

Non-congruent answers and exhaustive interpretation

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1. Introduction: Exhaustive interpretation of answers

Outline

1. Introduction: exhaustive interpretation of answers
2. Exhaustive interpretation as Gricean implicature
3. Problem: Ignorance effect of non-congruent answers
4. Proposal: Ignorance effect as relevance implicature
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Exhaustive interpretation

An answer to a wh-question typically gives rise to an **exhaustive interpretation** (Groenendijk & Stokhof 1984; G&S).

- (1) **Q:** Who among Alice, Bob and Carol likes cookies?
A: Bob (does).
(\rightsquigarrow Alice and Carol do **not** like cookies.)

G&S describe this interpretation by applying the following operator (akin to *only*) to the term answer:

$$\triangleright \text{exh}(T, P) := \lambda w. T(P)(w) \wedge \neg \exists P' : T(P')(w) \wedge P'(w) \subset P(w)$$

This operator turns the answer *Bob* into a GQ that is true only of the minimal set containing **b**.

$$\triangleright \lambda P \lambda w. \text{exh}(\lambda P \lambda w. P(w)(\mathbf{b}), P) = \lambda P \lambda w. P(w)(\mathbf{b}) \wedge \neg \exists P' : P'(w)(\mathbf{b}) \wedge P'(w) \subset P(w)$$

Context dependency of exhaustive interpretation

- ▶ domain restriction
- ▶ mention-some reading

- (2) **Q:** Who has a light? **A:** Bob does.
(\nrightarrow Alice doesn't have a light.)

Ignorance effect in negative answers

- (3) **Q:** Who among Alice, Bob and Carol likes cookies?
A: Bob doesn't. ($?? \rightsquigarrow$ Alice and Carol like cookies.)

2. Exhaustive interpretation as Gricean implicature

Exhaustive interpretation as quantity implicature (i)

- (4) **Q:** Who among Alice, Bob and Carol likes cookies?
A: Bob does.
(\rightsquigarrow Alice and Carol do not like cookies.)
- ▶ **Primary implicature:** **A** is the most informative among the alternative answers to **Q** that the speaker believes.
 \Leftrightarrow For any alternative answer p to **Q**, if **A** is not as informative as p , it is not the case that the speaker believes p .
 - ▶ **Secondary implicature:** Assuming that the speaker is **competent** about the truth/falsity of the alternative answers to **Q**, the inference is strengthened to: For any alternative answer p to **Q**, if **A** is not as informative as p , the speaker believes $\neg p$.
 - ▶ **Alternative answers to Q:** The **positive** possible answers to **Q**.
(Spector 2003; van Rooij & Schulz 2003, Schulz & van Rooij 2006)

Exhaustive interpretation as quantity implicature (ii)

- (5) **Q:** Who among Alice, Bob and Carol likes cookies?
A: Bob does.
(\rightsquigarrow Alice and Carol do not like cookies.)
- ▶ **Alternative answers to Q** = $\{A, B, C\}$
 - ▶ **Primary implicature:** $\forall p \in \{A, B, C\} : B \not\leq p \rightarrow \neg K(p)$
 $\Rightarrow \neg K(A), \neg K(C)$
(where $p \leq q$ iff p is at least as informative as q)
 - ▶ **Secondary implicature:** $K(\neg A), K(\neg C)$

Account of the context sensitivity

Domain restriction

- ▶ The alternative answers to a given question are restricted to the **relevant** positive answers to the question.
- ▶ The relevant positive answers only range over the relevant individuals.

Mention-some reading

(6) **Q:** Who has a light? **A:** Bob does.

- ▶ The informativeness can be context dependent.
- ▶ In this case, Bob's having a light is just as informative as Alice's having a light.
- ▶ $\forall \in \{A, B, C\} : B \not\leq_C p \rightarrow \neg K(p) \not\Rightarrow \neg K(A), \neg K(C)$

3. Problem: Ignorance effect of non-congruent answers

Ignorance effect in negative answers: Existing accounts (i)

(3) **Q:** Who among Alice, Bob and Carol likes cookies?
A: Bob doesn't. (?? \rightsquigarrow Alice and Carol like cookies.)

Spector (2005)

- ▶ Primary implicatures are inferred wrt the set of positive answers as usual. $\Rightarrow \neg B \rightsquigarrow \neg K(A), \neg K(B), \neg K(C)$
- ▶ If we strengthened these implicatures, we would get an incorrect implicature that the sp. believes that no one came.
- ▶ Spector: When the answer is negative, the maxim of **Negative Quantity** is also at work, which states that the speaker's utterance is the most informative among the negative answers to the QUD. $\Rightarrow \neg B \rightsquigarrow \neg K(\neg A), \neg K(\neg C)$
- ▶ Secondary implicature is **not** inferred since strengthening the primary implicatures would lead to inconsistent beliefs. $\Rightarrow \neg K(A), \neg K(\neg A), \neg K(C), \neg K(\neg C)$ i.e. **ignorance**

Ignorance effect in negative answers: Existing accounts (ii)

(3) **Q:** Who among Alice, Bob and Carol likes cookies?
A: Bob doesn't. (?? \rightsquigarrow Alice and Carol like cookies.)

van Rooij & Schulz (2003), Schulz & van Rooij (2006)

- ▶ Primary implicature of negative answers are inferred wrt the set of **negative** possible answers. (cf. e.g., von Stechow & Zimmermann 1984) $\Rightarrow \neg B \rightsquigarrow \neg K(\neg A), \neg K(\neg C)$
- ▶ In negative answers, the competence assumption is optionally relaxed. Hence, only the weak implicatures are available.

Ignorance effect in negative answers: Problems

- ▶ **Conceptual problem:** In both Spector's and vR&S's accounts, there is an extra stipulation which only targets the case of negative answers i.e., Negative Quantity (Spector), Relaxation of competence (vR&S).
 - ▶ The competence assumption is a contextual assumption, so it is odd to stipulate that it is sometimes relaxed based on the linguistic form of an answer.
- ▶ **Empirical problem:** The cancellation of exhaustive interpretation seems to be a general phenomenon that arises when the answer is **not congruent** to the immediate QUD, rather than a phenomenon concerning the difference in polarity between question and answer.

Non-congruent answers and ignorance effect

- (7) **Q:** Who likes cookies? Does Alice like cookies?
A: BOB does. (↗ Alice and Carol do not like cookies.)
- (8) **Q:** Who came to the yoga class yesterday?
A: Bob did TODAY. (↗ no one came yesterday, ?↗ Alice and Carol didn't come today.)
- ▶ Unless further stipulation is made about the exact circumstances when Negative Quantity/Relaxation of competence enters into the inference, it is hard to account for the ignorance effect in general.

4. Proposal: Ignorance effect as relevance implicature

- ▶ Derive the ignorance effect as a general phenomenon when the answer is not congruent to the immediate QUD.
- ▶ Achieve this without giving an extra stipulation that Competence assumption can be canceled.
- ▶ Rather, derive the fact that implicatures are not strengthened in non-congruent answers as the result of usual Gricean inference. (cf. Spector's account)

Goals

Solution (Non-congruent polar question)

- ▶ When the answer is not congruent to the immediate QUD, the answerer is assumed to be giving the most informative answer among the possible answers **to the immediate QUD and to the congruent sister-QUD**.
- (14) **Q:** Who likes cookies? Does Alice like cookies?
A: BOB does.
- ▶ **Immediate QUD:** $\llbracket \text{Does Alice like cookies?} \rrbracket = \{A, \neg A\}$
 - ▶ **Congruent sister-QUD:** $\llbracket \text{Does Bob like cookies?} \rrbracket = \{B, \neg B\}$
 $\Rightarrow \neg K(A), \neg K(\neg A)$
 - ▶ The strengthening cannot be applied since it would lead to inconsistent belief ascription. \Rightarrow Ignorance about A

Solution (Negative question to a positive question)

- ▶ When the answer is not congruent to the immediate QUD, the answerer is assumed to be giving the most informative available answer among the possible answers **to the immediate QUD and to the congruent sister-QUD**.
- (3) **Q:** Who among Alice, Bob and Carol likes cookies?
A: Bob doesn't.
- ▶ **Immediate QUD:**
 $\text{Hamb} \llbracket \text{Who} \dots \text{likes cookies?} \rrbracket = \text{clos}\{A, B, C\}$
 - ▶ **Congruent sister-QUD:**
 $\text{Hamb} \llbracket \text{Who doesn't like cookies?} \rrbracket = \text{clos}\{\neg A, \neg B, \neg C\}$
 $\Rightarrow \neg K(A), \neg K(\neg A), \neg K(C), \neg K(\neg C)$
 - ▶ Again, the strengthening cannot be applied since it would lead to inconsistent belief ascription. \Rightarrow Ignorance about A and C

Deriving the assumption from the Gricean mechanism

- (9) **Quantity (combined with Quality):** A cooperative speaker makes the most **informative** utterance given her belief/knowledge.
- (10) **Relevance (combined with Quality):** A cooperative speaker makes the most **relevant** utterance given her belief/knowledge.
- ▶ Just as we can rank utterances in terms of relative informativeness, we can rank them in terms of relative **relevance**. (Schulz and van Rooij 2006)
 - ▶ In particular, we can rank the immediate QUD as having higher relevance than its sister-QUD (with respect to a super-QUD/conversational goal).
 \Rightarrow If a speaker addresses a sister-QUD, for any possible answer p to the immediate QUD, it is not the case that she believes p .

Negative answer to a positive *wh*-question

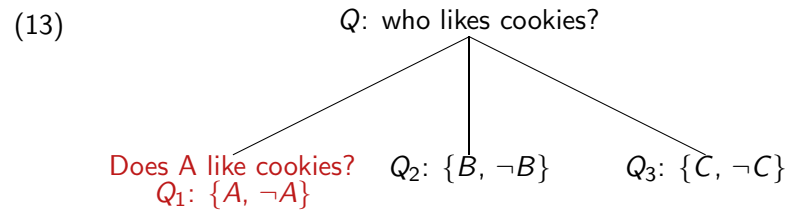
- (3) **Q:** Who among Alice, Bob and Carol likes cookies?
A: Bob doesn't. (?? \rightsquigarrow Alice and Carol like cookies.)

- (11)
- Q: who likes cookies?
- $\text{clos}\{A, B, C\}$
 $\text{clos}\{\neg A, \neg B, \neg C\}$

- ▶ **By Relevance,** $\rightsquigarrow \neg K(A), \neg K(B), \neg K(C)$
- ▶ **By Quantity,** $\rightsquigarrow \neg K(\neg A), \neg K(\neg C)$
 \Rightarrow Ignorance about A and C

Non-congruent polar question

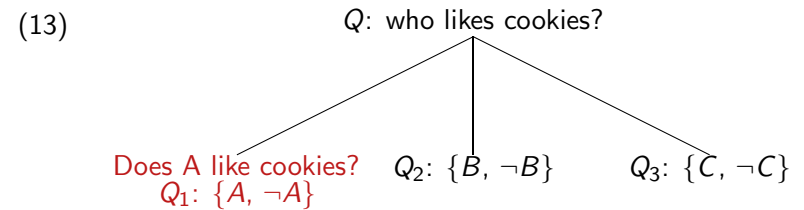
- (12) **Q:** Who likes cookies? Does Alice like cookies?
A: BOB does. (\nrightarrow Alice and Carol do not like cookies.)



- ▶ Assume the relevance ranking: $Q_1 > Q_2 = Q_3$
- ▶ By Relevance, $\rightsquigarrow \neg K(A), \neg K(\neg A), \neg K(C), \neg K(\neg C)$
 \Rightarrow Ignorance about A and C
- ▶ By Quantity, $\rightsquigarrow \neg K(\neg B)$ (entailed by the assertion)

Non-congruent polar question

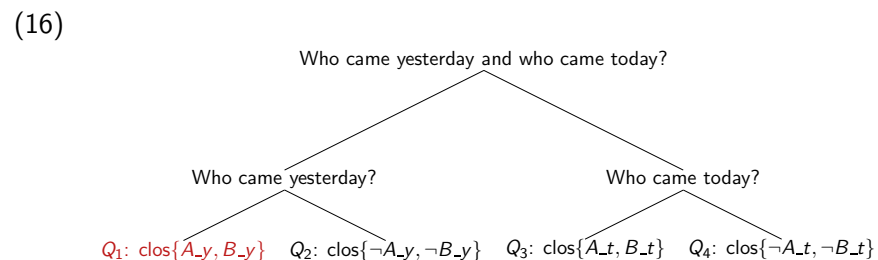
- (14) **Q:** Who likes cookies? Does Alice like cookies?
A: BOB does. (\nrightarrow Alice and Carol do not like cookies.)



- ▶ Assume the relevance ranking: $Q_1 > Q_2 > Q_3$
- ▶ By Relevance, $\rightsquigarrow \neg K(A), \neg K(\neg A)$
 \Rightarrow Ignorance about A and no implicature about C
- ▶ By Quantity, $\rightsquigarrow \neg K(\neg B)$ (entailed by the assertion)

A 'today' answer to a 'yesterday' question

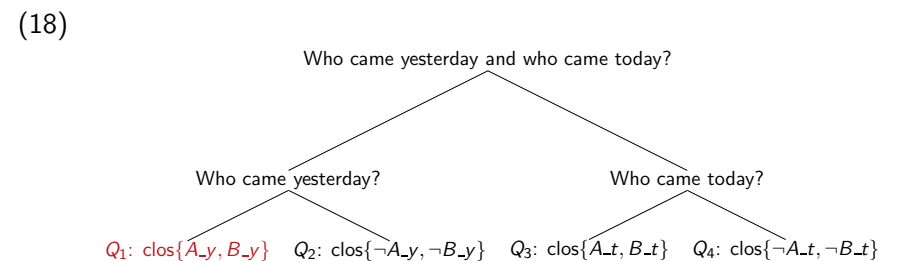
- (15) **Q:** Who came to the yoga class yesterday?
A: Bob did TODAY. (\nrightarrow no one came yesterday, $? \rightsquigarrow$ Alice and Carol didn't come today.)



- ▶ Assume the relevance ranking: $Q_1 > Q_2 > Q_3 > Q_4$
- ▶ By Relevance $\rightsquigarrow \neg K(A_y), \neg K(\neg A_y), \neg K(B_y), \neg K(\neg B_y)$
 \Rightarrow Ignorance about A_y and B_y
- ▶ By Quantity, $\rightsquigarrow K(\neg A_t)$

A 'today' answer to a 'yesterday' question

- (17) **Q:** Who came to the yoga class yesterday?
A: Bob did TODAY. (\nrightarrow no one came yesterday, $? \rightsquigarrow$ Alice and Carol didn't come today.)



- ▶ Assume the relevance ranking: $Q_1 > Q_2 > Q_3 = Q_4$
- ▶ By Relevance $\rightsquigarrow \neg K(A_y), \neg K(\neg A_y), \neg K(B_y), \neg K(\neg B_y), \neg K(\neg A_t), \neg K(\neg B_t)$
 \Rightarrow Ignorance about A_y and B_y
- ▶ By Quantity, $\rightsquigarrow \neg K(A_t) \Rightarrow$ Ignorance about A_t

5. Conclusions

Conclusions

- ▶ Non-congruent answers generally give rise to ignorance effect.
- ▶ This ignorance effect can be accounted for as resulting from the Gricean assumption that a cooperative speaker makes the most informative and most relevant utterance given her belief.
 - ▶ Non-congruent utterance implicates that the speaker does not believe any of the possible answers to the immediate QUD.
 - ▶ From this implicature, together with an ordinary quantity implicature wrt the congruent QUD, we get an ignorance interpretation of the form $\neg K(p) \wedge \neg K(\neg p)$.