Some Syntactic Character of Rhetorical Questions*

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Abstract

Some previous analyses of rhetorical questions claim that they have syntactic structures identical to ordinary questions, and their assertive flavor is derived from the semantics and pragmatics of interrogatives. This article points out that they cannot account for some syntactic characters of rhetorical questions, proposing an alternative syntactic analysis based on a cartographic approach to illocutionary force. This alternative analysis not only accounts for the core cases of rhetorical questions but also explains syntactic properties of RQs, such as Neg-Raising in rhetorical questions, intervention effects by sentence-initial quantifiers, and distribution in central/peripheral adverbial clauses.

Keywords: rhetorical questions, cartography, illocutionary force, Neg-Raising, NPI intervention

1. Introduction

Rhetorical questions (henceforth, RQs) are interrogative sentences that are interpreted as assertion. For example, the *yes-no* interrogative sentence in (1a) can be construed as the negative

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assertion, '*Syntax is not easy*,' as well as the question that seeks information (ordinary questions (henceforth, OQs)). Similarly, the *wh*-question (1b) has the RQ interpretation '*No one understands English*,' in addition to the reading of OQ.

(1) a. Is syntax easy?
    [OK]'Syntax isn't easy.'   (Sadock (1971: 223))

   b. Who understands English?
    [OK]'No one understands English.'   (Sadock (1971: 224))

Previous researches try to explain the mismatch between forms and meanings in RQs, namely the fact that an RQ has the form of an interrogative sentence while it is construed as an assertion. The previous approaches to RQs are divided into two camps: syntactic approaches (Sadock (1971, 1974), Progovac (1993)) and semantic-pragmatic ones (Ladusaw (1979), Gutiérrez-Rexach (1997), Han (2002), Guerzoni (2004), Rohde (2006), Caponigro and Sprouse (2007)). Syntactic approaches propose that RQ's syntactic structures are different from OQ's. For example, Sadock (1971, 1974) claims that (1a) is represented at D-structure as in (2), where positive question and negative assertion are conjoined (the second conjunct *syntax is not easy* and the performative clauses *I ask you* and *I assert you* is deleted at S-structure).

(2) $[_S$ I ask you $[_S$ syntax is easy$]]$ and $[_S$ I assert you $[_S$ syntax is not easy$]]$

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In contrast, semantic-pragmatic approaches assume that there is no syntactic difference between OQs and RQs, and rhetorical interpretations are derived from the semantics of OQs. For example, Caponigro and Sprouse (2007) claim that the denotation of (1a) is identical to that of OQ: the set of possible answers, {syntax is easy, syntax is not easy}. They account for the difference between OQs and RQs in terms of language use: when the speaker and the hearer mutually believe that syntax is not easy, *syntax is not easy*, which is an element of the answer-set, is chosen as the meaning of *Is syntax easy?*, whereas when the speaker does not know the answer, it is used as an information-seeking question. Crucially, these two camps differ in the source of the negativity: the syntactic approaches assume that the negative marker is generated in the syntactic structure, whereas the semantic-pragmatic approaches suppose no negative marker in the syntactic structure of an RQ, but attribute the negative implication to the semantics of interrogatives. The aim of this article is to argue for the syntactic view by pointing out syntactic properties of RQ that cannot be accounted for by the semantic-pragmatic approaches, and propose a new syntactic analysis based on a cartographic approach to illocutionary force by Coniglio and Zegrean (2012).

This article is organized as follows. Section 2 briefly reviews two notable semantic-pragmatic approaches to RQs, Han (2002) and Caponigro and Sprouse (2007), and points out their empirical problems, namely the fact that they cannot account for some syntactic properties of RQs. Section 3 proposes a new syntactic analysis of RQs based on Coniglio and Zegrean's (2012) cartographic approach to illocutionary force, and demonstrates that the proposed analysis not

only accounts for the core cases like (1), but also explains the data problematic to Han (2002) and Caponigro and Sprouse (2007). Section 4 considers a further consequence of the proposed analysis. Section 5 is a conclusion.

2.　Semantic-Pragmatic Approaches and Their Problems

This section reviews previous semantic-pragmatic approaches to RQs and points out problems with them.　Section 2.1 examines the proposal by Han (2002), and section 2.2, the proposal by Caponigro and Sprouse (2007).

2.1. Han (2002)

Let us first see the proposal by Han (2002).　Han proposes that a *yes-no* rhetorical question like (3a) is structured at LF as in (3b), where a silent *whether* is generated in the Spec of CP, and the silent *whether* is mapped onto the negative operator ¬ at a post-LF level as in (3c).

(3) a.　Is syntax easy?

　　 b.　[CP whether [C' is syntax easy]]

　　 c.　[CP ¬ [C' is syntax easy]]

(3c) is roughly paraphrased as 'it is not the case that syntax is easy.' Han argues that the mapping of *whether* onto ¬ is motivated by the semantics of *whether* and pragmatics of questions.　Han assumes with Groenendjik and Stokhof (1985) that *whether* is a variable that ranges over a domain including positive and negative polarity (i.e., the set

with {truth, falsity}), so that the expression *whether p* refers to the set {p, $\neg p$} in a possible world *w*. Thus, when a speaker utters a question *p?* as an assertion, either p or $\neg p$ qualifies for the meaning of the RQ.

Han further claims that a pragmatic condition on questions in (4) forces $\neg p$ to be selected from {p, $\neg p$} as the meaning of an RQ.

(4) When a speaker is formulating a question to find out whether p or $\neg p$ is true, s/he formulates the question in the form of the proposition that would be most informative if it turned out to be true. (Han (2002: 215))

(4) is independently motivated by the polarity-reversing effects found in biased questions like (5) and (6): when a speaker expects that a positive proposition like (5b) is true, an ordinary *yes-no* question is produced in the form of a negative question as in (5a), whereas when the speaker expects that a negative proposition like (6b) is true, s/he utters an ordinary *yes-no* question in the form of a positive question (with focus intonation on the auxiliary verb) as in (6a).

(5) a. Didn't John finish the paper?
    b. Speaker's expectation: John finished the paper.

(Han (2002: 214))

(6) a. DID John finish the paper?
    b. Speaker's expectation: John didn't finish the paper.

(Han (2002: 214))

This is because, according to (4), the speaker must formulate a question in the most informative way. If someone believes that John finished the paper, the expression *John finished the paper* provides no new information to him/her. In contrast, when someone believes that John didn't finish the paper, uttering *John finished the paper* may change his/her belief. Thus, since the expression *p* is the most informative under the context in which a proposition ¬*p* is expected to be true, questions in (5a) and (6a) have an opposite polarity.

Returning to RQs, among the options from {*p*, ¬*p*} provided by the semantics of *whether*, only the polarity-reversed option is consistent with the speaker's expectation under (4). That is, when a speaker uses (5a) as an assertion, the semantics of question makes one of the elements of {*John did not finish the paper*, *It is not the case that John did not finish the paper* (= *John finished the paper*)} available for the meaning of the utterance, but only the latter is pragmatically felicitous because it is compatible with the speaker's expectation (5b). Thus, *whether* must be mapped onto negative polarity at post-LF derivation in (3) so as to reverse polarity of a sentence.

Han tries to account for rhetorical *wh*-questions in a similar way. A rhetorical *wh*-question like (7a), which is represented as in (7b) at syntax and LF, undergoes post-LF derivation to map the *wh*-operator *who* onto a negative quantifier *nobody*, yielding the representation in (7c).

(7) a. Who understands English?

b. [$_{CP}$ who [$_{C'}$ *t* understands English]]

    c.   [$_{CP}$ nobody [$_{C'}$ *t* understands English]]

Consequently, (7a) is construed as 'For no human x, x understands English.' Again, the mapping of *who* onto *nobody* is motivated by the semantics of *wh*-words in the sense of Groenendjik and Stokhof (1985) and pragmatics of questions. Given the domain of universe containing *Mary*, *Bill*, and *John*, the possible values for *who* are the members of the power set of {Mary, John, Bill}, namely (8).

    (8)   {{Mary, John, Bill}, {Mary, John}, {Mary, Bill}, {John, Bill}, {Mary}, {John}, {Bill}, ∅} (where ∅ refers to the empty set (i.e., *nobody*))

Thus, *who* is mapped onto one of the elements of this set. Further, pragmatics forces *who* to be mapped onto *nobody* at the post-LF derivation, since the polarity-reversing option provides the expression that is compatible with the speaker's expectation.

    A problem with Han (2002) is that it cannot account for Yang's (2015) observation in terms of sentence-initial quantifiers. Yang points out that rhetorical reading disappears when a quantified phrase precedes a *wh*-phrase.

    (9) a.   This time/Now, who can afford this?
             ^{OK}'This time/Now, nobody can afford this!'

       b.   Every time/Very often, who can afford this?
            *'Every time/*Very often, nobody can afford this!'

       c.   Who can afford this every time/very often?

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[OK]'Nobody can afford this every time.'

(Yang (2015: 158-159))

(9a) allows rhetorical interpretation. In contrast, when the sentence-initial adjunct is quantified as in (9b), the rhetorical reading is barred and only the reading of OQ survives. The rhetorical reading arises when the quantified adjunct does not precede the *wh*-phrase, as in (9c).

These kinds of data pose problems to Han's analysis, since it cannot grasp the fact that availability of RQ interpretation is regulated by syntactic positions of quantified expressions. In other words, nothing in Han's system bars mapping from *who* onto *nobody* in (9b) in accord with arrangement of the quantified phrases. Furthermore, unavailability of RQ interpretation in (9b) cannot be attributed to ill-formedness of post-LF representations, since the following expressions are grammatical:

(10) a. ?This time/Now, nobody can afford this.

  b. Every time/?Very often, nobody can afford this.

2.2. Caponigro and Sprouse (2007)

Let us next see the proposal by Caponigro and Sprouse (2007). As for the semantics of RQ, they also assume with Groenendijk and Stokhof (1989) that the denotation of an interrogative sentence is the function that maps possible worlds into a partition. Each of the partition represents the set of possible worlds where an answer to the interrogative sentence is true. Suppose, for example, Andrea and

Luca are in the domain of universe. Then, the denotation (intension) of *Who walks* will be the partition as in (11):

(11) [[Who walks?]] =

{w: Andrea and Luca walk in w}
{w: Andrea walks in w}
{w: Luca walks in w}
{w: Nobody walks in w}

The top cell represents the set of possible worlds in which Andrea and Luca walks, the second is the set of possible worlds in which Andrea, but not Luca walks, and so on. Similarly, the denotation of *Does Luca walk?* is the partition that contains the sets of possible worlds in which Luca walks and the set of possible worlds in which Luca doesn't walk.

(12) [[Does Luca walk?]] =

{w: Luca walks in w}
{w: Luca doesn't walk in w}

Given the semantics of interrogatives above, Caponigro and Sprouse propose that the denotation (extension) of an RQ in a possible world w is identical to that of an OQ in w, the true answer to the question in w, as illustrated in (13).

(13) $[[RQ]]^w = [[OQ]]^w$

On the other hand, they try to derive differences between OQs and RQs from the knowledge of the speaker and addressee. Adopting

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Stalnker's (1978) Common Ground, they propose the condition that determines whether an interrogative sentence is used as an OQ or RQ. Suppose that we have the set of the beliefs of the speaker (SB) and the set of the beliefs of the addressee (AB).

(14) a.   SB = {p : p is a belief of the speaker}
     b.   AB = {p : p is a belief of the addressee}

Common Ground of the speaker and the addressee (CG_{S-A}) is defined as the intersection of SB and AB: the belief mutually held by the speaker and the addressee.

(15) CG_{S-A} = {p : p is mutually believed by the speaker and addressee}

Caponigro and Sprouse (2007) define OQ and RQ in terms of SB, AB, CG_{S-A}.   A question Q is an OQ if and only if the speaker does not have beliefs about the complete true answer to Q.   In contrast, a question Q is an RQ if and only if the speaker and the addressee mutually believe the true answer to Q.   More formally, OQ and RQ are defined as follows:

(16) a.   Q is an OQ iff $[[Q]]^w \notin$ SB
     b.   Q is an RQ iff $[[Q]]^w \in CG_{S-A}$

Suppose, for example, (1a) is uttered under the circumstance in which the speaker and addressee mutually believe that syntax is not

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easy.   Then, (1a) satisfies the condition in (16b) and is interpreted as an RQ since the answer to the question in (1a), *syntax is not easy*, is included in CG_{S-A}.   On the other hand, when the speaker does not know whether syntax is easy or not, the answer to (1a) is not included in SB, and the interrogative sentence is construed as an OQ.   In a nutshell, their analysis above entails that the distinction between RQs and OQs is pragmatic in nature (i.e., they are distinguished by the knowledge shared by the discourse participants), and that an RQ is identical to an OQ in syntax and semantics.

One problem with Caponigro and Sprouse (2007) is that it cannot account for Neg-Raising found in RQs.   Neg-Raising (henceforth, NR) is the phenomenon in which the matrix negative marker is interpreted in the embedded clause under certain circumstances. For example, the matrix negative marker *not* in (17) can take scope in the embedded infinitival clause that is a complement to *want*, yielding the NR interpretation as in (17b) in addition to the matrix negative reading as in (17a).

(17)   Jack doesn't want to be arrested.

   a.   'It's not the case that Jack wants to be arrested.'

(not > want)

   b.   'Jack wants not to be arrested.'   (want > not)

(Sadock (1974: 80))

NR is restricted to a certain class of predicates (NR-predicates). *Want* allows NR as in (18), whereas *hope* does not; hence (18) cannot be paraphrased as in (18b).   Predicates like *hope* that does not allow

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NR are called non-NR predicates.

    (18)   Jack doesn't hope to be arrested.
        a. 'It's not the case that Jack hopes to be arrested.'

                                                (not > hope)
        b. *'Jack hopes not to be arrested.'   (*hope > not)

                                         (Sadock (1974: 80))

Sadock (1974) points out that rhetorical *yes-no* sentences have embedded negative readings only when the embedded clauses are complements to the matrix NR predicates. For instance, when the complement clause is embedded by the NR-predicate *want* in the interrogative sentence as in (19), it has the embedded rhetorical reading as in (19b).

    (19)   Does Jack want to be arrested?
        a. 'It's not the case that Jack wants to be arrested.'

                                              (not > want)
        b. 'Jack wants not to be arrested.'   (want > not)

                                          (Sadock (1974:80))

On the other hand, (20), in which the matrix verb *hope* is a non-NR predicate, does not have the embedded negative interpretation.

    (20)   Does Jack hope to be arrested?
        a. 'It's not the case that Jack hopes to be arrested.'

                                              (not > hope)

b. *Jack hopes not to be arrested.'   (*hope > not)

(Sadock (1974:80))

The contrast between (19) and (20) suggests that NR takes place in (19) but not in (20).

The RQ reading in (19b) is problematic to the analysis by Caponigro and Sprouse, which assumes that the denotation of an RQ is identical to that of an OQ, the set of possible answers. It predicts that the embedded rhetorical reading in (19b) is one of the possible answers to the question in (19). However, this prediction is incorrect, as demonstrated in (21).

(21) a. Does Jack want to be arrested?

   b. i. Yes, Jack wants to be arrested.

       ii. No, Jack doesn't want to be arrested.

       iii.??No, Jack wants not to be arrested.

(21) shows that (21b-i) and (21b-ii) are candidates for the answer to (21a), but the embedded negative sentence in (21b-iii) is not. Accordingly, the denotation of (21a) includes a partition of the set of possible worlds {w: Jack wants to be arrested in w} and {w: Jack doesn't want to be arrested in w}, but not {w: Jack wants not to be arrested in w}. Thus, the pragmatic analyses cannot account for the embedded negative interpretation in (19).

Another problem with the proposal by Caponigro and Sprouse is that it cannot account for Yang's observation shown in (9), repeated here as (22).

(22) a. This time/Now, who can afford this?

^{OK}'This time/Now, nobody can afford this!'

   b. Every time/Very often, who can afford this?

'*Every time/*Very often, nobody can afford this!'

   c. Who can afford this every time/very often?

'Nobody can afford this every time.'

Unavailability of RQ interpretation in (22b) cannot be attributed to the answer set, because (23b-ii) is a possible answer to the question in (23a).

(23) a. I'm really curious: Every time, who can afford this?

   b. i. John.   Every time, John can afford that.

       ii. Nobody.   Every time, nobody can afford that.

Accordingly, Caponigro and Sprouse's analysis leaves it unexplained why (22b) lacks RQ interpretation.

2.3. Interim Summary

This section briefly reviewed two previous semantic-pragmatic approaches to RQ by Han (2002) and Caponigro and Sprouse (2007). These approaches commonly assume that negation in an RQ comes from the semantics of an interrogative sentence. Han attributes it to the negative polarity or empty set given by the denotation of a *wh*-operator. Caponigro and Sprouse associate it with a possible negative answer to the question. In a nutshell, both approaches

assume that negation is not present in the syntactic structure of an RQ.

However, these approaches cannot account for some syntactic properties of RQs. More specifically, blocking of the RQ interpretation by sentence-initial quantifiers is not explained by Han (2002) and Caponigro and Sprouse (2007), and NR in an RQ is not accounted for by Caponigro and Sprouse (2007). The next section will propose a new cartographic analysis, and show that it accounts for these syntactic properties of RQs.

3.   The Proposed Analysis

This section proposes a syntactic analysis of RQ, based on Coniglio and Zegrean's (2012) cartographic approach to illocutionary force, which is outlined in section 3.1. Section 3.2 and 3.3 present the structure of rhetorical *yes-no* questions and that of *wh*-questions, respectively. Section 3.4 shows that the proposed analysis accounts for NR in *yes-no* rhetorical questions, and section 3.5 discusses how to deal with the blocking of RQ interpretation by sentence initial quantifiers. The proposed analysis derives an RQ in syntax, eliminating the semantic/pragmatic process to map OQs onto RQs.

3.1. Splitting up Force

Rizzi (1997) claims that the CP domain is split into four functional projections, ForceP, TopP, FocP, and FinP.

(24) $[_{\text{ForceP}} \text{Force}^0 [_{\text{TopP}} \text{Top}^0 [_{\text{FocP}} \text{Foc}^0 [_{\text{FinP}} \text{Fin}^0 [_{\text{TP}} \dots]]]]$

ForceP is the projection that conveys information about clause type

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(declarative, interrogative, imperative, and etc.). Given (24), Coniglio and Zegrean (2012) propose to divide ForceP into two projections, ILL (Illocutionary Force) and CT (Clause Type).

(25) $[_{ILL}\ ILL^0\ [_{CT}\ CT^0\ [_{TopP}\ Top^0\ [_{FocP}\ Foc^0\ [_{FinP}\ Fin^0\ [_{TP}\ ...\ ]]]]]$

CT is the projection that specifies the clausal type, whereas ILL encodes speaker's intension in producing an utterance (i.e., whether the sentence is uttered as assertion, question, direction, or others). A direct consequence of splitting up Force into CT and ILL is to open a way to analyze indirect speech act syntactically. Let us see (26) for illustration of division of labor of ILL and CT.

(26) a. Call the police!　　　(ILL= directive / CT= imperative)

　　b. Could you call the police?

　　　　　　　　　　(ILL= directive / CT=interrogative)

　　　　　　　　　　(Coniglio and Zegrean (2012: 234))

Although the former is imperative but the latter is interrogative, both (26a) and (26b) are uttered as direction (ordering toward the hearer that he or she should call the police). The mismatch between the form and meaning found in (26b) is accounted for by postulating that ILL involves an interpretable feature [iDir(ective)] and CT has [iInterr(ogative)].

　　Coniglio and Zegrean's system explains distribution of discourse particles in Italian and German. As shown by Italian examples in (27), although both (27a) and (27b) are imperative sentences, only the

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former has the effect of weakening the order by virtue of the discourse particle *pure*.

(27) a.   Chiama pure la poliza!
          call.Imp Prt   the police
          'Call the police! (if you feel like it)'

                              (Coniglio and Zegrean (2012: 235))

     b.   Chiama la poliza!
          call.Imp the police
          'Call the police!'   (Coniglio and Zegrean (2012: 238))

According to Coniglio and Zegrean, *pure* in (27a) serves as a modifier that weakens directional force encoded in ILL. However, the distribution of *pure* is regulated not by ILL but by CT: *pure* cannot be used in an interrogative sentence even when it has illocutionary force of direction, as shown in (28).

(28) Puoi   (*pure)   chiudere   la finesta?
      can.2sg Prt   close   the window
      'Can you close the window?'

                              (Coniglio and Zegrean (2012: 238))

Coniglio and Zegrean explain these facts by proposing that discourse particles have uninterpretable features that agree with interpretable features in ILL and CT. Suppose, for example, that *pure* has uninterruptable features [uDir] and [uImp(erative)]. These features must be deleted by [iDir] in ILL and [iImp] in CT as in (29a).

However, when ILL and CT involve [iDir] and [iInterr] respectively, the [uImp] feature in *pure* cannot be deleted and causes crash at the interfaces.

(29) a. $[_{\text{ILL}}$ ILL^0 $_{[\text{iDir}]}$ $[_{\text{CT}}$ CT^0 $_{[\text{iImp}]}$ [... pure $_{[\text{uDir}][\text{uImp}]}$...]]]

   b. *$[_{\text{ILL}}$ ILL^0 $_{[\text{iDir}]}$ $[_{\text{CT}}$ CT^0 $_{[\text{iInterr}]}$ [... pure $_{[\text{uDir}][\text{uImp}]}$...]]]

Thus, incompatibility of *pure* with the interrogative sentence in (28) is attributed to ill-formedness of (29b) in which [uImp] in *pure* cannot be licensed.

3.2. Rhetorical *Yes-No* Questions

On the basis of the Coniglio and Zegrean's framework, I propose that a rhetorical *yes-no* question has structure like (30), where ILL and CT have [iAsser(tive)] feature and [iInterr] feature, respectively.

(30) $[_{\text{ILL}}$ ILL$^0_{[\text{iAsser}]}$ $[_{\text{CT}}$ Op$_{\text{Neg}}$ CT^0 $_{[\text{iInterr}]}$ $[_{\text{TopP}}$ Top^0 $[_{\text{FocP}}$ Foc^0 $[_{\text{FinP}}$ Fin^0 $[_{\text{TP}}$ ...]]]

The negative interpretation of RQ is obtained by virtue of a phonologically null negative operator Op$_{\text{Neg}}$ located in the Spec of CT, an element that is roughly paraphrased as *not*. I assume that Op$_{\text{Neg}}$ involves [uAsser] and [uInterr], so that it occurs only in the structure as in (30), where ILL and CT have features that delete them.[1]

Let us consider how the interpretation of RQ is derived in *Is syntax easy?* and *Isn't syntax easy?*. The structure of the former is given in (31).

(31) a. Is syntax easy? 'Syntax is not easy.'

b. $[_{\text{ILL}}$ ILL^0 $_{[\text{iAsser}]}$ $[_{\text{CT}}$ Op_{Neg} CT^0 $_{[\text{iInterr}]}$ $[_{\text{FinP}}$ $[_{\text{Fin0}}$ is$]$ $[_{\text{TP}}$ syntax easy$]]]$

Negative interpretation is yielded by virtue of Op_{Neg}. Although the sentence has the form of interrogative sentence (such as Aux inversion) thanks to $\text{CT}_{[\text{iInterr}]}$, it is interpreted as assertion by virtue of $\text{ILL}_{[\text{iAsser}]}$. Consequently, the sentence is construed as *I assert that it is not the case that syntax is easy*. The latter (*Isn't syntax easy?*) has the structure illustrated in (32), where Op_{Neg} is generated in the Spec of CT.

(32) a. Isn't syntax easy? 'Syntax is easy.'

b. $[_{\text{ILL}}$ ILL^0 $_{[\text{iAsser}]}$ $[_{\text{CT}}$ Op_{Neg} CT^0 $_{[\text{iInterr}]}$ $[_{\text{FinP}}$ $[_{\text{Fin0}}$ isn't$]$ $[_{\text{TP}}$ syntax easy$]]]$

The structure involves two negative markers, Op_{Neg} and *not*, so that it is interpreted affirmatively. Thus, it is roughly paraphrased as *I assert that syntax is easy*.

3.3. Rhetorical *Wh*-Questions

Let us next consider the structure of rhetorical *wh*-questions. I assume with Progovac (1993) that a *wh*-word is ambiguous between an interrogative operator and an NPI. This claim is supported by the observation that *wh*-words serve as NPIs in Chinese as in (33) and in Serbo-Croatian as in (34).

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(33) Ni xiang chi sheme ma?

you like eat what Q

'Would you like to eat anything?' (Progovac (1993: 174))

(34) Da li je Milan i-sta doneo?

that Q has Milan any-what brought

'Has Milan brought anything?' (Progovac (1993: 174))

Based on this observation, I propose that rhetorical *wh*-questions like *Who understands English?* has the following structure, where Op_{Neg} licenses the *wh*-word that serves as an NPI located in the Spec of FocP.

(35) a. Who understands English? 'Nobody understands English.'

b. $[_{ILL}$ ILL^0 $_{[iAsser]}$ $[_{CT}$ Op_{Neg} CT^0 $_{[iInterr]}$ $[_{FocP}$ who $_{[NPI]}$ Foc^0 $[_{TP}$ *t* understands English$]]]$

According to Rizzi (1997), the landing site of *wh*-movement is the Spec of FocP. I postulate that this is true of rhetorical *wh*-movement. Thus, the sentence is construed as *I assert that it is not the case that anybody understands English*.[2]

Note that although a *wh*-word is ambiguous between an interrogative operator and an NPI, only the latter option is compatible with the structure of RQ. Suppose that the Spec of FocP in (35) is occupied by a *wh*-phrase that serves as an interrogative operator,

instead of an NPI. Then the structure yields anomalous interpretation since its illocutionary force is assertion but the *wh*-operator requires an answer. For example, *Who understand English?* with RQ interpretation has the following structure when *who* is not an NPI but a *wh*-operator:

(36) $[_{ILL} \text{ILL}^0 \, _{[iAsser]} \, [_{CT} \text{Op}_{Neg} \, \text{CT}^0 \, _{[iInterr]} \, [_{FocP} \text{who} \, _{[Wh]} \, \text{Foc}^0 \, [_{TP} \, t$ understands English]]]

This structure is paraphrased as *I assert which person x is such that x doesn't understand English*, which makes no sense. Accordingly, the option of (36) is ruled out.

3.4. Neg-Raising in Rhetorical Questions

Let us see how the proposed system deals with data problematic to semantic-pragmatic approaches. We have seen that an RQ sentence allows embedded negative interpretation when the matrix verb is an NR predicate as in (19), repeated here as (37).

(37) Does Jack want to be arrested? (^{OK}want > not)

I assume with Collins and Postal (2014) that an NR sentence is derived by extracting the negative marker from the embedded clause to the root clause. Then, (17), repeated here as (38), has the following structure in (39).

(38) Jack doesn't want to be arrested.

^{OK}'Jack wants not to be arrested.' (want > not)

(39) Jack does not$_i$ want [t_i to be arrested]

Based on this analysis, I claim that Op_{Neg} is extracted from the embedded clause to the root clause in (37). The structure of (37) is then given as in (40).

(40) [$_{ILL}$ ILL^0 $_{[iAssert]}$ [$_{CT}$ $Op_{Neg i}$ $_{[uAsser][uInterr]}$ CT^0 $_{[iInterr]}$ [$_{TopP}$ Top^0 [$_{FocP}$ Foc^0 [$_{FinP}$ [$_{Fin0}$ does] [$_{TP}$ Jack want [$_{TP}$ t_i to be arrested]]]]]]]?

In other words, availability of embedded interpretation in (37) is attributed to extraction of Op_{Neg} from the embedded clause.

Furthermore, it will be predicted that when the matrix verb is a non-NR predicate, Op_{Neg} cannot be extracted from the embedded clause, so that the embedded rhetorical interpretation is not allowed.

(41) *[$_{ILL}$ ILL^0 $_{[iAssert]}$ [$_{CT}$ CT^0 $_{[iInterr]}$ [$_{TopP}$ Top^0 [$_{FocP}$ $Op_{Neg i}$ $_{[uAsser][uInterr]}$ Foc^0 [$_{FinP}$ [$_{Fin0}$ does] [$_{TP}$ Jack hope [$_{TP}$ t_i to be arrested]?

This prediction is borne out. We have seen that the embedded negative reading in RQ is not allowed when the matrix predicate is a non-NR predicate *hope* as in (20), repeated here as (42).

(42) Does Jack hope to be arrested? (*hope > not)

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3.5. Sentence-Initial Quantifiers

Let us next consider why sentence-initial quantifiers block RQ interpretation, as seen in (9), repeated here as (43).

(43) a. This time/Now, who can afford this?

^{OK}'This time/Now, nobody can afford this!'

b. Every time/Very often, who can afford this?

*'Every time/Very often, nobody can afford this!'

c. Who can afford this every time/very often?

^{OK}'Nobody can afford this every time!'

I suggest that these data are accounted for by NPI intervention, namely the fact that an intervening universal quantifier blocks NPI licensing:

(44) a. Sam didn't read every child a story.

^{OK}'Not every child was read a story by some.'

$\qquad\qquad\qquad\qquad\qquad\qquad\qquad$ (not > every > a)

b. Sam didn't read every child any stories.

*'Not every child was read a story by some.'

$\qquad\qquad\qquad\qquad\qquad\qquad\qquad$ (not > every > any)

$\qquad\qquad\qquad\qquad\qquad\qquad\qquad$ (Ladusaw (1996: 334))

The sentence in (44a) can be interpreted as 'not every child was read a story by someone, whereas such reading is not available in (44b), where *every child* intervenes between *not* and *any stories*. Returning to the case in (43b), its structure is represented as follows (I assume

the sentence-initial expressions like *every time* are located in the Spec of TopP):

(45) $[_{ILL}$ ILL^0 $_{[iAsser]}$ $[_{CT}$ Op$_{Neg}$ CT^0 $_{[iInterr]}$ $[_{TopP}$ every time Top^0 $[_{FocP}$ who $_{[NPI]}$ Foc^0 $[_{TP}$ *t* can afford this]]]]

Since the *wh*-expression *who* is an NPI, it must be licensed by Op$_{Neg}$. However, *every time*, located in the Spec of TopP, intervenes licensing of *who* by Op$_{Neg}$. Thus, the RQ interpretation is not available. In (43a), on the other hand, the sentence initial phrases *this time* and *now* are not quantificational, so that it does not block licensing of the NPI *who* by Op$_{Neg}$. Furthermore, the quantificational expressions *every time* and *very often* in (43c) does not cause the intervention effect since it is not in the sentence-initial position, the Spec of TopP.

4.   Rhetorical Questions in Peripheral Adverbial Clauses

Haegeman (2003 et seq.) observes that there are two types of adverbial clauses: central adverbial clauses and peripheral ones. Central adverbial clauses bring about event-related interpretation, while peripheral ones provide discourse-related interpretation. For example, the central conditional clause in (46a) gives the condition for the event expressed in the consequent, whereas the peripheral conditional clause in (46b) introduces a contextual background against the associated clause is processed.

(46) a. If your back-pupporting muscles tire, you will be at increased risk of lower-back pain.

(Independent on Sunday Sports, October 14, 2001: 29, col. 3)

  b. We are seeing a fall in the incidence of crime, particularly serious crime, and I think we're right to say "What's going on? *If crime is falling, why are we seeing a continuing rise in the prison population?*"

(*Guardian*, November 1, 2001: 2, col. 6)

(cited in Haegeman (2012: 161))

Coniglio and Zegrean (2012) observe the central/peripheral distinction of adverbial clauses is relevant to distribution of Italian discourse particles. (47) illustrates that the discourse particle *pur* cannot be generated in a central adverbial clause.

(47) Se Gianni ha   (*pur) detto che   non verrà,
        If Gianni have.3sg Prt   said   that Neg come.Fut.3sg
        allora NON verrà.
        then   Neg come.Fut.3sg
        'If Gianni said that he won't come, then he won't come.'

(Coniglio and Zegrean (2012: 244))

In contrast, discourse particle *pur* can be contained in a peripheral adverbial clause:

(48) Se Gianni – come dici –   ha   pur detto che
      If Gianni   as   say.2sg have.3sg Prt said   that
      Non verrà,   perché allora ha prenotato
      Neg come.Fut.3sg why   then have.3sg.booked

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l'hotel?

Art-hotel?

'If Gianni – as you say – said that he won't come, then why

did he book the hotel?'(Coniglio and Zegrean (2012: 244))

Coniglio and Zegrean account for this contrast by proposing that ILL in the central adverbial clauses is impoverished and cannot license discourse particle involving uninterpretable features (strictly speaking, ILL in a central adverbial clause has a default value [i0] that cannot enter into matching relation with an uninterruptable feature of the discourse particle), while ILL in the peripheral adverbial clause is not impoverished and can delete the uninterpretable feature in a discourse particle.

(49) a. *$[_{ILL}$ ILL^0 $_{[i0]}$ $[_{CT}$ CT^0 $_{[iF']}$ [… pure $_{[uF][uF']}$…]]]

 b. $[_{ILL}$ ILL^0 $_{[iF]}$ $[_{CT}$ CT^0 $_{[iF']}$ [… pure $_{[uF][uF']}$…]]]

It is then predicted that central adverbial clauses cannot contain RQ, while peripheral ones can.

(50) a. *$[_{Central}$ $[_{ILL}$ ILL$^0_{[i0]}$ $[_{CT}$ Op$_{Neg\ [uAsser][uInterr]}$ CT^0 $_{[iInterr]}$ …]]]

 b. $[_{Peripheral}$ $[_{ILL}$ ILL$^0_{[iAsser]}$ $[_{CT}$ Op$_{Neg\ [uAsser][uInterr]}$ CT^0 $_{[iInterr]}$ …]]]

This prediction is borne out. According to Haegeman (2012), peripheral adverbial clauses can contain rhetorical *wh*-questions as in (51a-d) and rhetorical *yes-no* questions as in (51e-f).

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(51) a. She was thinking of how Philip had buttoned up her fur coat on the platform at Paddington, saying that she mustn't catch cold *because what would they do then?*

(Ellis, Alice Thomas. *The Other Side of the Fire*, Penguin 1985, 1986: 93)

b. It surely says something –– *although who knows what* –– about our media-saturated culture that the topless shots in question are not of Jordan but the prime minister's wife?   (*Observer*, February 6, 2005; col. 3)

c. Oil and electricity is useful, *while gold –– what's the point of that?* (*Observer*, November 23, 2008; 12, col.4)

d. These assumptions can be irritating, since *who is this naive, unquestioning, plural intelligence identified as "we"?*   (*Observer Magazine*, April 10, 2005: 5, col. 1)

e. Actually, I just made that last one up t*hough, honestly, isn't all this talk of "wibbling" and "frubbling" just a teensy-weensy bit infantile?*

(*Observer Magazine*, April 10, 2000: 27, col. 8)

f. No one would have been too upset about her bad behavior, *because wasn't that what writers were put on earth to do?*

(*Observer*, August 20, 2000: 27, col. 8)

(cited in Haegeman (2012: 173))

In contrast, neither rhetorical *wh*-questions nor rhetorical *yes-no* questions may be generated in central adverbial clauses, as predicted.

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(52) a. *If did Mary say that he won't come, then he will come.

(Intended: 'If Mary did not say that he won't come, then

he will come.')

b. *If who said that he won't come, then he will come.

(Intended: 'If nobody said that he won't come, then he

will come.')

5. Conclusion

The semantic-pragmatic approaches like Han (2002) and Caponigro and Sprouse (2007) attribute negative interpretation in RQs to semantics and pragmatics of interrogatives. These approaches, however, cannot explain some syntactic characters such as NR in rhetorical *yes-no* questions and blocking of rhetorical interpretation by sentence-initial quantifiers. As an alternative analysis, I proposed a syntactic analysis of RQ based on Coniglio and Zegrean's (2012) cartographic framework, which assumes that information on clause type and illocutionary force is encoded in the syntactic structure through the dedicated projections CT and ILL, and they licenses a silent negative operator Op_{Neg}. This alternative not only explain the core data of RQs but also the cases problematic to the semantic-pragmatic approaches and availability of RQ in peripheral adverbial clauses.

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Notes

1) One may wonder why Op_{Neg} is phonologically empty. This question is answered if we adopt the phase-based cyclic Spell-Out (Chomsky (2000, 2001)). Following a personal communication with Nissenbaum, Chomsky (2004: 125, fn. 17) argues that the phase-edge of the topmost phase does not undergo Spell-Out, so that the phase-head-complement is pronounced whereas items merged at the edge are not. That is, if the matrix CP is headed by a "performative" *v* as schematized in (i), the phase-head-complement CP is shipped to the phonological component, whereas the performative clause does not.

(i) $[_{vP} \, v_{performative} \, [_{CP} \, C \, ...]]]$

Given that, assuming with Totsuka (2015) that the highest phase is ForceP (in the split-Force system, CT), the complement of CT is sent to the phonological component.

(ii) $[_{ILL} \, ILL^0 \, _{[iAsser]} \, [_{CT} \, Op_{Neg} \, CT^0 \, _{[iInterr]} \, [_{FinP} \, [_{Fin0} \, is] \, [_{TP} \, syntax \, easy]]]$

In contrast, items merged in the Spec of CT do not undergo Spell-Out. For this reason, Op_{Neg} remains silent.

2)   Although RQs are typically interpreted as a negative assertion, it is not the case that they are always interpreted negatively: the italicized sentence in (ib) is paraphrased as 'Mina helped him when he was in trouble.'

   (i) a.   SITUATION: Mina helped Luca when he was in trouble
            and both the Speaker and the Addressee are aware of
            that.   Now Luca adores Mina for helping him.
      b.   SPEAKER: It's understandable that Luca adores Mina.
            After all, who helped him when he was in trouble?
      c.   ADDRESSEE or SPEAKER: Mina / #Nobody

                              (Caponigro and Sprouse (2007: 124))

One might wonder how the non-negative interpretation of RQ is accounted for by the proposed analysis.   Etsuro Shima (p.c.) suggests that the italicized sentence in (ib) is interpreted as 'I assert that it is not the case that *anybody but Mina* when he was in trouble.'   In other words, the non-negative interpretation of the *wh*-phrase is brought about by the exceptional phrase *but Mina*.   How to implement this idea formally is left for my future research.

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