On the role of the Speaker's beliefs in some biased questions

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1   Introduction

This short paper looks at two biased question types, Polar Rhetorical Questions (PRQs) and the so-called Negative Wh-Construction (NWHC). Although at first glance both could seem RQs because of the Speaker's bias toward the negation of the proposition expressed by the sentence radical of the interrogative, it is argued here that the NWHC is not a subtype of RQs. Beliefs attributed to the Addressee play a crucial role in setting NWHCs and PRQs apart.

1.1   The Negative Wh-Construction

The Negative Wh-Construction is a special question type: by its form it is a wh-interrogative, but by its function, it is a denial to some previous utterance.

(1)   A: John is a vegetarian.
       B: Since whén is John a vegetarian?

    Since when in B's reaction bears emphatic stress and expresses that B does not believe the proposition *that John is a vegetarian.* Wh-interrogatives expressing such a move have been observed in a wide range of unrelated languages.

(2)   a. Koei bindou jau hai   toushugun sik je   aa3?! (Cantonese)
            he   where have be.at library   eat thing Q

            'No way did he eat anything in the library.'

      b. Eti   John-i   60 sal   i-ni?! (Korean)
            where John-NOM 60 year.old be-Q

            'No way is John 60 years old.'

      c. De   dónde va   a tener 60 años?! (Spanish)
            from where goes to have 60 years

            'No way is he 60 years old.'   (Cheung, 2008, (1a)–(1c))

      d. Can ne   zaman-dan beri vejetaryan-dır? (Turkish)
            Can what time-ABL   since vegetarian-COP

            'Since when is Can a vegetarian?'

e. Mióta   érdekel mások véleménye? (Hungarian)
   Since-when interests others opinion
   'Since when do you care about others' opinion?'

Although at a first glance, these questions look similar to RQs, the present paper argues that they are not rhetorical. According to Cheung (2008, 2009), the NWHC has a "negative rhetorical interpretation", by which he means that the at-issue meaning of a Negative Wh-Construction is a negative assertion. There are two discourse-related constraints that apply, both of which are conventional implicatures. One of them he called the 'Conflicting View Condition', which restricts the utterance of a NWHC to contexts where the Speaker is sure that her conversational partner believes the opposite of the proposition currently in question, and the other one being the so-called 'Mis-Conclusion Condition', which guarantees that NWHCs be used in contexts in which the Speaker thinks that her partner should have come to the same conclusion as the Speaker. The three meaning components are shown in (3), where p the proposition expressed by the previous utterance to which the NWHC is a denial.

(3)   1. At-issue meaning: $\neg p$

      2. Conventional Implicatures:

         (a) Conflicting View Condition: The Speaker thinks that the discourse participant believes that p.

         (b) Mis-Conclusion Condition: The Speaker thinks that the discourse participant should have every reason to believe that $\neg p$. (Cheung, 2009, p. 306)

Applying these to (1), upon uttering 'Since when is John a vegetarian?', the Speaker commits herself to 'John is not a vegetarian', and thinks that her Addressee (wrongly) believes that John *is* a vegetarian. Also, the Speaker thinks that the Addressee should have already known that John was not a vegetarian.

It has been noted that some NWHCs do not necessarily express propositional negation but they can target some metalinguistic issue raised by the latest move (Kiss, 2017). The present paper restricts itself to NWHCs that express propositional negation.

1.2   The markedness of NWHCs

NWHCs are thus biased questions, showing a marked form in several ways. As for their syntax, they resist any kind of embedding and the wh-phrase is restricted to a peripheral position. The examples in (4) could only be grammatical if the embedded sentence is pronounced as a quote, but not otherwise. Example (5) shows that a NWHC cannot serve as a sentential subject.

(4)   a. *Maria ha detto che ma dove le   piaceva il   concerto. (Italian)
         Maria has said that but where to.her pleasant the concert

      b. *Marija skazala chto s kakix eto por chto jej   ponravilsya koncert.
         Maria   said   that since.when.is.it that to.her was.pleasant concert
         (Russian)

         Intended: 'Maria said that she didn't like the concert'

(5) a. [Bù chōuyān] yǒuyí jiànkāng. (Mandarin)
   not smoke benefit health
   'Not smoking is good for your health.'

   b. [*Nǎr chōuyān] yǒuyí jiànkāng.
   where smoke benefit health
   Intended: 'Not smoking is good for your health.'

The peripheral position of the wh-phrase in a NWHC is seen even in wh-in-situ languages. The Cantonese example in (6) shows that unless the wh-phrase is above the ability modal *wui*, the utterance cannot be interpreted as a NWHC. (6a) and (6b) are genuine questions, (6c) is a NWHC.

(6) a. Keoi wui hai bindou maai ce aa3? (Cantonese)
   he will at where buy car Q
   'Where will he buy a car?'

   b. Keoi hai bindou wui maai ce aa3?
   he at where will buy car Q
   'Where will he buy a car?'

   c. Keoi bindou wui maai ce aa3?
   he where will buy car Q
   Lit: 'Where will he buy a car?'
   'No way will he buy a car'   (After Cheung 2008, p. 23)

Cheung has made the following observations: Languages differ in what wh-phrases can participate in a NWHC, if any, but typically only a small subset of wh-phrases is used, and they cannot be paraphrased. As for their semantics, the wh-phrases do not quantify over the domains canonically associated with them: *where* does not range over places, *when* does not range over times, etc. (Cheung analyzes them as wh-words that stand for possible worlds). Also, the wh-phrase in a NWHC can easily cooccur with a constituent that in a genuine question would serve as a congruent answer to it.

(7) a. Since when has he been working at UCLA since 2000?   (Cheung, 2009, (8))

   b. Tā nǎr yǒu zài túshūguǎn lǐ chī fàn (ne)? (Mandarin)
   He where have be.at library in eat meal (Q)
   'No way did he eat anything in the library.'

Another property contributing to markedness is that the wh-phrase in NWHCs can cooccur with predicates having temporal properties that would otherwise make them incompatible in genuine questions. *Since when* is normally ungrammatical with a telic predicate like *decide to vote for Trump*, and *where* is incompatible with stative properties like *to be a bus*.

(8) a. Da quando ha deciso di votare per Trump? (Italian)
   since when has decided to vote for Trump
   Lit.: 'Since when did he decide to vote for Trump?'

   b. E bʌs kit^{h}õ ja? (Punjabi)
   this bus where COP
   Lit.: 'Where is this a bus?'

3

Furthermore, the wh-expressions in NWHCs tend to be marked in form in some languages. They might not be outright idiomatic, but they are somewhere between their ordinary meaning known from genuine questions and the special meaning seen in NWHCs. Examples of such wh-phrases are shown in (9):

(9)   a.   Italian: *dove* 'where': **(ma) dove* in NWHCs
      b.   Cantonese: *(hai) bindou* '(at) where': *(*hai) bindou* in NWHCs
      c.   Punjabi: $kit^h e$ 'where': $kit^h \tilde{o}$ in NWHCs

English *since when* is close to the literal end of the continuum, but at the other end, we find examples such as *ma dove* 'but where' in Italian and $kit^h \tilde{o}$, derived from $kit^h e$ in Punjabi.

Lastly, NWHCs bear emphatic stress on the wh-phrase and tend to have a falling final tune, which differentiates them from genuine questions.

The above properties show that NWHCs have a marked form and that the relation of the sentence radical and the wh-phrase is different from how it is in genuine questions. The sentence radical of a NWHC is of the same type as the sentence radical of declaratives and polar questions, that is, they are full propositions. While the sentence radical of wh-interrogatives lacks information (Krifka, 2011), the one of NWHCs does not. Examples (7) and (8) prove that the wh-phrase does not come from the proposition as it is in genuine questions. In NWHCs, the wh-phrase seems to act as a discourse-related operator, which is supported by the fact that NWHCs cannot embed.

1.3   What this paper is about

The present paper aims to spell out the difference between RQs and NWHCs by representing the beliefs of the Speaker. This is shown informally in section 2.

In section 3, the system of Farkas and Roelofsen (2017) is presented, which offers a principled way to associate the semantic content and conventions of use of declaratives and polar interrogatives. In this framework, only those utterances can be accommodated that have a proposition-denoting sentence radical and have a so-called highlighted proposition. It will be shown that both PRQs and NWHCs contribute a highlighted proposition. Since this framework also cares about the Speaker's attitude towards the truth of the proposition conveyed by some biased questions, the question whether PRQs and NWHCs should be accommodated in Farkas and Roelofsen's framework becomes relevant.

2   Belief-constellations

2.1   What makes a question rhetorical?

Given Cheung's claim that NWHCs have a 'negative rhetorical interpretation' but are not RQs themselves, it is worth looking at where this interpretation comes from. What makes a question rhetorical? There are at two main views found in the literature on how one could analyze RQs. One of them analyzes them as assertions (Han and Siegel, 1997; Han, 1998, 2002), and the other, as questions (Rohde, 2006; Caponigro and Sprouse, 2007). The assertion-like analysis is based on the fact that RQs pattern with assertions, rather than with questions, in some tests offered by Sadock (1974), some examples of which are shown in (10). A genuine question cannot follow *after all*, but an assertion can. On the

other hand, *by any chance* can only appear in a genuine question, not in a RQ or in an assertion. What we see is that RQs pattern with assertions.

(10)   a. *After all*, do phonemes have anything to do with language?

       b. *After all*, phonemes do not have anything to do with language.

       c. Does Arthur, *by any chance*, know anything about syntax?

The semantic derivation at some point turns RQs into assertions of the opposite polarity, which is shown in (11). The job is done by an operator that turns the polarity of the sentence radical to the opposite (Han, 1998, 2002).

(11)   a. Did I tell you that writing a dissertation was easy?

       b. *Op*[Did I tell you that writing a dissertation was easy?]

       c. ¬[I told you that writing a dissertation was easy]
          (Han, 1998, (25))

Since the polarity operator is set to a pragmatically available value, the expression is not a question any more, it becomes an assertion. One major advantage of the assertion-like analysis is that it also accounts for the distribution of Negative Polarity Items in RQs: it is the hidden operator that licenses them.

Caponigro and Sprouse (2007) and Rohde (2006) have pointed out some problems with this analysis, both in terms of empirical facts and theoretically. They noticed that RQs can be answered, while assertions cannot. Also, RQs can have answers that are positive, that is, non-negated propositions.

(12)   A: It's understandable that Luca adores Mina. After all, who helped him when he was in trouble?
       B: Mina./#Nobody.   (Caponigro and Sprouse, 2007, (11))

Rohde (2006) points to Schaffer's (2005) *RQs-as-retorts*, another example of RQs not having an answer "of opposite polarity of what has been asked", as Han claims is the case.

(13)   a. A: Does Ed McMahon drink?
          B: Is the Pope a Catholic?   (Schaffer, 2005, (5))

       b. A: How do you like school?
          B: How do you like prison?   (Schaffer, 2005, (8))

The RQ in (13aB) does not convey the negation of what has been asked, on the contrary. And neither does (13bB), strictly speaking: what it says is 'I like school to the extent you like prison', and the answer also signals that the question was a trivial one. RQs-as-retorts are special in several ways, the reader is referred to Schaffer (2005) for a description of them.

As for the theoretical side of the assertion-like analysis, one cannot overlook the costliness of Han's assumptions. First, the interpretation of interrogatives should branch into questions and assertions, from now on, despite the fact that they can have the same form (at least the same segmental material), as pointed out by Caponigro and Sprouse (2007). Also, Han assumes two sets of wh-words: interrogative and negative ones, yet we have hardly any reason based on morphology to do so.

The other view found in the literature, advocated by Caponigro and Sprouse (2007) and by Rohde (2006), pictures Rhetorical Questions as questions. On this account, it

is the obviousness of the answer, and nothing else, that makes a question rhetorical. In other words, genuine information-seeking questions and RQs are the same semantically, although they differ pragmatically; what makes them different is the public beliefs the discourse participants are committed to. Once the speakers all believe the same answer to a given question, it can be asked felicitously as a RQ.

What makes a question rhetorical in Caponigro and Sprouse's analysis is formulated in (14):

(14)　a.　Q is a Rhetorical Question iff $[\![Q]\!]^w$ is an element of the common ground of both the Speaker and the Addressee.

　　　b.　Q is an Ordinary Question iff $[\![Q]\!]^w$ is not an element of Speaker's beliefs

The definition of Rhetorical Questions along these lines is given in (15).

(15)　A RQ is an interrogative clause whose answer is known to the Speaker and the Addressee, and they both also know that the other knows the answer as well. An answer is not required, but possible. Either the Speaker or the Addressee can answer.
(Caponigro and Sprouse, 2007, (26))

Treating RQs as questions has some advantages compared to the assertion-like analysis: there is no need to posit two sets of wh-words and the facts about answerability are explained. The major shortcoming of the question-like analysis is that it does not offer an answer to why NPIs can occur in RQs. This problem is not treated here, but the reader is referred to the work of Guerzoni (2004) and Abels (2003) who offer some answer to it. Despite this shortcoming, in this paper, RQs are analyzed as questions to which the answers are perceived by the Speaker as obvious.

2.2　The role of discourse participants' beliefs

A RQ suggesting a negative answer is similar to a NWHC in an important respect: the Speaker believes that the answer to her question is the empty set. What RQs and NWHCs differ in is the belief the Speaker attributes to the Addressee about the truth of the proposition in question. Following Caponigro and Sprouse, in the case of a RQ, the Speaker attributes a positive or negative belief to herself about the proposition in question p if the RQ in question is a polar one. If the RQ is a wh-interrogative, this negative belief means that according to the Speaker, there is no value that makes the sentence radical a true proposition. At the same time, the Speaker attributes the same belief on the proposition p to her Addressee, which is either the sentence radical of a PRQ or a proposition that serves as a true answer to the wh-RQ. This condition holds whether it is a RQ awaiting a positive or a negative answer.

In the case of a NWHC, recall that there are some discourse-related constraints, namely the Conflicting View Condition and the Mis-Conclusion Condition. These guarantee that a NWHC is pronounced felicitously only if the Speaker and the Addressee have opposing beliefs about p. Upon reacting to the previous utterance expressing the proposition p, a NWHC expresses $\neg p$.

Let S^S represent the Speaker's own belief about the proposition in question, and let S^A be the belief attributed by the Speaker to the Hearer. The polarity of the belief about the truth of p is marked by $+$, $-$ and *neut* for positive, negative and neutral stances on it. In this case, RQs with negative answers, RQs with positive answers and NWHCs pertain

to three different constellations of beliefs. Let us represent a certain belief-constellation as an ordered pair of Speaker's beliefs, the first element being S's belief about p and the second, what S attributes to A as a belief about p.

(16)　a. Rhetorical Question with a negative answer: $\langle S^{S-}, S^{A-} \rangle$
　　　　b. Rhetorical Question with a positive answer: $\langle S^{S+}, S^{A+} \rangle$
　　　　c. Negative Wh-Construction: $\langle S^{S-}, S^{A+} \rangle$

Both RQs and NWHCs are biased questions, since in both cases, the Speaker has a bias toward the proposition she is questioning, and in addition, she also attributes a bias to the Addressee. The similarity between RQs and NWHCs is due to the Speaker's negative bias S^{S-} in both cases. But the Addressee is attributed different things in both cases: RQs with a negative answer require the Addressee's belief to be negative as well, while NWHCs are felicitous only if the Addressee's belief on the subject matter p is of opposite polarity, that is, positive.

These properties are summarized in the following table, where S stands for Speaker, and A, for the belief attributed to the Addressee by S:

S's belief about A $\rightarrow$ S's own belief	S^{A-}	S^{A-neut}	S^{A+}
S^{S-}	**RQ$^-$**	accommodate as a RQ	**NWHC**
S^{S-neut}	n/a	genuine question	rising declarative
S^{S+}	n/a	accommodate as a RQ	**RQ$^+$**

Table 1: Speaker's beliefs about the proposition in question and about Addressee's beliefs on it.

The two dimensions of the table show the possible beliefs of the Speaker about the truth of the proposition p. The header column shows that the Speaker can believe that p is not true (S^{S-}), that p is true (S^{S+}), or she can have a neutral stance on it (S^{S-neut}). The header row shows three possible beliefs the Speaker can attribute to the Addressee: she can think A agrees with p (S^{A+}), that A disagrees with p (S^{A-}), or it is possible that the Speaker has no reason to attribute any bias to A (S^{A-neut}). Attributing a neutral stance to A does not mean to believe that A does not know whether p is true, it only means that the Speaker is unable to attribute a positive or a negative stance to A about p, which does not exclude that A does have one. S^{S-neut}, on the other hand, should be read off as "S cannot attribute neither a positive, neither a negative attitude to S", that is, to herself, which means that the Speaker does not know whether p is true or not.

(17)　Belief-constellations
　　　Any Speaker S in a conversation who pronounces an interrogative has a belief constellation represented as an ordered pair $\langle S^S, S^A \rangle$,
　　　where S^S indicates the belief about the truth, falsity or a neutral stance about the proposition in question p attributed by S to herself, and
　　　where S^A indicates the belief of the truth, falsity or neither, about p, attributed by S to the Addressee A,

so that both S^S and S^A can have positive, negative or neutral values, depending on the kind of the question.

If we adopt Caponigro and Sprouse's view on the "felicity conditions" of RQs, then both members of the ordered pair should show the same (non-neutral) value. To illustrate it, consider the following example of a RQ awaiting a negative answer.

(18)   Do chickens have lips?   (Schaffer, 2005, (1))

Here, the proposition in question p would be the sentence radical of the RQ, *chickens have lips*. The answer to this question is negative and this fact is obvious enough so that we can rely on that the Addressee also knows this. The belief constellation of the Speaker of (18) is therefore $\langle S^{S-}, S^{A-} \rangle$.

(19)   A: It's understandable that Luca adores Mina. After all, who helped him when he was in trouble?
       A/B: Mina./#Nobody.   (Caponigro and Sprouse, 2007, (11))

The proposition in question here is composed of applying the commonly known answer to the question radical (in the terminology of Krifka (2017)): $\lambda x[x$ helped Luca when he was in trouble](Mina). The proposition in question in this case would be 'Mina helped Luca when he was in trouble'. The Speaker believes this proposition is true and expects her Addressee to also believe this to be the case, the belief constellation is thus $\langle S^{S+}, S^{A+} \rangle^1$.

As for the rest of the cases in Table 1, a Speaker can use a RQ felicitously even if she does not believe the Addressee to be biased towards the answer her question suggests because as Abels (2003) noted, a cooperative discourse participant can accommodate presuppositions arising from RQs. This represents the notion of "one-sided mutual belief", the importance of which is highlighted by Pierrehumbert and Hirschberg (1990). Belief constellations that have a neutral value for S's own belief about p are genuine questions in case the belief attributed to A is not biased either: $\langle S^{S-neut}, S^{A-neut} \rangle$. If A is biased towards the positive answer, however, it is a case of a rising declarative (Gunlogson, 2001). $\langle S^{S-neut}, S^{A+} \rangle$ represents cases of questions that in English are syntactically declarative but have a rising intonation. Rising declaratives fail to commit the Speaker to the truth of the sentence radical, yet they are biased, namely their Speaker attributes a certain proposition to the Addressee (Gunlogson, 2001, p. 4). If this is indeed the constellation of beliefs a rising declarative expresses, then it can be adequately captured by the ordered pair of Speaker's beliefs $\langle S^{S-neut}, S^{A+} \rangle$.

In sum, Rhetorical Questions and the Negative Wh-Construction are similar in an important respect, namely that the Speaker's negative stance on a proposition in question p (S^{S-}) is part of the felicity conditions of both. What sets them apart is the belief the Speaker attributes to the Addressee.

3   Semantic content and conventions of use

Farkas and Roelofsen (2017) suggest a framework that allows that semantic content and conventional discourse effects divide the labor when interpreting declaratives and polar

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[1]The belief-constellation $\langle S^{S+}, S^{A+} \rangle$ is somewhat underspecified in this case. It only shows that there is a true answer to the RQ, but the exact information comes from world knowledge, unlike in the case of RQs awaiting a negative answer and PRQs.

interrogatives. Besides information-seeking questions, they also look at some special questions such as rising declaratives, claiming that their framework can host all question types, biased and neutral. It is argued here, that we have reasons to accommodate RQs and NWHCs in their system, and if so, some extensions are needed.

The authors claim that the difference in the interpretation of assertions and polar interrogatives follows from their semantic differences while the same convention of use is assigned to both. Marked utterance types, for example rising declaratives, are also subject to some special discourse effects, which is due to how strongly the Speaker believes that the highlighted proposition (the sentence radical) is true. This they call the *credence level*, and it becomes important whenever special effects arise, and special effects arise due to markedness.
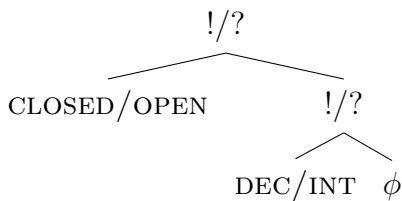
(20) Division of labor principle
   a. The discourse effects of unmarked forms should be fully determined by their semantic content and the basic convention of use, F_b.
   b. The discourse effects of marked forms should always include the discourse effects that are dictated by their semantic content and the basic convention of use F_b. In addition, they may include special discourse effects connected to the particular sentence type involved.   (Farkas and Roelofsen, 2017, p. 250)

The authors characterize the basic discourse context in terms of the set of discourse participants, the table, which is a stack of propositions that have been raised as issues but have not yet been accepted into the common ground (Farkas and Bruce, 2010), and the set of commitments, which maps discourse participants to the set of propositions that cover all their public beliefs (to their commitment set, see Stalnaker (1978)).

Farkas and Roelofsen characterize the semantics of declaratives and interrogatives in terms of clause type markers. The presence of the clause type markers DEC or INT are signaled in English by word order, and the clause type markers CLOSED and OPEN are signaled by falling and rising intonation, respectively. The two kinds of markers together determine whether the sentence is inquisitive or not (Ciardelli et al., 2013). The sentence radical is the argument of the DEC/INT marker, and the resulting expression then combines with the CLOSED/OPEN marker, which can have a further effect on its inquisitiveness.

(21) Clause type markers

(22) a. $\llbracket \text{DEC} \rrbracket = \lambda \text{P}.!\text{P}$
   b. $\llbracket \text{INT} \rrbracket = \lambda \text{P}.\langle ? \rangle$
   c. $\llbracket \text{CLOSED} \rrbracket = \lambda \text{P}.\text{P}$
   d. $\llbracket \text{OPEN} \rrbracket = \lambda \text{P}.?\text{P}$

In the case of an assertion, the clause type marker DEC makes any sentence radical non-inquisitive (marked by !), and if it is also CLOSED, the utterance ends up non-inquisitive, that is, it is informative and does not need further information to be completed. On

the other hand, polar interrogatives expressing an information-seeking question are typed INT and OPEN, marked by ?. Marked sentence types typically have both ! and ?, as it is exemplified by the case of rising declaratives.

(23) Clause type markers in rising declaratives

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        ?!P
       /   \
   OPEN    !P
          /  \
        DEC    P
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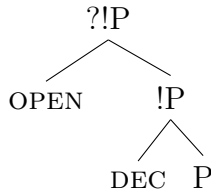
Since in this case a declarative combines with OPEN, both the highlighted alternative P and its complement are added to the table, and the sentence becomes inquisitive. A proposition is equivalent to a set of worlds: adding the proposition together with its complement results in adding the whole set of worlds W to the table, which is not an informative move.

The second interpretational component is determined by the convention of use.

(24) Basic convention of use
    If a discourse participant x utters a declarative or interrogative sentence ϕ, the discourse context is affected as follows:
    a. The proposition expressed by ϕ, $[\![\phi]\!]$, is added to the **table**.
    b. The informative content of ϕ, $\bigcup[\![\phi]\!]$, is added to the **commitments**(x).

In case of an assertion, ϕ equals to a proposition, but in case of a polar interrogative, ϕ stands for both the highlighted alternative and its complement, as shown in (25). Thus, in the latter case, the entire set of worlds W is added to **commitments**(x), as it becomes an inquisitive proposition, resulting in a trivial commitment, requiring an answer.

(25) Conventional discourse effects of participant x uttering a polar interrogative expressing the proposition $\{\alpha, \overline{\alpha}\}$:
    a. $\{\alpha, \overline{\alpha}\}$ is added to the **table**
    b. W is added to the **commitments**(x).   (Farkas and Roelofsen, 2017, p. 267)

In case of a genuine question, the answer is supposed to reduce the set of worlds in **commitments**(x). But in marked sentences, some special discourse effects may arise. Between any two forms that have the same semantic content, the one that is formally more complex, and therefore "less likely to ensure communicative success" is considered marked (p. 263). Assuming that both segmental and suprasegmental material counts as 'form', biased questions are all marked, as expected. Tag interrogatives have a longer form than polar interrogatives without a tag, and rising declaratives, RQs and NWHCs are marked because of their intonation. And NWHCs, in addition, also have peculiar syntactic properties that in their genuine counterparts would cause ungrammaticality.

Marked sentences are subject to the same basic convention as unmarked ones, but in addition, they carry some extra information that is signaled by their non-minimal form. The extra information, according to Farkas and Roelofsen, concerns the level of credence the Speaker has in the truth of the highlighted proposition. In characterizing the discourse context, the authors make use of a set they called **evidence**(x), which stands for the set of propositions, such that speaker x has access to evidence to believe them

(*evidenced possibilities* as Farkas and Roelofsen call it). In addition to signalling that the Speaker has evidence to the truth of the highlighted proposition, she also signals the level of confidence she has in the truth of it. She can have high credence, as in the case of uttering an assertion, or low credence, when uttering a rising declarative, or in yet other cases, moderate or zero credence. The set **evidence** is thus made up of ordered pairs $\langle p, i \rangle$ such that p is a proposition the Speaker has evidence to believe and i is an interval of credence levels. In the case of a rising declarative, the special effect equals to a low level of credence on the part of the Speaker.

(26)   Special conventional discourse effects of a rising declarative:
        When a discourse participant x utters a rising declarative ϕ, expressing the proposition $[\![\phi]\!] = \{\alpha, \overline{\alpha}\}$, the discourse context is affected as follows:
        1. Basic effects: as in (25)
        2. Special effect: $\langle \alpha, [zero, low] \rangle$ is added to **evidence**(x).
        (Farkas and Roelofsen, 2017, p. 269)

Farkas and Roelofsen's system thus determines whether a sentence is inquisitive or not by using clause type markers. These sentences are then subject to the same basic convention, namely that the inquisitive or non-inquisitive expression is added to the table and the corresponding set of worlds is added to the set of commitments. Thirdly, if the sentence is marked, some special effects are postulated, which share one characteristic: they all say something about the level of the Speaker's confidence in the truth of the highlighted proposition. However, the authors admit that special effects are assigned to each sentence form individually, but not according to a principle.

3.1   PRQs and the NWHC in Farkas and Roelofsen's system

Farkas and Roelofsen do not consider the case of RQs or NWHCs. They mention that RQs are used to underline some proposition already present in the common ground, but this property of them belongs to pragmatics. However, both RQs and NWHCs are marked utterances based on the author's measures, because of the mismatch between their form (an interrogative) and what they convey (an assertion), which makes them "more prone to misinterpretation". Intonation also alters the form so that it becomes more marked, as RQs are more likely to have a sentence-final falling intonation (Banuazizi and Creswell, 1999), and NWHCs have a similar tendency.

There are some other good reasons to treat PRQs and NWHCs in the same system, as they both have sentence radicals that are full propositions. This is obvious for PRQs, but less so for NWHCs. In section 1.2, it was shown that the wh-expression cannot stand for a constituent that comes from the clause, thus NWHCs are made up of a wh-phrase independent of the clause (a fact also observed by Cheung (2009)), and a proposition-denoting sentence radical.

Also, these sentence radicals pass the tests of highlighted propositions suggested by Farkas and Roelofsen, namely they can serve as antecedents for anaphoric expressions. Such tests include expressions like *yes*, *no*, *if so* and *otherwise*. Just as the sentence radicals of genuine polar questions, rising declaratives, and tag questions can be referred to by such expressions, as shown in (27), so can the sentence radicals of NWHCs (28b) and PRQs (28c), too, setting them apart from wh-interrogatives, whether they are genuine or rhetorical (28a).

(27) a. János vegetáriánus? (genuine)
          John vegetarian
          'Is John a vegetarian?

      b. János/\ vegetáriánus/\? (rising declarative)[2]
          'John's a vegetarian?'

      c. János vegetáriánus, (vagy) nem? (reverse polarity tag question)
          John vegetarian   or   no
          'John is a vegetarian, isn't he?'

      d. Igen. / Így van.
          yes / so is

(28) a. A: János mióta   vegetáriánus? (genuine)
          A: John since-when vegetarian?
          'Since when is John a vegetarian?'
          B: #Igen. / #Így van.
          B: yes / so   is

      b. János mióta   vegetáriánus? Ha így lenne, halat se   ehetne.
          John since-when vegetarian   if so were fish either could-eat
          (NWHC)

          'Since whén is John a vegetarian? If it were the case, he couldn't eat fish
          either.'

      c. János talán   vegetáriánus? Mert   ha nem így van, akkor ne prédikáljon
          John perhaps vegetarian   because if not so is   then not preach
          állatkínzásról.   (PRQ)
          about-cruelty-to-animals

          'Is John a vegetarian? Because if not, he should not preach about cruelty to
          animals.'

The same contrast is shown in English with (29): let alone genuine wh-interrogatives,
all other question types under discussion have highlighted propositions that *it* can refer
back to.

(29) a. A: Is John a vegetarian? (genuine)
          B: I don't believe it.

      b. A: John's a vegetarian? (rising declarative)
          B: I don't believe it.

      c. A: John is a vegetarian, isn't he? (reverse polarity tag question)
          B: I don't believe it.

      d. A: Since when is John a vegetarian? (genuine)
          B: #I don't believe it.

      e. A: Since whén is John a vegetarian? (NWHC)
   B: I don't believe it either.

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[2]Hungarian polar questions with multiple rise-fall (indicated by Kálmán (2001) as /\) and English
rising declaratives do not have the exact same distribution, although there is an overlap, see Gyuris
(2017).

f. A: Is John a vegetarian? (PRQ)
   B: I don't believe it either.

Given that the PRQs and NWHCs seem to contribute highlighted propositions to the discourse just like assertions, polar interrogatives, rising declaratives and tag questions, there is reason to accommodate them in the same framework.

If INT contributes inquisitiveness and CLOSED encodes falling intonation, a PRQ or a NWHC should then have the following clause type markers:

(30)   Clause type markers of PRQs and NWHCs:

```
        !?P
       /    \
  CLOSED     ?P
            /   \
         INT     P
```
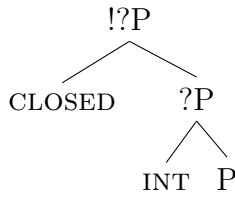
In the case of a PRQ, the argument of INT is a proposition which needs INT to become inquisitive. Since CLOSED is semantically vacuous (see (22c)), the result is an inquisitive expression, as expected. The interpretation is shown in (31b).

(31)   a. (Come on,) Is John a vegetarian?
       b. ⟦INT John is a vegetarian⟧ = {{John is a vegetarian}, {John is not a vegetarian}}

The conventional discourse effects of a PRQ suggesting a negative answer are the same as with a genuine polar question. But because of its markedness, it is expected to have special effects. If the highlighted alternative is the sentence radical, the special effect should be a strong disbelief in it, given its typically falling final tune. This, according to Farkas and Roelofsen, is captured by a *zero* credence level, which can mean that the Speaker is unbiased or that she is against the truth of the highlighted proposition (p. 256).

(32)   Special conventional discourse effects of a Polar Rhetorical Question awaiting a negative answer (first version):
       Basic effects:
       a. $\{\alpha, \overline{\alpha}\}$ is added to the **table**
       b. W is added to the **commitments**(x).
       Special effect: $\langle \alpha, [zero] \rangle$ is added to **evidence**(x).

The problem that arises here is that the basic and special conventional discourse effects of a PRQ awaiting a negative answer is not any different from a genuine polar question. Since in the case of a PRQ awaiting a negative answer, the Speaker believes the opposite of the highlighted proposition, saying that she has a *zero* credence level is not enough. It is suggested that the label *contrary* be used in this case, and let *zero* be saved for unbiased questions.

(33)   Distinguishing genuine and biased polar questions by their special effects (final version):

a. Special effect of a genuine polar question:
⟨*John is a vegetarian*, [*zero*]⟩ is added to **evidence**(x).

b. Special effect of a PRQ with a negative answer:
⟨*John is a vegetarian*, [*contrary*]⟩ is added to **evidence**(x).

Now, the case of NWHCs is peculiar and it is well possible that they cannot be accommodated in Farkas and Roelofsen's system at all. In what follows, we give a first look at the possibilities we have.

A genuine wh-interrogative is expected to put a Hamblin-set on the table.

(34) a. Since when is John a vegetarian? (genuine question)

b. ⟦INT John is a vegetarian since t ∈ TIMES⟧ = {{w: John is a vegetarian since $t_1 \in$ TIMES}, {w: John is a vegetarian since $t_2 \in$ TIMES}, ..., {w: John is a vegetarian since $t_n \in$ TIMES}}

Recall that NWHCs differ from ordinary wh-interrogatives because their denotation is a set made up of full propositions, which is not necessarily the case with genuine wh-interrogatives; and because they contribute a highlighted proposition, unlike genuine wh-interrogatives. Also, the wh-phrase in a NWHC does not range over entities it is canonically associated with, e.g. *since when* in (1B) does not range over times (Cheung, 2008, 2009), which is corroborated by the fact that the segmental material of wh-phrases in NWHCs is slightly altered in some languages.

If (34a) is pronounced as a NWHC, we cannot use the variable *t* standing for timepoints to create the partition on *W*, because the wh-phrase is no longer associated with its canonical domain, as it was shown in (7).

Otherwise, we can say that the highlighted proposition is the sentence radical of the NWHC and put it on the table along with its complement generated by INT, as a result of which we get the following basic conventional discourse effects:

(35) Basic conventional discourse effects of a Negative Wh-Construction (provisional):
a. {$\alpha, \overline{\alpha}$} is added to the **table**
b. *W* is added to the **commitments**(x).

But (35) is not a fortunate representation either, because we represent a wh-interrogative (though not a canonical one) the same way we represent a polar interrogative. Until a better way of representing the conventional discourse effects of NWHCs is found, we let (35) be the provisional representation.

3.2 Special effects

As for the special effects of NWHCs, the Speaker is expected to believe that the highlighted proposition is false, that is, she will be assigned the credence level *contrary*, as in the case of PRQs awaiting a negative answer.

(36) Special effect of a NWHC: ⟨α, [*contrary*]⟩ is added to **evidence**(x).

If PRQs awaiting a negative answer and NWHCs have the same basic and special conventional discourse effects, cf. (32), (33), (35) and (36), then they need to be further distinguished. It was suggested in section 2 that RQs awaiting a negative answer and NWHCs both share the property that their Speaker disagrees with some proposition *p*,

possibly conveyed by the latest move, which is also the sentence radical of the sentence. It was also shown that NWHCs are not RQs, because the Speaker attributes different beliefs to her Addressee in both cases. Namely, in the case of RQs, the Speaker believes and/or conveys that her Addressee has (or should have) the same belief on the truth of p, while in the case of NWHCs, the Speaker and Addressee have opposing beliefs. If so, a more adequate description of special effects would be one that includes an extra slot for the belief attributed to the Addressee.

(37)   a. Special effect of a NWHC: $\langle S \langle \alpha, contrary \rangle, A \langle \alpha, high \rangle \rangle$

          b. Special effect of a PRQ suggesting a negative answer:
              $\langle S \langle \alpha, contrary \rangle, A \langle \alpha, contrary \rangle \rangle$

          c. Special effect of a rising declarative $\langle S \langle \alpha, [zero, low] \rangle, A \langle \alpha, high \rangle \rangle$

Although representing both the Speaker's belief and the belief attributed by the Speaker to the Addressee is more costly, as it complicates the representation, there seems to be no other way to capture the difference between NWHCs and PRQs with a negative answer, at least given the premises this paper builds on.

There are various views in the literature on how it comes about that RQs convey their speakers' bias (which is an assertion): it has been attributed to semantics (Han, 2002) and to pragmatics (Caponigro and Sprouse, 2007). As for NWHCs, Cheung argues that the special effect described here, which he called the Conflicting View Condition, is a conventional implicature[3]. His claim is not inconsistent with the arguments of this paper. What we stated here is that PRQs and NWHCs, being marked utterances, have a highlighted proposition, based on the division of labor principle in (20), therefore they must have special effects. These special effects are present by virtue of the marked form, which means they are encoded, and being encoded is one of the tests Potts (2015) uses to tell conventional implicatures from other kinds of meaning. There are other tests though, and it is outside the scope of this paper to determine where these special effects belong, although it is not a minor issue.

Farkas and Roelofsen suggest that intonation and credence levels show a connection in marked sentence forms. The generalization they make is the following: the lower the credence level in the highlighted alternative, the less likely the utterance ends with a falling tune; and the higher the credence level, the less likely the utterance involves a final rise (p. 272). Now, if NWHCs have the special discourse effect shown in (36), in favor of which some supporting facts have been shown, this generalization does not hold. In (1B), because of the falling final tune, the Speaker should strongly believe the truth of the sentence radical 'John is a vegetarian', which is just the opposite of how it actually is. Thus, as a next step, this prediction should be modified to possibly accommodate the belief attributed by the Speaker to the Addressee as well.

Lastly, a remark should be made about the status of RQs. What was considered here as special effect, Farkas and Roelofsen considers pragmatics. Undoubtedly, not all RQs are marked the way suggested here. Banuazizi and Creswell (1999) observed a tendency for RQs to have a sentence-final falling intonation, but by no means is this always the case for (English) PRQs. What is more, as Farkas and Roelofsen claims, genuine polar interrogatives can have a sentence-final fall, too. If so, it raises the question of how marked RQs are at all, and in what ways.

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[3]At least he has shown that the Conflicting View Condition associated with NWHCs is not at-issue and not cancellable either.

4   Conclusion

This short paper has presented some arguments for the importance of belief-constellations, that is, for representing a more elaborate picture of the Speaker's own belief and percieved beliefs. The advantage of doing so is seen in a commitment-based account such as the one of Farkas and Roelofsen (2017), that aims to host sentences having a highlighted alternative. PRQs with a negative answer and NWHCs both have such alternatives, so there is reason to consider their place in such a model. Fitting them into Farkas and Roelofsen's account raises questions; to some of them, the paper suggested an answer.

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