

# Deriving the Interpretation of Rhetorical Questions\*

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## 1 Introduction

The purpose of this paper is (1) to show that RHETORICAL QUESTIONS and ORDINARY QUESTIONS do not pattern alike with respect to various well-formedness conditions, (2) to provide a way of deriving the interpretation of rhetorical questions as assertions, and (3) to address the question of why rhetorical questions get the interpretation that they do,

While an ordinary question seeks information or an answer from the hearer, a rhetorical question does not expect to elicit an answer. In general, a rhetorical question has the illocutionary force of a strong assertion of opposite polarity from what is apparently asked (Sadock (1971), Sadock (1974)). That is, a rhetorical positive question has the illocutionary force of a negative assertion and a rhetorical negative question has the illocutionary force of a positive assertion. Consider the questions in (1).

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- (1) a. What has John ever done for Sam?
- b. What hasn't John done for Sam?

Under the rhetorical question reading, the *wh*-questions in (1) assert *John has done nothing for Sam*, and *John has done everything for Sam*, respectively.

- (2) a. Did I tell you that writing a dissertation was easy?
- b. Didn't I tell you that writing a dissertation was easy?

Under the rhetorical question reading, the *yes-no* questions in (2) respectively assert *I didn't tell you that writing a dissertation was easy*, and *I told you that writing a dissertation was easy*.

Sadock (1971, 1974) argues that a rhetorical question is semantically equivalent to an assertion of the opposite polarity of what is apparently asked followed by a tag question with a falling intonation. Other studies on rhetorical questions include Linebarger (1987), Progovac (1993), Lee (1995) and Gutiérrez-Rexach (1996). They are mainly concerned with accounting for negative polarity item (NPI) licensing in rhetorical questions. In the present paper, I add new observations with respect to the behavior of NPIs in rhetorical questions. But more importantly, I motivate why rhetorical questions have the interpretation that they do. Once this is done, NPI licensing facts will just follow from the proposed analysis.

In §2, I show that rhetorical questions have the formal properties of assertions rather than of questions. I also show that NPI licensing in ordinary questions and rhetorical questions is not the same. In §3, I briefly discuss the semantics of questions and semantics of *wh*-words that I am assuming. In §4, I address the question of why a rhetorical question has the illocutionary force of an assertion of the opposite polarity. In §5, I propose a way of deriving the interpretation for rhetorical questions. Based on the proposed system, I provide an account of NPI licensing facts in rhetorical questions and explain why rhetorical questions are interpreted as assertions in §6. In §7 and §8, I provide further evidence for the proposal from the interpretation of rhetorical questions with a deontic modal and the behavior of post-verbal negative constituents in rhetorical questions in Italian, which is a negative concord language. In §9, I show that under the proposed analysis the interpretation of rhetorical questions can be derived compositionally.

## 2 Formal Properties of Rhetorical Questions

### 2.1 Rhetorical Questions as Assertions

Sadock (1971) and Sadock (1974) provide tests to show that rhetorical *yes-no* questions are formally assertions and that they are formally different from

information seeking ordinary *yes-no* questions. Sadock's tests yield the same results for rhetorical *wh*-questions.

The introductory item *after all* can occur with rhetorical *wh*-questions, but it cannot occur with ordinary *wh*-questions. For instance, (3) can only be interpreted as a rhetorical question.

- (3) After all, who helped Mary?

While rhetorical *wh*-questions can be followed by a *yet*-clause, ordinary *wh*-questions cannot. The question in (4) is felicitous only if it is interpreted as a rhetorical question.

- (4) Who helped Mary? Yet, she managed everything by herself.

The parenthetical *by any chance* can occur with ordinary *wh*-questions, but it cannot occur with rhetorical *wh*-questions. The question in (5) can only be interpreted as an ordinary question.

- (5) Who helped Mary, by any chance?

Finally, Sadock (1974) shows that when rhetorical *wh*-questions are used as a parenthetical, they can be in the form of a nonrestrictive relative clause, as shown in (6a). But when ordinary *wh*-questions are used as a parenthetical, they have the form of a conjunct, as in (6c). The following examples are from Sadock (1974).

- (6) a. Symbolic logic, which who cares about anyway, is awfully tough.  
b. \* Symbolic logic, which by the way who invented, isn't my cup of Postum.  
c. Symbolic logic – and by the way who invented it? – isn't my cup of Postum.

As shown in (6b), ordinary *wh*-questions cannot be reduced to a nonrestrictive relative clause when used as a parenthetical.

## 2.2 NPI Licensing

Ordinary *yes-no* questions are known to license weak NPIs, such as *any* (Ladusaw (1980), Linebarger (1987), Progovac (1993), and Higginbotham (1993)).<sup>1</sup>

- (7) a. Did anybody visit John?  
b. Did John visit anyone?

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<sup>1</sup>Zwarts (1993) makes a distinction between weak NPIs and strong NPIs. Weak NPIs include *any* and *ever*. They can be licensed by any downward entailing entity, such as *few NP*, or *less than four NP*. Strong NPIs include *lift a finger*, *budge an inch*, etc. and they can only be licensed by negative elements such as *no* or *not*.

Ordinary *yes-no* questions do not license strong NPIs, such as *lift a finger* and *budge an inch*. *Yes-no* questions with strong NPIs can only have rhetorical question reading.

- (8) a. Did John lift a finger to help Sam?
- b. Did John budge an inch when Sam was in trouble?

For example, (8a) can only be interpreted as an assertion of the speaker's belief that John didn't lift a finger to help Sam.

As for the NPI licensing in argument *wh*-questions, Han and Siegel (1996) point out that when the trace of the *wh*-phrase c-commands the weak NPI, both the ordinary question reading and the rhetorical question reading are available (as in (9)), whereas when this c-command relationship does not hold, only the rhetorical question reading is available (as in (10)).

- (9) a. Who<sub>*i*</sub> *t<sub>*i*</sub>* has ever been to Seoul?
- b. Who<sub>*i*</sub> *t<sub>*i*</sub>* said anything interesting at the seminar?

- (10) a. What<sub>*i*</sub> has Sam ever contributed *t<sub>*i*</sub>* to the project?
- b. What<sub>*i*</sub> did anybody say *t<sub>*i*</sub>* at the seminar?

For instance, (9a) can be interpreted either as a question about visitors to Seoul, or as an assertion of the speaker's belief that no one has been to Seoul. However, (10a) can only be interpreted as an assertion that Sam has not contributed anything to the project.

Just like ordinary *yes-no* questions, ordinary *wh*-questions do not license strong NPIs. *Wh*-questions with strong NPIs can only be interpreted as rhetorical questions.

- (11) a. Who lifted a finger to help Mary?
- b. Who budged an inch when you were in trouble?

(11a) can only be interpreted as an assertion that no one helped Mary.

While an ordinary negative question can have a weak NPI, a rhetorical negative question cannot have a weak NPI. The questions in (12) and (13) are good under the ordinary question reading. For example, (12a) can be a question that asks whether John visited anyone or not, and (13a) can be a question about visitors to Seoul. However, the questions in (12) and (13) do not have the rhetorical question reading. For example, (12a) cannot mean that John visited someone, and (13a) cannot mean that everybody has been to Seoul.

- (12) a. Didn't John visit anyone?
- b. Didn't anyone visit John?

- (13) a. Who hasn't ever been to Seoul?  
 b. Who didn't say anything interesting at the seminar?

The fact that rhetorical negative questions do not license NPIs is quite surprising. This means that the negation that is present in the surface string of rhetorical negative questions does not function as the licenser of NPIs. It suggests that the NPI licensing condition is applied at a more abstract level, and that the representation of rhetorical negative questions at this level does not have a licenser for NPIs.

Based on the data considered in this section, I conclude that NPI licensing in ordinary questions and rhetorical questions is not the same.

### 3 Semantics of Questions and *Wh*-words

#### 3.1 Semantics of Questions

Let us define, as in Groenendijk and Stokhof (1985), a question as denoting a function which partitions the set of all possible worlds. The partition represents the set of propositions which are possible answers, including the negative answer. That is, each block of the partition corresponds to the set of possible worlds in which one of the possible answers is true. For instance, the *yes-no* question *Does John drink?* returns the bipartition as in (14).

- (14) 

John drinks
<b>John doesn't drink</b>

One block of the partition represents the positive answer and the other block represents the negative answer.

The *wh*-question *Who drinks?* returns the partition in (15).

- (15) 

<b>Nobody drinks</b>
John drinks
John and Mary drink
⋮
Everybody drinks

Each block in the partition represents a possible answer. One of the blocks will contain the true answer.

#### 3.2 Semantics of *Wh*-words

Following the motivations given in Szabolcsi and Zwarts (1993) and Gutiérrez-Rexach (1996), let us assume that *wh*-words like *who*, *what* and *which N* range over individuals, and the domain of individuals is structured as a boolean algebra.

A boolean algebraic structure is a lattice closed under meets, joins and complements. A structure is closed under a given operation iff that operation is defined for every element in the structure. In set-theoretic terms, meet operation corresponds to intersection, join operation corresponds to union, and complement operation corresponds to set-theoretic complement.

In Figure 1, I provide an example of a boolean algebraic structure of a mini-universe that contains three individuals: a, b, and c. The top element corresponds to the set that contains everything in the universe. The bottom element corresponds to an empty set.

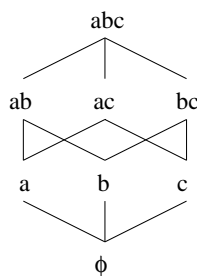


Figure 1: A boolean algebraic structure

### 3.3 The Source of Negation

Under the semantics of questions assumed here, the partition returned by a question includes a block that represents a negative answer. Moreover, under the semantics of *wh*-words assumed here, the denotation of a *wh*-word includes an empty set. Both the block representing a negative answer (in boldface in (14) and (15)) and the empty set ( $\phi$  in Figure 1) contribute the model-theoretic equivalent of negation in the language.

## 4 An Assertion of the Opposite Polarity

Recall that rhetorical questions are interpreted as assertions of opposite polarity from what is apparently asked. I propose that the negation contributed by the semantics of questions and the semantics of *wh*-words is responsible for the polarity reversal in the interpretation of rhetorical questions. That is, the polarity reversal in the interpretation of rhetorical questions is the result of the following general principles:

- (16) a. Rhetorical questions denote the negative answer.
- b. The *wh*-phrase in rhetorical *wh*-questions denotes  $\phi$ .

Then the question is ‘Why?’ To put it differently, why shouldn’t rhetorical *yes-no* questions always denote the positive answer, and why shouldn’t rhetorical

*wh*-questions always denote any of the positive answers. Furthermore, why shouldn't the *wh*-phrase in rhetorical *wh*-questions always denote some non-empty set.

#### 4.1 *Yes-no* questions

It turns out that ordinary questions also have polarity reversal effects in terms of the speaker's expectations towards the answer. Ordinary negative *yes-no* questions implicate that the speaker expects a positive answer.

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

For instance, the ordinary question in (17a) implicates that the speaker expects the answer to be that John indeed finished the paper.

In general, positive *yes-no* questions do not have any implications as to the speaker's expectations towards the answer. However, if it implicates the speaker's expectations towards the answer at all, it implicates that the speaker expects a negative answer.

- (18) a. Did John finish the paper?  
b. Speaker's expectation: John didn't finish the paper.

Assume that the speaker thought that John didn't finish the paper. But he is not completely sure. In such a context, the speaker would utter (18a), rather than (17a).

If a positive assertion is followed by the conjunction *but* and a tag question, the tag question must be in the positive form, as in (19). If a negative assertion is followed by *but* and a tag question, the tag question must be in the negative form, as in (20). The conjunction *but* requires the second conjunct to be contrastive with the first conjunct. A positive tag question can be the second conjunct in (19a) because it expresses the speaker's expectation towards the negative answer. A negative tag question can be the second conjunct in (20a) because it expresses the speaker's expectation towards the positive answer. In both cases, the first conjunct contrasts with the second conjunct.

- (19) a. John said that he finished the paper, but did he?  
b. # John said that he finished the paper, but didn't he?  
(20) a. John said that he didn't finish the paper, but didn't he?  
b. # John said that he didn't finish the paper, but did he?

A possible explanation for the polarity reversal effects as to the speaker's expectation towards the answer in *yes-no* questions may come from Gricean maxims (Grice (1975)). The speaker's expectation may be the result of an instantiation of the first part of the Gricean maxim of Quantity:

(21) Make your contribution as informative as is required.

I take the notion of ‘informativeness’ to be relative to the individual’s degree of belief in a certain proposition  $p$  in a given context  $c$ . The idea of assigning a degree of belief for  $p$  is adopted from various probabilistic ways of modeling epistemic states (e.g., Bayesian models for degrees of beliefs,<sup>2</sup> see Gärdenfors (1988)(p.36)). Such models take into account individuals’ beliefs that are partial in the sense that they are neither accepted nor rejected. If a speaker believes that it is very likely that  $p$  holds in  $c$ , the most informative proposition in  $c$  is  $\neg p$ . For instance, assume that you believe that it is very likely that it is raining and someone says to you *It is raining* ( $q$ ). Then  $q$  is not adding much to what you already know. But if someone says to you *It is not raining* ( $q'$ ) and you believe him to be truthful, then you have to change your beliefs about the weather. The claim is that  $q'$  is more informative than  $q$  because you have to change your beliefs if you accept  $q'$ . I speculate that when a speaker is formulating a question to find out whether  $p$  or  $\neg p$ , s/he formulates the question with the form of the proposition which would be the most informative if it turned out to be true. This means that if a question has the form of “ $\neg p$ ?”, the speaker believes that  $\neg p$  is the most informative proposition if it turned out to be true. This in turn means that in such a context, the speaker believes that it is very likely that  $p$  holds.

I claim that rhetorical *yes-no* questions implicate the speaker’s expectation towards the answer in the strongest possible form. The implicated speaker’s expectation is asserted as the speaker’s belief. Then the problem of why rhetorical *yes-no* questions are interpreted as assertions of opposite polarity reduces to why ordinary positive *yes-no* questions can implicate that the speaker expects a negative answer and ordinary negative *yes-no* questions implicate that the speaker expects a positive answer. While the facts for positive *yes-no* questions as to the speaker’s expectations are somewhat unclear, there is some evidence for the claim from tag questions.<sup>3</sup>

<sup>2</sup>Each proposition has associated with it a probabilistic belief function  $b: P \rightarrow [0,1]$ , where  $P$  is the set of propositions and  $[0,1]$  is the real interval between 0 and 1.

<sup>3</sup>There are some apparent rhetorical positive *yes-no* questions that do not denote the negative answer. The question in (1b) and the rhetorical *yes-no* question in (1c) can mean the same thing: namely, the Pope is indeed Catholic. However, the usage of these questions are different. As can be seen by the following discourse segments, the two questions cannot be used interchangeably. While (1b) can be an answer to the ordinary question in (1a), (1c) cannot. Moreover, while (2b) can be an appropriate reply to (2a), (2c) cannot.

- (1) a. A: Is Clinton a liberal?  
b. B: Is the Pope Catholic?  
c. #B: Isn’t the Pope Catholic?
- (2) a. A: The Pope has not been acting like himself lately.  
b. B: No matter what, isn’t the Pope Catholic?



## 4.2 *Wh*-questions

A similar point can be made about ordinary *wh*-questions and speaker's expectations towards the answer. Ordinary negative *wh*-questions implicate that the speaker expects that the set of individuals who satisfy the question is smaller than the set of individuals who don't satisfy the question.

- (22) a. Who didn't finish the paper?  
b. Speaker's expectation: The set of people that didn't finish the paper is smaller than the set of people that finished the paper.

In general, positive *wh*-questions do not have any implications as to the speaker's expectations with respect to the answer. However, if they have any implications at all, they behave similarly to negative *wh*-questions.

- (23) a. Who finished the paper?  
b. Speaker's expectation: The set of people that finished the paper is smaller than the set of people that didn't finish the paper.

Assume that the speaker believes that most people didn't finish the paper, and wants to know who indeed finished the paper. In such a context, the speaker would utter (23a), rather than (22a).

A possible explanation for the speaker's expectation towards the answer in *wh*-questions may come from the second part of Gricean maxim of Quantity:

- (24) Do not make your contribution more informative than is required.

If a shorter answer is enough to be informative, then the speaker prefers the shorter answer. Hence, the speaker formulates the question in such a way that a shorter answer will be given.

Returning to rhetorical *wh*-questions: I claim that rhetorical *wh*-questions implicate the speaker's expectation in the strongest possible form. It asserts that the speaker believes that the set of individuals that satisfies the question is empty.<sup>4</sup>

- c. # B: No matter what, is the Pope Catholic?

The question in (1b), although without negation, expresses a positive assertion. While the analysis given here predicts that such cases must have negation (as in (1c)), the above examples show that the positive assertion of (1b) is distinct from the one in (1c) and must be dealt with exceptionally.

<sup>4</sup>There are some rhetorical *wh*-questions whose *wh*-phrase does not denote an empty set.

- (1) Who has fed you and given you a proper education? (A mother to her son)

Under the rhetorical question reading, the *wh*-phrase in (1) denotes a singleton set, and the question denotes a specific answer: namely, *I have fed you and given you a proper education*. A possible explanation could come from the nature of the discourse context. That is, it may be the case that the discourse context in which such a type of rhetorical questions can be used has an existential presupposition, e.g. *someone has fed you and given you a proper education*. Then,

## 5 Deriving the Interpretation

Now that I have motivated why rhetorical questions are interpreted as assertions of the opposite polarity, I propose a way of deriving the interpretation.

I assume that *yes-no* questions have a polarity operator in [Spec, CP], which is unspecified for the polarity. This is adopted from the approach proposed by Progovac (1993) for independent reasons. I propose that in rhetorical *yes-no* questions, the polarity operator maps onto negation. The source of this negation is from the partition returned by the semantics of questions.

- (25) a. Did I tell you that writing a dissertation was easy?  
b.  $Op$ [Did I tell you that writing a dissertation was easy]  
c.  $\neg$ [I told you that writing a dissertation was easy]

In (25a), the polarity operator ( $Op$ ) has the negative value. And so the question is interpreted as a negative assertion, as can be represented as (25c).

- (26) a. Didn't I tell you that writing a dissertation was easy?  
b.  $Op[\neg$ (I told you that writing a dissertation was easy)]  
c.  $\neg[\neg$ (I told you that writing a dissertation was easy)]  
d. I told you that writing a dissertation was easy

In (26a), the polarity operator ( $Op$ ) gets the negative value. The polarity operator and the content of the question each contribute a negation, as represented in (26c). The two negations cancel out each other, and the question is finally interpreted as a positive assertion, as represented in (26d).

I propose that in rhetorical *wh*-questions, the *wh*-phrase maps onto an empty set, which is semantically equivalent to a negative quantifier. The source of the empty set is from the denotation of *wh*-words.

- (27) a. What has John done for you?  
b.  $\neg\exists x$ [John has done x for you]

In (27a), the *wh*-phrase is mapped onto a negative quantifier. And so the question is interpreted as a negative assertion, as represented in (27b).

- (28) a. What hasn't John done for you?  
b.  $\neg\exists x[\neg$ (John has done x for you)]  
c.  $\forall x$ [John has done x for you]

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the *wh*-phrase can no longer denote an empty set, and the smallest possible set it can denote is a singleton set. With this kind of extension in mind, I restrict the discussion to rhetorical *wh*-questions whose *wh*-phrase denotes an empty set.

In (28a), the *wh*-phrase is mapped onto a negative quantifier. The negative quantifier and the content of the question each contribute a negation, as represented in (28b). The two negations cancel out each other, and the question is finally given the correct interpretation as a positive assertion, as represented in (28c).

## 6 An Account of the Data

### 6.1 Rhetorical Questions as Assertions

The proposed analysis explains why rhetorical questions are interpreted as assertions. In rhetorical *yes-no* questions, the value of the polarity operator is determined. And in *wh*-questions, the value of the *wh*-phrase is determined. Since the gap is filled, rhetorical questions are not questions anymore. Rather, they are assertions.

### 6.2 NPI Licensing

Under the proposed analysis, NPI licensing in rhetorical questions can be accounted for. NPIs are licensed when rhetorical questions are interpreted as negative assertions and NPIs are not licensed when rhetorical questions are interpreted as positive assertions.

#### 6.2.1 Rhetorical *yes-no* questions

Both strong and weak NPIs are licensed in rhetorical positive *yes-no* questions.

- (29) a. Did John visit anyone?  
b.  $\neg$ [John visited anyone]
- (30) a. Did John lift a finger to help you?  
b.  $\neg$ [John lifted a finger to help you]

Under the rhetorical question reading, both (29a) and (30a) are interpreted as negative assertions. The interpretation of (29a) and (30a) can be represented as in (29b) and (30b) respectively. The weak NPI *anyone* in (29a) and the strong NPI *lift a finger* in (30a) are licensed because they both end up in the scope of negation in the derived representations for the rhetorical questions.

NPIs are not licensed in rhetorical negative *yes-no* questions.<sup>5</sup>

- (31) a. \* Didn't John visit anyone?  
b.  $\neg$ [ $\neg$ (John visited anyone)]  
c. \* John visited anyone

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<sup>5</sup>The asterisk on (31a) indicates that the question is bad under the rhetorical question reading.

Under the rhetorical question reading, (31a) would be interpreted as a positive assertion because the two negations contributed by the polarity operator and the content of the question cancel out each other. The interpretation of (31a) can be represented as in (31c). But this representation is not well-formed because the NPI *anyone* is not licensed.

### 6.2.2 Rhetorical *wh*-questions

Just like rhetorical positive *yes-no* questions, rhetorical positive *wh*-questions license both weak and strong NPIs.

- (32) a. What has Sam ever contributed to the project?  
 b.  $\neg\exists x$ [Sam has ever contributed  $x$  to the project]

- (33) a. Who lifted a finger to help Mary?  
 b.  $\neg\exists x$ [ $x$  lifted a finger to help Mary]

Under the rhetorical question reading, both (32a) and (33a) are interpreted as negative assertions. The interpretation of these questions can be represented as in (32b) and (33b). The NPIs *ever* and *lift a finger* are licensed because they end up in the scope of negation in the derived representations for the rhetorical questions.

Moreover, just like rhetorical negative *yes-no* questions, rhetorical negative *wh*-questions do not license NPIs.<sup>6</sup>

- (34) a. \* Who didn't say anything interesting at the seminar?  
 b.  $\neg\exists x$ [ $\neg$ ( $x$  said anything interesting at the seminar)]  
 c. \*  $\forall x$ ( $x$  said anything interesting at the seminar)

Under the rhetorical question reading, (34a) would be interpreted as a positive assertion because the two negations contributed by the *wh*-phrase (which is equivalent to a negative QP) and the content of the question cancel out each other. The interpretation of (34a) can be represented as in (34c). But this representation is not well-formed because the NPI *anything* is not licensed.

## 7 Rhetorical Questions with a Deontic Modal

Further evidence for the proposal comes from rhetorical questions with deontic modals. In a sentence where a deontic modal *c*-commands negation *not* or a negative QP, the deontic modal unambiguously scopes over the negation or the negative QP.

- (35) a. John must not eat the cake.  
 $\approx$ It is obligatory for John to not eat the cake.

<sup>6</sup>The asterisk on (34a) indicates that the question is bad under the rhetorical question reading.

- b. John should not leave.  
 $\approx$ It is obligatory for John to not leave.
- (36)
- a. John must say nothing.  
 $\approx$ It is obligatory for John to say nothing.
  - b. John should eat nothing.  
 $\approx$ It is obligatory for John to eat nothing.

For instance, in (35), the deontic modal *must* or *should* c-commands *not*. In (36), the deontic modal c-commands *nothing*. In these examples, the deontic modal unambiguously scopes over the negation, as can be seen by the paraphrases given for each sentence.

Interestingly, rhetorical questions with a deontic modal unambiguously have the interpretation in which the deontic modal has narrow scope with respect to a negation or a negative QP, although there is no negation or a negative QP in the surface syntax.

- (37)
- a. Must John say anything?  
 $\approx$ It is not obligatory for John to say anything.
  - b. Should John do the homework?  
 $\approx$ It is not obligatory for John to do the homework.
- (38)
- a. What must John say?  
 $\approx$ There is nothing such that it is obligatory for John to say it.
  - b. What should John do?  
 $\approx$ There is nothing such that it is obligatory for John to do it.

Under the proposal given here, in rhetorical *yes-no* questions, the polarity operator which has the negative value is located in [Spec, CP], c-commanding the deontic modal. Hence, it is not surprising that rhetorical *yes-no* questions with a deontic modal have an interpretation in which the negation takes scope over the deontic modal.

- (39)
- a.  $\neg$ [John must say anything]
  - b.  $\neg$ [John should do the homework]

The interpretation of the rhetorical *yes-no* questions in (37) can be represented as in (39).

Similarly, under the proposal given here, in rhetorical *wh*-questions, the *wh*-phrase, which is equivalent to a negative QP, is in [Spec, CP], c-commanding the deontic modal. Hence, it follows that rhetorical *wh*-questions with a deontic modal have an interpretation in which the negation takes scope over the deontic modal.

- (40) a.  $\neg\exists x$ [John must say x]  
 b.  $\neg\exists x$ [John should do x]

The interpretation of the rhetorical *wh*-questions in (38) can be represented as in (40).

Although there is no negation in the surface syntax, the questions in (37) and (38) can have the rhetorical question reading in which the negation takes scope over the deontic modal. This is because the polarity operator in *yes-no* questions and the *wh*-phrase in *wh*-questions contribute negation under the proposed analysis.

## 8 Evidence from a Negative Concord Language: Italian

We have seen that *wh*-words in rhetorical *wh*-questions behave like a negative QP. Here, I look at some facts from the behavior of negative constituents in *wh*-questions in Italian which give support to my analysis in general and the link between *wh*-words and negative QPs in particular.

### 8.1 Sentential Negation

In Italian, pure sentential negation is expressed by the negative marker *non*.

- (41) Gianni non telefona a sua madre.  
 G. non telephones to his mother  
 ‘Gianni does not call his mother.’

Sentential negation can also be expressed by one or more negative constituents. In Italian, post-verbal negative constituents behave differently from pre-verbal negative constituents. Post-verbal negative constituents are like English NPIs in that they have to be licensed by *non* or a pre-verbal negative constituent (Zanuttini (1991) and Haegeman (1995)).

- (42) a. Gianni non telefona a nessuno.  
 G. non telephones to nobody  
 ‘Gianni does not call anyone.’  
 b. Nessuno ha detto niente.  
 nobody has said nothing  
 ‘Nobody said anything.’  
 c. \*Gianni telefona a nessuno.  
 G. telephones to nobody

Both (42a) and (42b) are well-formed because *nessuno* is licensed by *non* in (42a), and *niente* is licensed by *nessuno* in (42b). But (42c) is not well-formed because there is no licenser for *nessuno*.

On the other hand, a pre-verbal negative constituent is a full-fledged negative QP. It does not require a licensing negative element.

- (43) Nessuno ha visto Mario.  
nobody has seen M.  
'Nobody has seen Mario.'

In (43), the preverbal subject *nessuno* is a true negative QP. It does not require a licenser.

### 8.2 *Wh*-questions with post-verbal negative constituent

In ordinary information seeking *wh*-questions with a post-verbal negative constituent, the negative marker *non* must be present in order to license the post-verbal negative constituent.

- (44) a. Chi non ha baciato nessuno?  
who non has kissed nobody  
'Who has not kissed anybody?'  
b. \*Chi ha baciato nessuno?  
who has kissed nobody

### 8.3 Rhetorical Questions

However, a rhetorical positive question with a post-verbal negative constituent does not require *non*. Assume that speaker A has accused speaker B of kissing Mary and B has denied this accusation by uttering a rhetorical question in (45b).

- (45) a. A: Hai baciato Maria!  
have:you kissed M.  
'You have kissed Mary.'  
b. B: Ma chi ha baciato nessuno?  
but who has kissed nobody  
'But who has kissed anyone?'

Under the proposed analysis, *chi* is equivalent to a negative QP. It licenses *nessuno*.

Moreover, a rhetorical negative question that has *non* is interpreted as a positive assertion.

- (46) Chi non sposerebbe Maria?  
Who non marry M.  
'Who would not marry Mary?'

Under the proposed analysis, *chi* is equivalent to a negative QP. It has true negative force. *Chi* and *non* cancel out each other, and the question is interpreted as a positive assertion.

In summary, since the *wh*-phrase in a rhetorical question denotes an empty set and is equivalent to a true negative QP, it can license post-verbal negative constituents.

## 9 Compositional Semantics for Rhetorical Questions

Under the proposed analysis, the interpretation of rhetorical questions is derived compositionally. I show this by using Montague’s (1973) PTQ model, with the addition of modal operators to the language. The function  $F_i$  is a quantifying-in function.

A correct logical form for the interpretation of the rhetorical *wh*-question *What must Sam eat?* can be derived as in Table 1.

Translations	Rules
1. $\text{must Sam eat } x_i \mapsto \Box \text{eat}'_*(\text{sam}', x_i)$	
2. $\text{nothing} \mapsto \lambda X \neg \exists x (\text{thing}'(x) \wedge \forall X(x))$	
3. $F_i(\text{nothing}, \text{must Sam eat } x_i) \mapsto (\lambda X \neg \exists x (\text{thing}'(x) \wedge \forall X(x))) \wedge \lambda x_i \Box \text{eat}'_*(\text{sam}', x_i)$	Quantifying-in
4. $\neg \exists x (\text{thing}'(x) \wedge \forall \lambda x_i \Box \text{eat}'_*(\text{sam}', x_i)(x))$	$\lambda$ -conversion
5. $\neg \exists x (\text{thing}'(x) \wedge \lambda x_i \Box \text{eat}'_*(\text{sam}', x_i)(x))$	$\forall^\wedge$ -elimination
6. $\neg \exists x (\text{thing}'(x) \wedge \Box \text{eat}'_*(\text{sam}', x))$	$\lambda$ -conversion

Table 1: Deriving the translation of *What must Sam eat?*

In step 1, *must Sam eat  $x_i$*  is translated and in step 2, *what* is mapped to the intensional logical translation of *nothing*. In step 3, the translation of *nothing* is quantified into the translation of *must Sam eat  $x_i$* . After  $\lambda$ -conversions and  $\forall^\wedge$ -eliminations, the translation in step 6 is derived, which represents the correct scope between the negation and the deontic modal.

## 10 Conclusion

I have shown that rhetorical questions and ordinary questions do not pattern alike with respect to various well-formedness conditions. I have proposed a way of deriving the interpretation of rhetorical questions and addressed the question of why rhetorical questions get the interpretation that they do. The proposed analysis implicates that the syntax-pragmatics interface determines the representation of rhetorical questions. This representation directly maps



onto the semantic interpretation where well-formedness conditions, such as NPI licensing, apply.

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