

## Abstract

**Challenge:** New corpus data suggests that standard analyses of rhetorical questions have been limited in their approach to rhetorical questions, restricting them to questions associated with single negative answers (Krifka 1995, Han 1998), or interpreted as biased assertions (Sadock 1971) or constrained questions (van Rooy 2003).

**Proposal:** The discourse conditions that allow for the felicitous use of a rhetorical question require a presupposed answer on the part of both participants. This shared and obvious answer is subject to certain constraints.

**Tools & Analysis:** I frame the analysis of **shared answers** within Gunlogson's (2001) model of Common Ground. I measure **obviousness** using van Rooy's (2003) information theoretic calculation of answer-set predictability.

### 1. Assert an Obvious Answer?

#### Assertions of single negative answers (Krifka 1995, Han 1998, Lee 1994)

(1) *yes/no Question:*

- a. Did John ever help?
- b. Implies : John never helped.

(2) *wh- Question:*

- a. What has John ever done to help?
- b. Implies : John has done nothing to help.

→ Bias of an assertion

### 2. Resemble Regular Interrogatives?

#### Constrained questions (Ladusaw 1980, van Rooy 2003)

(3) *analogous to regular questions*

- a. Did John lift finger to help?
- b. Possible answers:

- (i) Yes, John lifted a finger.
- (ii) No, John did not lift a finger.

→ Answer set invoked

### 3. Problems

- Can rhetorical questions really be limited to cases with single, negative answers?
- Can we reconcile their interrogative status with the reality of their redundancy?

# Information Theoretic Approach to Rhetorical Questions

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## 4. New Data<sup>1</sup>

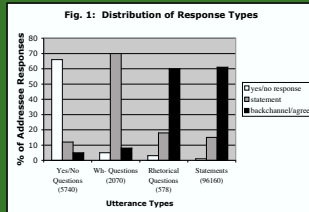
### Existing Approaches Don't Anticipate:

- (4) *Positive answer*: Has the educational system been so watered down that anybody who's above average is now gifted?
- (5) *Non-null answer*: Who fed and clothed you for twenty years?
- (6) *Multiple answers*: What's going to happen to these kids when they grow up?
- (7) *Scalar answers*: How high are taxes going to be when my kids are my age?

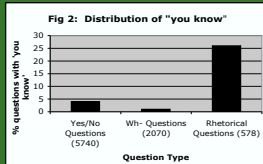
## 5. Corpus Description

### Felicity conditions:

- Presence of an obvious answer
- Uninformativity of the answer



- Sufficient similarity of Speaker/Addressee answers



## 6. Uninformativity Condition

### Shared Answer in the Common Ground

Gunlogson (2001): separate commitment sets for all discourse participants

- Similar to declaratives (Gunlogson associates falling and rising declaratives with commitment to the Speaker and Addressee, respectively)

➔ Rhetorical questions require both Speaker & Addressee commitments

- Similar to interrogatives (Gunlogson describes rising Interrogatives as identity functions)

➔ Rhetorical questions require no updates to the Common Ground

... answers to regular & rhetorical questions differ

## 7. Obvious Answer Condition

### How surprising/informative is the answer?

Assume the meaning of a question  $?xPx$  to be a partition (Groenendijk & Stokhof 1997):

- (8) Who came to the party?

|  |        |           |
|--|--------|-----------|
| (i) nobody is such that                | $x.Px$ | Prob(i)   |
| (ii) $a_1$ is the one that             | $x.Px$ | Prob(ii)  |
| (iii) $a_2$ is the one that            | $x.Px$ | Prob(iii) |
| (iv) $a_1$ and $a_2$ are the ones that | $x.Px$ | Prob(iv)  |
| (v) everybody such that                | $x.Px$ | Prob(v)   |

Assume a partition with probabilities (van Rooij 2003) where an obvious answer has high probability.

### Entropy

$$H(x) = - \sum_{x \in X} P(x) \log_2 P(x)$$

## 8. Entropy of Regular Questions

- (9) Who has spare time? [information-seeking]

|             |     |                   |     |
|-------------|-----|-------------------|-----|
| John        | 1/8 | John & Bob        | 1/8 |
| Mary        | 1/8 | Mary & Bob        | 1/8 |
| Bob         | 1/8 | John & Mary & Bob | 1/8 |
| John & Mary | 1/8 | ∅                 | 1/8 |

High uncertainty - answer is very informative

➔ High Entropy

## 9. Entropy of Rhetorical Questions

- (10) Who has spare time? [skew to null]

|             |      |                   |       |
|-------------|------|-------------------|-------|
| John        | 1/64 | John & Bob        | 4/64  |
| Mary        | 1/64 | Mary & Bob        | 8/64  |
| Bob         | 1/64 | John & Mary & Bob | 16/64 |
| John & Mary | 1/64 | ∅                 | 32/64 |

- (11) Who has spare time? [skew to non-null]

|             |       |                   |      |
|-------------|-------|-------------------|------|
| John        | 32/64 | John & Bob        | 1/64 |
| Mary        | 16/64 | Mary & Bob        | 1/64 |
| Bob         | 8/64  | John & Mary & Bob | 1/64 |
| John & Mary | 4/64  | ∅                 | 1/64 |

High certainty - answer is minimally informative

➔ Low Entropy

<sup>1</sup>Some from the Switchboard corpus (Jurafsky et al. 1998a), available at [www.colorado.edu/ling/jurafsky/ws97/](http://www.colorado.edu/ling/jurafsky/ws97/) with discourse annotated conversations. Rhetorical questions represent about 7% of questions.

## 10. Formalized Constraints

- **Presence of an Obvious answer**

Condition 1: Answers to rhetorical questions are **Obvious** for a set of worlds  $A_x = \text{ANSWER}(Q_{\text{rhet}}, X)$ :  
 $\frac{H(A_x)}{H(A_{\text{unbiased}})} < \theta$ , for  $X \in [\text{Speaker}, \text{Addressee}]$

- **Uninformative to Speaker & Addressee**

Condition 2: Commitments are **Preserved** in context C after  $Q_{\text{rhet}}$  is uttered:  $C + Q_{\text{rhet}} = C'$  such that  
 $cs_x(C') = cs_x(C)$  for  $X \in [\text{Speaker}, \text{Addressee}]$

- **Sufficient Similarity**

- Equivalence of singleton answers

(12) Who would pay a red cent for that old car?

Speaker's obvious answer: *no one*

Addressee's obvious answer: *no one*

$$\emptyset = \emptyset$$

- Similarly skewed answers along scale

(13) How high will taxes be when my kids are my age? --> *very high*

(14) How deprived could they be if they had a camcorder? --> *not very deprived*

(15) How soon are we going to start getting our money's worth? --> *not very soon*

## 11. Rhetorical Failure

- **Lack of similar answers**

(16) What have the Romans ever done for us?

A's intended answer:

B's answer: the aqueduct!

- **Lack of an obvious answer**

(17) How high will taxes be when my kids are my age?

A's intended answer: very high

B's answer: Well, that's a tough question!

They could go up or down, depending on many factors and constraints.

## Conclusion

The answer to a rhetorical question is not predictable from the utterance. Corpus data I presented shows the answer is not simply the negation of the question content.

Instead, conditions of felicitous use are established to constrain the properties of a discourse in which a rhetorical question will succeed:

- presence of an obvious answer
- unformativity of this answer
- sufficient similarity between Speaker and Addressee answer