Approaching the Logic of Conversational Implicatures

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1. Introduction

1.1 Aim of the Research

⇨ Describe the logic of conversational implicatures (Grice '57) (particularly Quantity1-implicatures)

- formally precise account
- descriptive adequate
- explanatory convincing

⇨ formalize Grice's theory of conversational implicatures

1. Introduction

1.2 Motivation

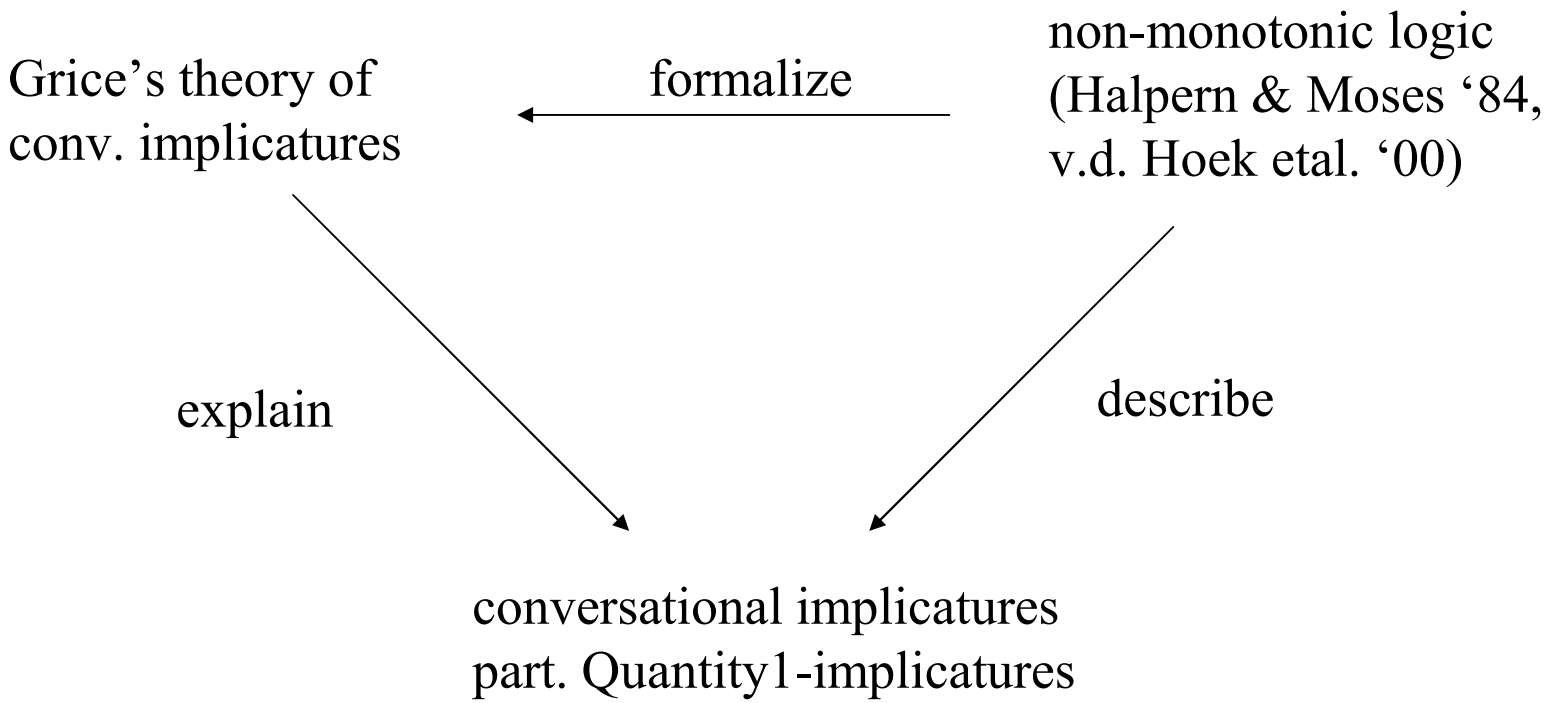
⇨ The dilemma of pragmatics:

• conversational implicatures and Grice's theory thereof have become an enormous popular ingredient of semantic theories

• there exists no precise formulation of Grice's theory that is overall convincing

1. Introduction

1.3 The Strategy



1. Introduction

1.4 The Problem

- few available data
- which are theoretical preloaded
- and inconsistent with each other

⇨ We need serious data studies! Semantics has to grow up!

1. Introduction

1.5 Outline of the talk

1. Introduction
2. The Data
3. The Proposal
4. Critical Predictions
5. Conclusion

2. The Data

Paul: Who passed the examination?
Paula: Ann or Bob passed.

- scalar implicatures: *Not both, Ann and Bob passed.*
- exhaustive interpretation: *Nobody else passed.*
- clausal implicatures: *Paula doesn't know that Ann passed.*
- context dependence:

Paul: Did Ann or Bob pass the examination?
Paula: Yes, Ann or Bob passed.

3. The Proposal

3.1 Formalizing Grice

Quantity1: The speaker makes the strongest relevant claim she can
(Quality: given her knowledge)

⇨ Pragmatic interpretation function $f: L \times C \longrightarrow p(S)$

Requirements on f(A,c):

1. Speaker knows A
2. A is a *strongest* claim the speaker could have made (given her knowledge)
3. A is a strongest claim with respect to what is *relevant*

3. The Proposal

3.1 Formalizing Grice

How to formalize the requirements?

1. Speaker knows A

$$f(A,c) \models \mathbf{K}_S A$$

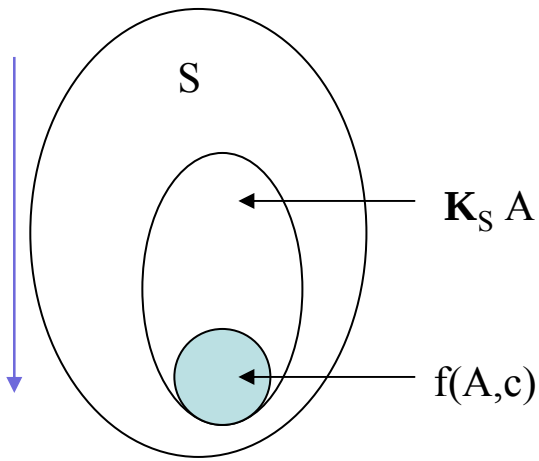
3. The Proposal

3.1 Formalizing Grice

How to formalize the requirements?

2. A is a *strongest* claim the speaker could have made (given her knowledge)

- impose an order ≤ on S
- select minimal elements with respect to ≤



3. The Proposal

3.1 Formalizing Grice

How to formalize the requirements?

3. A is maximal informative with respect to what is *relevant*

- relevant = helps to resolve the question
  → speaker knows not more about the answer than she said with A

Paul: Who passed the examination?
Paula: Ann passed. → $\neg \mathbf{K}_S P(Bob)$

3. The Proposal

3.1 Formalizing Grice

Definition 1 (order):

$\forall s_1, s_2 \in S: s_1 \leq_P^1 s_2 \Leftrightarrow_{def} \forall v_2 \in R_2[w_2]\ \exists v_1 \in R_1[w_1]: P(v_1) \subseteq P(v_2)$

Definition 2 (pragmatic interpretation function):

$eps_1^S(A,P) = \{ s \in S \mid s \models \mathbf{K}_S A \ \&\ \forall s' \in S : s' \models \mathbf{K}_S A \Rightarrow s \leq_P^1 s' \}$

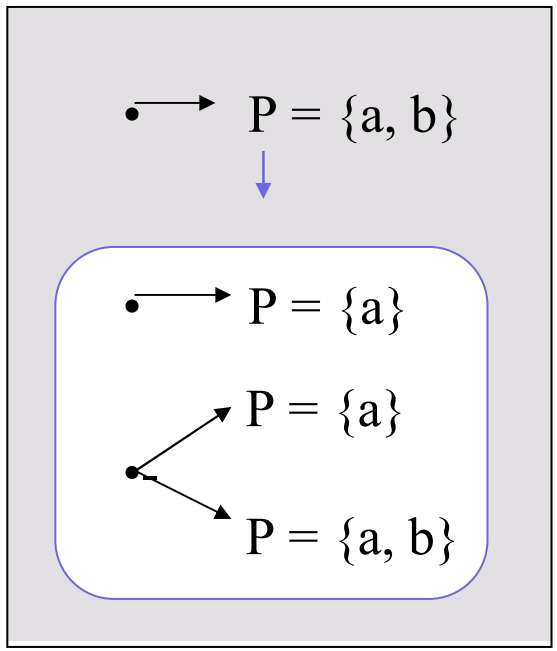
3. The Proposal

3.2 Example

Paul: Who passed the examination?
Paula: Ann passed.

$\text{eps}_1{}^{S}(P(a), P) \models \neg \mathbf{K}_S P(b)$

$\not\models \neg P(b)$



3. The Proposal

3.3 Formalizing Competence

3.3.1 The Simple Approach - does not work!

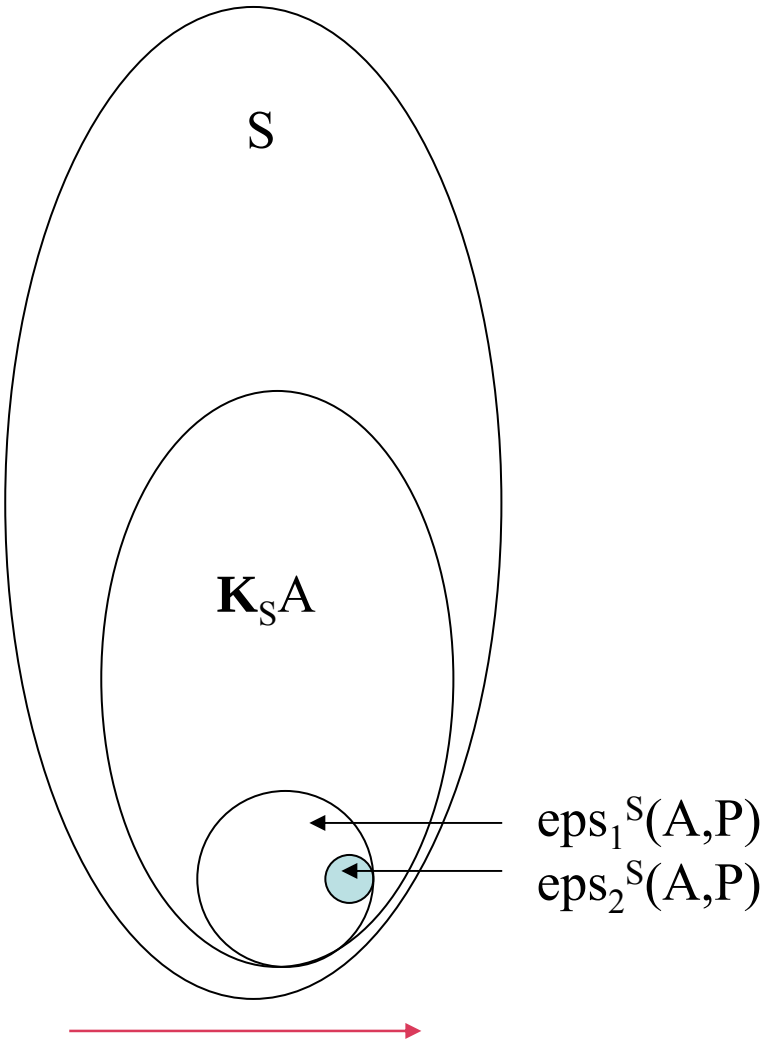
- Let $C \subseteq S$ be the worlds where the speaker is competent. Then $|eps_1{}^C(A, P)|$ = scalar implicatures.

3. The Proposal

3.3 Formalizing Competence

3.3.2 Maximize Competence

- impose a second order $\leq^2$ on S
- select among those worlds in $eps_1{}^S$ those worlds where the speaker is maximal competent



3. The Proposal

3.3 Formalizing Competence

Definition 2 (order):

$\forall s_1, s_2 \in S: s_1 \leq_P^2 s_2 \Leftrightarrow_{def} \forall v_1 \in R_1[w_1]\ \exists v_2 \in R_2[w_2]: P(v_1) \subseteq P(v_2)$

Definition 4 (pragmatic interpretation function):

$eps_2^S(A,c) = \{ s \in eps_1^S(A,c) \mid \neg\exists s' \in eps_1^S(A,c): s' <_P^2 s\}$

3. The Proposal

3.4 Example

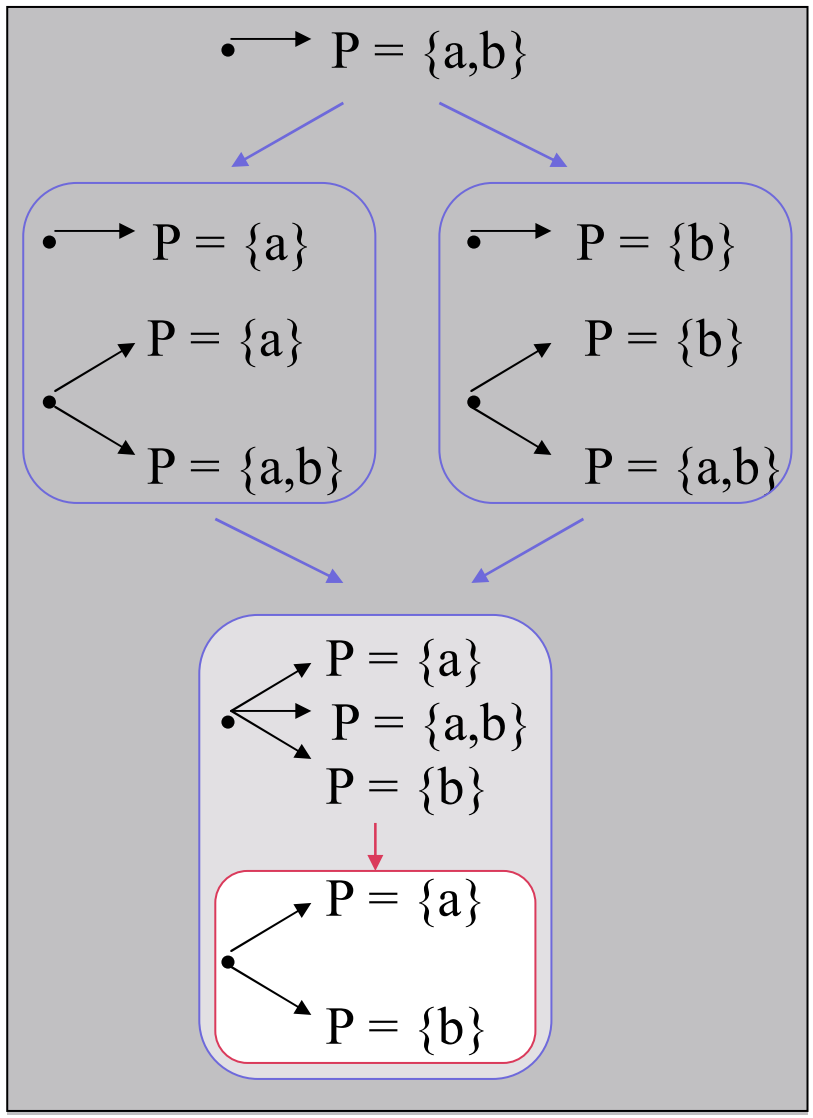
Paul: Who passed the examination?

Paula: Ann or Bob passed.

$\text{eps}_2^S(P(a) \vee P(b), P)$

$\models \neg (P(a) \wedge P(b))$

$\models \neg \mathbf{K}_S \neg P(a) \wedge \neg \mathbf{K}_S \neg P(b)$



4. Critical Predictions

4.1 Context-dependence

? Do answers always come with the inferences we predict?
? Do Quantity1-implicatures occur also in other contexts than answers to overt questions?

4. Critical Predictions

4.1 How convincing are the orders?

- The Gricean order $\leq^1$

Paul: Who passed the examination?
Paula: Ann passed.

$\rightarrow \neg \mathbf{K}_S P(Bob)$
$\not\rightarrow \neg \mathbf{K}_S \neg P(Bob)$

? In the context of questions, do interpreters also infer incompetence of the speaker with respect to the complement of the question predicate?

4. Critical Predictions

4.3 The Functionality Problem

Paul: Who passed the examination?

Paula: (i) Not Ann.

(ii) If he did not oversleep Bob passed.

(iii) Maybe Ann passed.

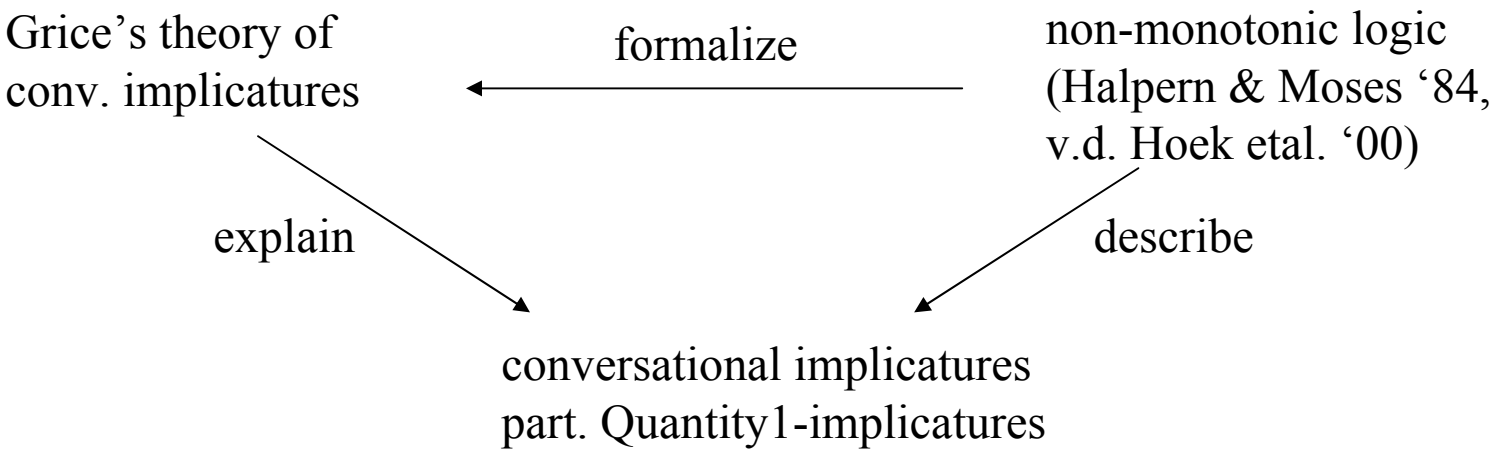
…

? What form-aspects are relevant for Quantity1-implicatures?

? Can we give a Gricean-like motivation for such form restrictions?

5. Conclusions

5.1 The Approach



- two pragmatic interpretation functions
  1. eps_1^S → formalizes inferences due to Quantity1 and Quality
  2. eps_2^S → formalizes maximizing competence

5. Conclusions

5.1 Achievements

- formally precise approach to conversational implicatures; hence, strong in its predictions
- unified account to Quantity1-implicatures
- based on the well-known and well-established ideas of Grice

5.2 Open Questions

- test the descriptive adequacy of the approach
- the role of competence in natural language interpretation
- extension to other conversational implicatures