx.doi.org/10.3765/sp.10.16>.
- Biezma, María & Kyle Rawlins. 2017b. Rhetorical questions: severing questioning from asking. In Dan Burgdorf, Jacob Collard, Sireemas Maspong & Brynhildur Stefánsdóttir (eds.), *Semantics and Linguistic Theory (SALT) 27*, 302–322. doi:10.3765/salt.v27i0.4155.
- Bledin, Justin & Kyle Rawlins. 2020. Resistance & resolution: attentional dynamics in discourse. *Journal of Semantics* 37. 43–82. doi:10.1093/jos/ffz015.
- Bolinger, Dwight. 1978. Yes-no questions are not alternative questions. In Henry Hiz (ed.), *Questions*, 87–105. D. Reidel Publishing Company.
- Büring, Daniel & Christine Gunlogson. 2000. Aren't positive and negative polar questions the same? Manuscript, UCSC/UCLA. [https://semanticsarchive.net/Archive/mYwOGNhO/polar\\_questions.pdf](https://semanticsarchive.net/Archive/mYwOGNhO/polar_questions.pdf).
- Caponigro, Ivano & Jon Sprouse. 2007. Rhetorical questions as questions. In Estela Puig-Waldmueller (ed.), *Sinn und Bedeutung (SuB) 11*, 121–133. doi:10.18148/sub/2007.v11i0.635.
- Ciardelli, Ivano. 2017. Question meaning = resolution conditions. *Logic and logical philosophy* 26(3). 383–416. doi:10.12775/LLP.2017.017.
- Ciardelli, Ivano, Jeroen Groenendijk & Floris Roelofsen. 2013. Inquisitive semantics: a new notion of meaning. *Language and linguistic compass* 7(9). 459–476. doi:10.1111/lnc3.12037.
- Ciardelli, Ivano, Jeroen Groenendijk & Floris Roelofsen. 2019. *Inquisitive Semantics*. Oxford University Press.
- Dayal, Veneeta. 2016. *Questions*. Oxford University Press. doi:10.1093/acprof:oso/9780199281268.001.0001.
- Farkas, Donka & Kim Bruce. 2010. On reacting to assertions and polar questions. *Journal of Semantics* 27. 81–118. <https://doi.org/10.1093/jos/ffp010>.
- von Fintel, Kai & Anthony Gillies. 2010. Must...stay...strong! *Natural Language Semantics* 18. 351–383. doi:10.1007/s11050-010-9058-2.
- Frana, Ilaria & Kyle Rawlins. 2016. Italian 'mica' in assertions and questions. In Nadine Bade, Polina Berezovskaya & Anthea Schöller (eds.), *Sinn und Bedeu-*

- tung (SuB)20*, 234–251.
- Frana, Ilaria & Kyle Rawlins. 2019. Attitudes in discourse: Italian polar questions and the particle ‘mica’. *Semantics & Pragmatics* 12(16). doi:10.3765/sp.12.16.
- Goodhue, Daniel. 2018. *On asking and answering biased polar questions*: McGill University Ph.D. dissertation.
- Goodhue, Daniel. 2022. Isn’t there more than one way to bias a polar question? *Natural Language Semantics* 30. 379–413. doi:0.1007/s11050-022-09198-2.
- Groenendijk, Jeroen & Martin Stokhof. 1984. *Studies in the semantics of questions and the pragmatics of answers*: University of Amsterdam Ph.D. dissertation.
- Guerzoni, Elena. 2003. *Why Even Ask?:* Massachusetts Institute of Technology Ph.D. dissertation.
- Gutzmann, Daniel, Katharina Hartmann & Lisa Matthewson. 2022. Verum focus is verum, not focus: Cross-linguistic evidence. *Glossa* 5. doi:10.5334/gjgl.347.
- Gutzmann, Daniel & Elena Castroviejo Miró. 2011. The dimensions of Verum. In Olivier Bonami & Patricia Cabredo Hofherr (eds.), *Empirical issues in syntax and semantics* 8, 143–165. CSSP. <http://www.cssp.cnrs.fr/eiss8>.
- Haddican, Bill, Anders Holmberg, Hidekazu Tanaka & Geroge Tsoulas. 2014. Interrogative slifting in English. *Lingua* 138. 86–106. doi:10.1016/j.lingua.2013.10.006.
- Hamblin, C. L. 1958. Questions. *Australasian Journal of Philosophy* 36. 159–168.
- Hamblin, C. L. 1973. Questions in Montague English. *Foundations of Language* 10. 41–53.
- Heim, Irene. 1990. Artikel und Definitheit. In A. von Stechow & D. Wunderlich (eds.), *Handbuch der Semantik*, 487–535. de Gruyter. doi:10.1515/9783110126969.7.487.
- Hirschberg, J. 1985. *A theory of scalar implicature*: University of Pennsylvania Ph.D. dissertation.
- Horn, Larry. 1989. *A Natural History of Negation*. University of Chicago Press.
- Krifka, Manfred. 2013. Response particles as propositional anaphors. In Todd Snider (ed.), *Semantics and Linguistic Theory (SALT) 23*, 1–18. doi:10.3765/salt.v23i0.2676.
- Krifka, Manfred. 2015. Bias in commitment space semantics: declarative questions, negated questions, and question tags. In Sarah D’Antonio, Mary Moroney & Carol Rose Little (eds.), *Semantics and Linguistic Theory (SALT) 25*, 328–345.
- Krifka, Manfred. 2017. Negated polarity questions as denegations of assertions. In Chungmin Lee, Ferenc Kiefer & Manfred Krifka (eds.), *Contrastiveness and scalar implicatures*, Springer. [https://doi.org/10.1007/978-3-319-10106-4\\_18](https://doi.org/10.1007/978-3-319-10106-4_18).
- Ladd, Robert. 1981. A first look at the semantics and pragmatics of negative questions and tag questions. In Roberta A. Hendrik, Carrie S. Masek & Mary Frances Miller (eds.), *Chicago Linguistics Society (CLS) 17*, 164–171.

- Chicago Linguistics Society.
- Ladusaw, William. 1979. *Polarity sensitivity as inherent scope relations*: The University of Texas at Austin PhD dissertation.
- Lauer, Sven. 2016. On the status of ‘maximize presupposition’. In Mary Moroney, Carol-Rose Little, Jacob Collard & Dan Burgdorf (eds.), *Semantics and Linguistic Theory (SALT) 26*, LSA and CLC Publications. doi:10.3765/salt.v26i0.3947.
- Lewis, David. 1979. Scorekeeping in a language game. *Journal of Philosophical Logic* 8. 339–359. doi:10.1007/BF00258436.
- Murray, Sarah. 2017. *The semantics of evidentials*. Oxford University Press. www.doi.org/10.1093/oso/9780199681570.001.0001.
- Rawlins, Kyle. 2010. Conversational backoff. In Nan Li & David Lutz (eds.), *Semantics and Linguistic Theory (SALT) 20*, 347–365. doi:10.3765/salt.v20i0.2550.
- Reese, Brian. 2007. *Bias in Questions*: UT Austin Ph.D. dissertation.
- Repp, Sophie. 2013. Common ground management: modal particles, illocutionary negation and VERUM. In Daniel Gutzman & Hans-Martin Gärtner (eds.), *Beyond expressives – explorations in use-conditional meaning*, 231–274. Emerald Group. [https://doi.org/10.1163/9789004183988\\_008](https://doi.org/10.1163/9789004183988_008).
- Roberts, Craige. 1996. Information structure in discourse: Towards an integrated formal theory of pragmatics, 1998 revision. In Jae Hak Yoon & Andreas Kathol (eds.), *OSUWPL vol. 49: Papers in Semantics*, The Ohio State University, Department of Linguistics.
- Roberts, Craige. 2012. Information structure in discourse: Towards an integrated formal theory of pragmatics. *Semantics & Pragmatics* 5(1). 1–69. <http://dx.doi.org/10.3765/sp.5.6>.
- Roelofsen, Floris & Donka Farkas. 2015. Polarity particle responses as a window onto the interpretation of questions and assertions. *Language* 91(2). 359–414. <https://doi.org/10.1353/lan.2015.0017>.
- Roelofsen, Floris & Sam van Gool. 2010. Disjunctive questions, intonation, and highlighting. In Maria Aloni, Harald Bastiaanse, Tikitou de Jager & Katrin Schulz (eds.), *Logic, Language and Meaning: 17th Amsterdam Colloquium, Amsterdam, The Netherlands, December 16-18, 2009, Revised Selected Papers*, doi:10.1007/978-3-642-14287-1\_39.
- Roelofsen, Floris, Noortje Joost Venhuizen & Galit Weidman Sassoon. 2013. Positive and negative questions in discourse. In Emmanuel Chemla, Vincent Homer & Grégoire Winterstein (eds.), *Sinn und Bedeutung (SuB) 17*, 455–472. Paris.
- Rohde, Hannah. 2006. Rhetorical questions as redundant questions. In *San Diego Linguistics Papers* 2, 134–168. University of California, San Diego.
- Romero, Maribel & Chung-hye Han. 2004. On negative *Yes/No* questions. *Lin-*

- linguistics and Philosophy* 27(5). 609–658. <https://doi.org/10.1023/B:LING.0000033850.15705.94>.
- Rooryck, Johan. 2001. Evidentiality, part I. *Glott International* 5(4). 125–133.
- van Rooy, Robert & Marie Safarova. 2003. On polar questions. In Robert B. Young & Yuping Zhou (eds.), *Semantics and Linguistic Theory (SALT) 13*, 292–309. doi:10.3765/salt.v13i0.2887.
- Schlenker, Philippe. 2012. Maximize presupposition and Gricean reasoning. *Natural Language Semantics* 20. 391–429. doi:10.1007/s11050-012-9085-2.
- Simons, Mandy. 2006. Observations on embedding verbs, evidentiality, and presupposition. *Lingua* 117. 1034–1056.
- Stalnaker, Robert. 1978. Assertion. In Peter Cole (ed.), *Pragmatics*, 315–332. New York: Academic Press.
- Stalnaker, Robert. 2002. Common ground. *Linguistics and Philosophy* 25. 701–721. doi:10.1023/A:1020867916902.
- Sudo, Yasutada. 2013. Biased polar questions in English and Japanese. In Daniel Gutzmann & Hans-Martin Gärtner (eds.), *Beyond expressives: explorations in use-conditional meaning*, 275–295. Brill. [https://doi.org/10.1163/9789004183988\\_009](https://doi.org/10.1163/9789004183988_009).
- Tabatowski, Michael. 2022. *Preferring to learn: an attitudinal approach to polar questions*: University of Chicago Ph.D. dissertation.
- Talmina, Natalia & Kyle Rawlins. 2021. Evidential meaning of English clause-embedding verbs. In *Proceedings of the 43rd Annual Meeting of the Cognitive Science Society*, 1521–1527.
- Trinh, Tue. 2014. How to ask the obvious: a presuppositional account of evidential bias in English yes/no questions. In Luka Crnic & Uli Sauerland (eds.), *The Art and Craft of Semantics: A Festschrift for Irene Heim*, vol. 71, MITWPL.
- Weiner, Matt. 2007. Norms of assertion. *Philosophy Compass* 2(2). 187–195. doi:10.1111/j.1747-9991.2007.00065.x.

Kyle Rawlins  
Cognitive Science Department  
237 Krieger Hall  
Johns Hopkins University  
3400 N Charles St  
Baltimore, MD, 21218  
[kgr@jhu.edu](mailto:kgr@jhu.edu)