Relating form and meaning in negative polar questions

**Polar Questions.** Since Ladd (1981), semanticists have puzzled over the fact that questioners may use different forms of polar questions (PQs) to convey bias towards their expected answer to the question. For instance, the asker of the positive PQ (PPQ) in (1) may be taken as neutral with respect to whether John is home, but the asker of the high negation PQ (HNPQ) in (2) or the low negation PQ (LNPQ) in (3) is implicated to have a prior belief that John is home.

1. Is John home?  
2. Isn’t John home?  
3. Is John not home?

Under a Hamblin-Karttunen semantics, the denotation of a question is the set of possible resolutions to that question. Thus, in this system, (1)-(3) all denote \{John is home, John is not home\}, though they convey different epistemic biases on the part of the speaker. While a significant body of research exists on empirically characterizing the meaning of PQs, less often explored is the question of how the particular form of a polar question gives rise to this meaning (though see Farkas & Roelofsen 2016 for some generalizations).

I begin to tackle this question from the angle of Estonian, in which the lexical choice of question particle influences the type of bias conveyed in otherwise identical NPQs. From this, I suggest that NPQ biases can be derived simply from compositional semantics and the application of general pragmatic principles governing interpretation of marked sentence types.

**Estonian Question Particles.** PQs in Estonian are distinguished by the choice of the left-periphery question particle: *kas* or *ega*. Only *kas* may be used in PPQs, and these positive *kas* questions do not necessarily license epistemic implicatures, much like unmarked polar interrogatives in English:

4. Kas/*Ega* sul on jalgratas?  
   ‘Do you have a bike?’

*Kas*−*p* questions, on the other hand, indicate that the speaker had a prior belief that *p*, whereas *ega*−*p* questions indicate that the speaker had a prior belief that *¬p* (Keevalik & Habicht 2017). The discourse conditions in which each question type is licit is typically one where contextual evidence either fails to support or contradicts the prior belief (Metslang 2017):

5. Kas sul ei ole jalgratast?  
6. Ega sul ei ole jalgratast?  

Responses to both PPQs and NPQs with the polar response particles *jah* ’yes’ and *ei* ’no’ do not exhibit different patterns with the choice of question particle; they universally concord with the polarity of the response itself. Nevertheless, the superficial similarity between NPQ form with both *kas* and *ega*, and the differing compatibility with PPQs, suggests a significant lexical distinction between the two particles.

**Prior accounts of PQ bias.** Previous attempts to link PQ form and specific bias they encode are relatively sparse. The purely pragmatic account of van Rooy & Šafařová (2003, vR&S) states that PPQs differ from NPQs in that the expected utility of a positive response is greater than a negative response in the case of the former, and vice versa for the latter. But while it is certainly true that different PQ types convey that different answers to *q* may be of different utilities, vR&S lack a non-stipulative way of accounting for the divergent implicatures associated with *kas* and *ega* NPQs, which are string-identical aside from the choice of particle.

Negative *kas* questions generate extremely similar implicatures to English HNPQs, which are argued to contribute an epistemic operator *VERUM* by Romero & Han (2004, R&H). But if *VERUM* is somehow part of the meaning of *kas*, it is difficult to explain why *kas* can be freely used in unmarked PPQs, and if it is outside the meaning of *kas*, it seems arbitrary that *kas* NPQs, but not *ega* NPQs, should license it, and its syntactic status would require additional stipulation. Furthermore, neither account would have anything to say about the inability of *ega* to appear in PPQs.

**The analysis.** I propose that, contra the approaches of vR&S and R&H, the discourse effects of PQs in
Estonian arise in large part from the semantics of the interrogative particles and independent principles of pragmatic reasoning. Both kas and ega expone interrogative operators. Kas simply takes a complementary proposition and returns the set containing that proposition and its negation:

\[ [\text{kas}]^w = \lambda p. \{ p, \neg p \} \]

If kas simply makes polar questions out of propositions in this fashion, then the meaning of a kas-\neg p question like (4) would be the following, if the particle scopes over negation (a not-unreasonable assumption given that kas always appears at the left periphery of a clause):

\[ [\text{kas sul ei ole jalgratas}] = \{ \neg (\text{ADDR has a bike}), \neg \neg (\text{ADDR has a bike}) \} \]

I propose that while \( p \) and \( \neg p \) are logically equivalent, they are not pragmatically so. Because \( \neg p \) is, essentially, a redundant version of \( p \), it is highly marked. With a kas-NPQ, the speaker presents \( \neg p \) as the less-marked possible answer in situations—\( p \) is seen as the ‘default’ or ‘salient’ response, such as when is suggested by contextual evidence. In such scenarios, asking a question aiming to settle whether \( p \) or \( \neg p \) is only licit if the speaker doesn’t already believe \( \neg p \): that is, if the speaker’s prior beliefs were either \( p \) or they were agnostic. However, if the latter were true, the speaker would be likely to accept the \( \neg p \) evidence in the context at face value. Thus, if a speaker utters kas-\neg p, they most plausibly have a prior belief that \( p \). In this way, the denotations of kas-PPQs and NPQs are equivalent, but give rise to different discourse effects. This approach makes the strong prediction that NPQs cross-linguistically should behave similarly to kas-NPQs (barring scope considerations), which merits further investigation.

The semantics of ega, however, need to reflect both its conveyance of epistemic belief in \( \neg p \) with NPQs and its incompatibility with PPQs. The latter can be accomplished by means of a presupposition that the complement of ega is a negated clause: given the existence of NPIs, this does not seem a far-fetched component of ega’s meaning. However, this is insufficient to capture the implicature that an utterer of ega-\neg p believes \( \neg p \), which would otherwise follow from the reasoning of (8).

To bridge this gap, I turn to observations by Keevallik & Habricht (2017), who note that ega may also appear turn-initially in declarative utterances to reinforce the belief in that proposition. While ega-NPQs seem to be genuine interrogatives (they can, for instance, include the sentence-final interrogative particle või), they share this core of meaning with declarative ega, indicating this belief is a core component of its meaning. For the QP version of ega, I suggest this too is a presupposition:

\[ [\text{ega}]^w = \lambda p. \{ p, \neg p \} \] and presupposes:

a. That \( p \) is negated (i.e., \( p = \neg q \) for some atomic proposition \( q \))

b. That the speaker \( x \) believes \( p \): DOX\( x \subseteq p \)

\[ [\text{ega sul ei ole jalgratas}] = \{ \neg (\text{ADDR has a bike}), \neg \neg (\text{ADDR has a bike}) \} \]

While the same epistemic implicature as in (8) could be generated in (10) in principle, as they have identical denotations, it is blocked by the presuppositional content of ega, which requires speaker belief in \( \neg p \). Whereas the epistemic bias in kas-NPQs is derived from implicature, in ega-NPQs, it comes from presupposition.

**Upshot.** The meaning of NPQs in discourse in Estonian can be derived by straightforward composition of the meaning of a negative declarative and operator-encoding polar question particles which vary in their presuppositional content. Further work must be done within Estonian—for instance, on the use of different particles with alternative questions and embedded questions—to determine how far this semantic account of Estonian question particles can be pushed. A productive line of inquiry could also focus on deriving richer systems of BPQ feature encoding (e.g. the epistemic/evidential bias system of Sudo 2013) cross-linguistically, from compositional semantics and independently motivated pragmatic principles.