Non-congruent answers and exhaustive interpretation

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Outline

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1. Introduction: Exhaustive interpretation of answers

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:

- $exh(T, P) := \lambda w.T(P)(w) \wedge \neg\exists P' : T(P')(w) \wedge P'(w) \subset P(w)$

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

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

Problems with *exh* (cf. e.g., Schulz and van Rooij 2006)

Context dependency of exhaustive interpretation

- domain restriction
- mention-some reading

(2) **Q:** Who has a light? **A:** Bob does.
($\not\rightsquigarrow$ 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.
- $\forall \in \{A, B, C\} : B \not\leq_C p \rightarrow \neg K(p) \quad \not\Rightarrow \quad \neg K(A), \neg K(C)$

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 implicatures are **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 implicatures 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 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. ($\not\rightarrow$ Alice and Carol do not like cookies.)

(8) **Q:** Who came to the yoga class yesterday?
A: Bob did TODAY. ($\not\rightarrow$ no one came yesterday, ?$\rightsquigarrow$ 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 for Spector or vR&S to account for the ignorance effect in general.

4. Proposal: Ignorance effect as relevance implicature

Goals

- Derive the ignorance effect as a general phenomenon arising 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)

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: $[\![\text{Does Alice like cookies?}]\!] = \{A, \neg A\}$
- Congruent sister-QUD: $[\![\text{Does Bob like cookies?}]\!] = \{B, \neg B\}$
  $\Rightarrow \neg K(A), \neg K(\neg A)$
- 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 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:
  $Hamb[\![\text{Who} \ldots \text{likes cookies?}]\!] = \text{clos}\{A, B, C\}$
- Congruent sister-QUD:
  $Hamb[\![\text{Who doesn't like cookies?}]\!] = \text{clos}\{\neg A, \neg B, \neg C\}$
  $\Rightarrow \neg K(A), \neg K(\neg A), \neg K(C), \neg K(\neg C)$
- 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.

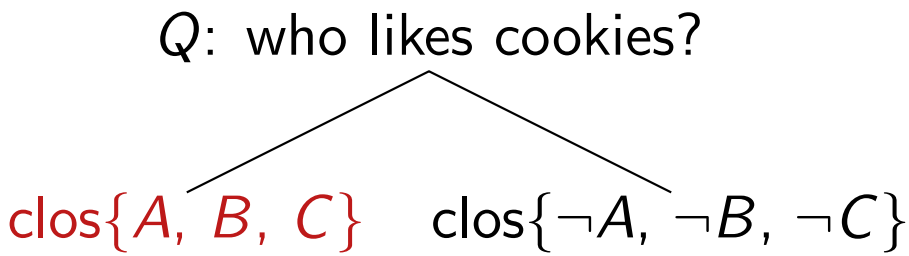
(10) Relevance (combined with Quality): A cooperative speaker makes the most **relevant** utterance given her belief/knowledge.

- 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)



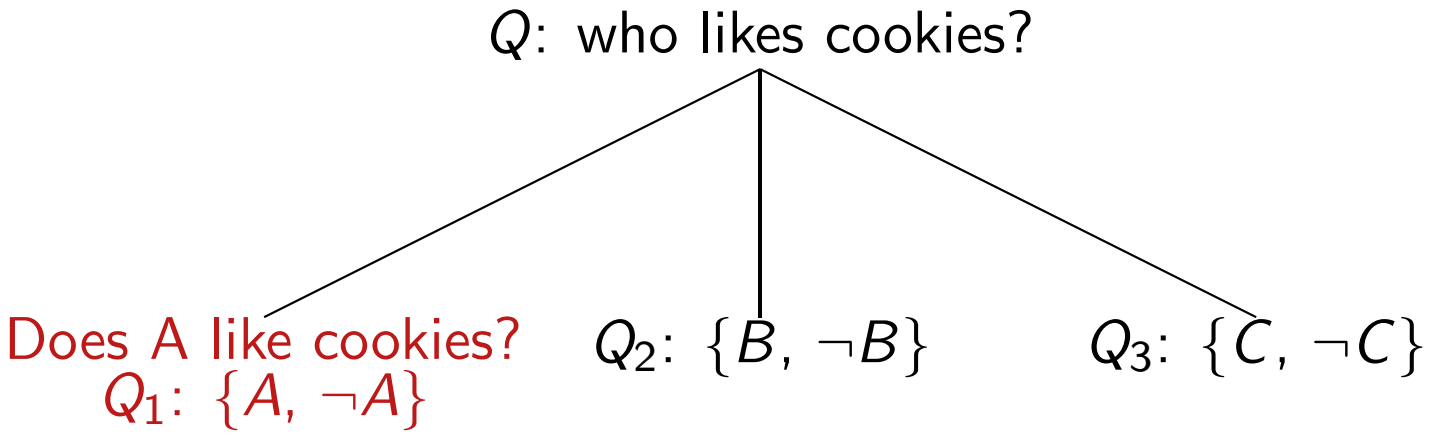
- By Relevance, $\rightsquigarrow \neg K(A), \neg K(B), \neg K(C)$
- By Quantity, $\rightsquigarrow \neg K(\neg A), \neg K(\neg C)$

$\Rightarrow$ Ignorance about A and C

Non-congruent polar question

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

(13)

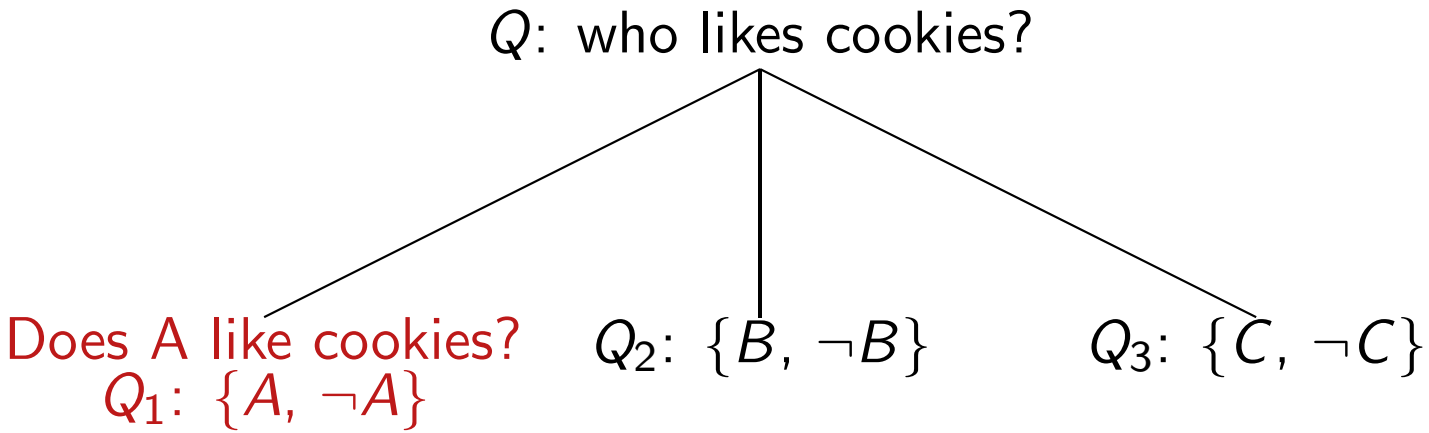


- Assume the relevance ranking: $Q_1 > Q_2 = Q_3$
- By Relevance, $\rightsquigarrow \neg K(A), \neg K(\neg A), \neg K(C), \neg K(\neg C)$
  $\Rightarrow$ Ignorance about A and C
- By Quantity, $\rightsquigarrow \neg K(\neg B)$ (entailed by the assertion)

Non-congruent polar question

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

(13)

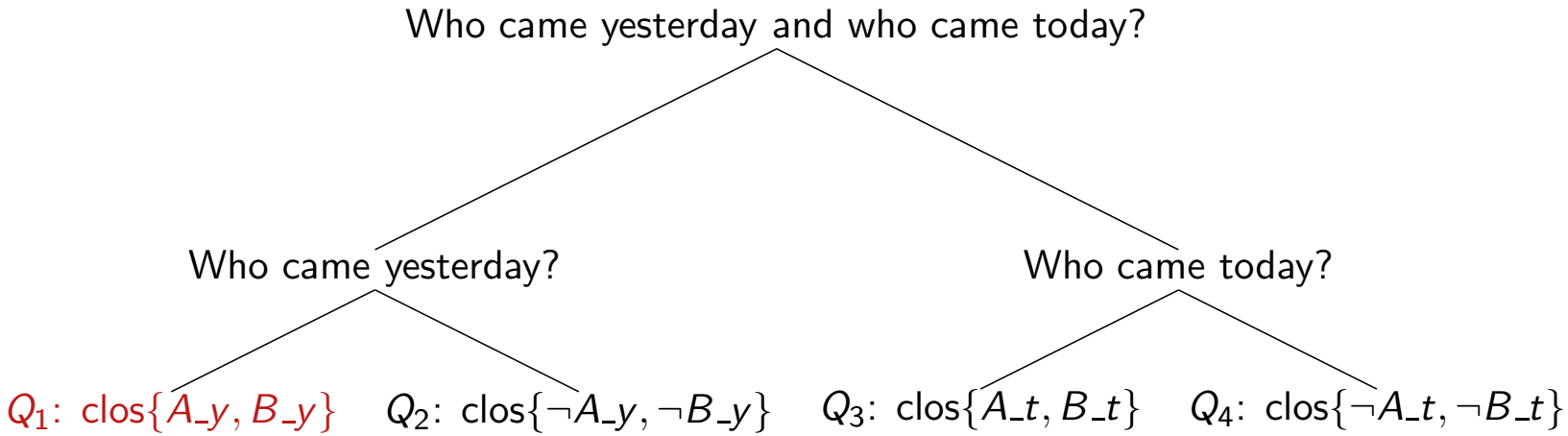


- Assume the relevance ranking: $Q_1 > Q_2 > Q_3$
- By Relevance, $\rightsquigarrow \neg K(A), \neg K(\neg A)$
  $\Rightarrow$ Ignorance about A and no implicature about C
- By Quantity, $\rightsquigarrow \neg K(\neg B)$ (entailed by the assertion)

A 'today' answer to a 'yesterday' question

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

(16)

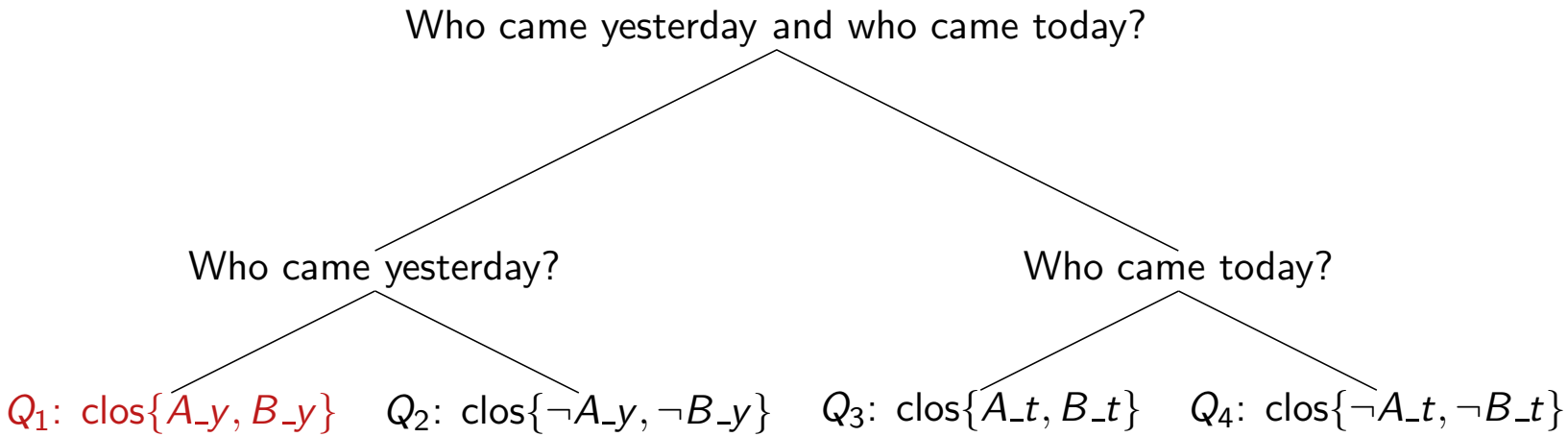


- Assume the relevance ranking: $Q_1 > Q_2 > Q_3 > Q_4$
- By Relevance $\rightsquigarrow \neg K(A\_y), \neg K(\neg A\_y), \neg K(B\_y), \neg K(\neg B\_y)$
  $\Rightarrow$ Ignorance about A_y and B_y
- By Quantity, $\rightsquigarrow K(\neg A\_t)$

A 'today' answer to a 'yesterday' question

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

(18)



- 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 $\neg K(p) \wedge \neg K(\neg p)$.