

## INFORMATION THEORETIC APPROACH TO RHETORICAL QUESTIONS

Under the pragmatic definition of presupposition, speakers presuppose a proposition  $P$ , taking for granted that  $P$  is true and that the audience believes  $P$  as well (Karttunen 1973 on semantic/pragmatic presupposition). I introduce new rhetorical question data suggesting that a presupposed answer is required on the part of both event participants, and furthermore that this answer is subject to certain constraints.

Standard analyses associate rhetorical questions with single negative answers (Krifka 1995, Han 1998) or define them either as biased assertions (Sadock 1971) or constrained questions (van Rooy 2003). New data (some from Jurafsky et al.'s (1998) annotated Switchboard corpus) show that rhetorical questions have a wider range of answers:

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

I propose that rhetorical questions are felicitous only when the Speaker and Addressee share prior commitments to similar and obvious answers. I frame the analysis of shared answers within Gunlogson's (2001) model of Common Ground, and I measure obviousness using van Rooy's (2003) information theoretic calculation of answer-set predictability. Since rhetorical questions invoke an answer set, they resemble interrogatives, but the obviousness of a particular answer implies the bias of an assertion. As such, they are assertive, yet uninformative, serving to synchronize Speaker and Addressee beliefs.

Under my analysis, every question, regular or rhetorical, invokes a set of answers over which a probability distribution is defined. Following van Rooy's implementation of entropy for determining the predictability of an answer set, the presence of one obvious answer renders the answer set highly predictable, or minimally entropic, since all probability mass shifts to one answer. However, unlike van Rooy who equates regular and rhetorical questions, I use the same entropy model to contrast the unpredictability of regular questions (high entropy) with the predictability of rhetorical questions (low entropy). As a tool to measure surprisal, entropy can be used to describe formally the predictable and unsurprising answers to rhetorical questions.

By separating participant's commitment sets, Gunlogson's model allows a comparison between the Speaker and Addressee's obvious answers. Sufficiently similar answers either have an identical value or share an extreme position on a contextually relevant scale. The similarity of singleton answers can be established through direct comparison — for example, *no one* in (1). For multiple answers and vague answers, the probability distribution must highlight answers at the same end of a contextually relevant scale — good/bad adulthoods in (4) or tax rates in (5). Unlike previous analyses, I make no predictions about the content of a rhetorical question's answer — I capture instead the Common Ground conditions that permit the felicitous use of a rhetorical question.

## References

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