A Gricean Pragmatics for Non-Cooperative Dialogue:
The Role of Goal Hierarchies

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Overview

Introduction
- Gricean Pragmatics and Cooperation
- An Example
- Analysis of the Example

A Framework
- Non-Cooperative Dialogue
- Back to the Example

Hints on an Approach
- The Role of Goal Hierarchies
- Computational Approach
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Grice and (Non-)Cooperation

Cooperative Principle (CP):

“Make your conversational contribution such as is required, at the stage at which it occurs, by the accepted purpose or direction of the talk exchange in which you are engaged.” (Grice, 1975, p.45)
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- **Quantity**: be informative
- **Quality**: be truthful
- **Relation**: be relevant
- **Manner**: be perspicuous
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- Criticism of Grice: little to say about situations in which a strong sense of cooperation is absent (e.g. (Attardo, 1997), (Asher and Lascarides, 2008)).
- Grice was aware of this:
  - CP + maxims $\rightarrow$ maximum effectiveness of information exchange.
- What about situations of conflict?
  - e.g. tutoring, bargaining, questioning, training (Traum, 2008).
Some Context

- First aired by BBC on May 13, 1997.

Jeremy Paxman

Michael Howard

v.

“Him”: Derek Lewis, head of the Prison Service.

- Repeated security failures in Parkhurst Prison.
- Accusations by Lewis that Howard had instructed him, thus exceeding the powers of his office.
Analysis

(11) Paxman (Interrupting) Did you threaten to overrule him?
(12) Howard I...I... was not entitled to instruct Derek Lewis, and I did not instruct him.
(13) Paxman (Interrupting) Did you threaten to overrule him?
(14) Howard The truth of the matter is that Mr Marriott was not suspended. I...
(15) Paxman (Interrupting) Did you threaten to overrule him?
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Howard threatened to overrule Lewis = TTO
Howard instructed Lewis = I
Marriot was suspended = S
Howard overruled Lewis = O
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By analogy with examples in (Grice, 1975) and (Attardo, 1997)
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From (Walton and Krabbe, 1995):

- Six dialogue types based on: initial situation, joint aim and private (possibly conflicting) goals.
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From (Walton and Krabbe, 1995):

- Six dialogues types based on: **initial situation, joint aim** and **private (possibly conflicting) goals**.
- Each type formalised as a **dialogue game** with strict **rules**.
- **Functional embedding**: when a different type of dialogue is required, participants move **together** into a sub-dialogue of another type.

Based on (Reed and Long, 1997).
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- **Functional embedding**: when a different type of dialogue is required, participants move together into a sub-dialogue of another type.

A dialogue is **non-cooperative** when (and only when) participants fail to agree on the set of rules or the joint aim of the type of dialogue in which they engage.

- This includes shifts for functional embedding.
- Based on (Reed and Long, 1997).
Back to the Example

- Political interview → subtype of the information-seeking dialogue.
  - **Shared aim:** spreading information.
  - **Individual goals:** e.g. not providing all the information, eliciting a certain piece.
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• Disagreement (conflict of beliefs):
  → persuasion sub-dialogue to reach an agreement
  → negotiation sub-dialogue to make a deal

And move forward.

• But...
• Political interview → subtype of the information-seeking dialogue.
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• But... the sequence goes on for over 20 turns.
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The Role of Goal Hierarchies

- What motivates this behaviour?

Divergent goals that are in conflict:
- Paxman wants a yes/no answer to the question.
- Howard wants to convey that he did not instruct Lewis.

Focus: individual vs. shared goals and their relative priorities.
- High priorities for shared aims → cooperative behavior.
- High priorities for individual aims → non-cooperative behaviour.

We can think of hierarchies of goals where order is determined by these priorities, as part of the cognitive state of each participant.

By comparing the priorities speakers decide on a more or less cooperative move.
The Role of Goal Hierarchies

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Computational Approach

• Formalising priorities:
  • *Weights* associated with goals.
  • A *partial order* given by a compare function.
  • Or...?
Computational Approach

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- Generation:
  - Set of comments, with degrees of cooperativeness for different types of dialogue.
  - Skills for non-cooperative behaviour (or for coping).
  - By tuning priorities we could generate varying degrees of non-cooperativeness.
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  - **Skills** for non-cooperative behaviour (or for coping).
  - By **tuning** priorities we could generate varying degrees of non-cooperativeness.

- **Simulation:**
  - For **evaluation**.
  - Applications (e.g. training).
Future Work

- Dialogue rules for political interview.
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- Formalization:
  - Rules.
  - Goals.
  - Hierarchies.
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• We can analyse (and hopefully model and simulate) non-cooperative behavior by focusing on participants shared and individual goals.

• Goal hierarchies based on priorities seem to be the key for such an analysis.
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Questions

Thanks!

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Dialogue Classification

From (Walton and Krabbe, 1995):

- **Dialogue types:**
  1. Persuasion
  2. Negotiation
  3. Inquiry
  4. Deliberation
  5. Information-Seeking
  6. Eristics

- Based on: initial situation, joint aim and private (possibly conflicting) goals.
- Formalised as dialogue games with strict rules for each type.

- **Functional Embedding:** a different type of dialogue is required.
  - Participants move together into a subdialogue of another type.
  - Once the situation is resolved, the original dialogue resumes.
Cooperation and Collaboration

Based on (Reed and Long, 1997):

- A dialogue of a certain type is **cooperative** if and only if both participants follow the rules and share the joint aim of that type.
  - In complex dialogues, all functional embedding must be licit and take place when required.
- A dialogue is **collaborative** when individual goals are not in conflict (i.e. participants **work together**).

Under these definitions, **all** dialogues in the typology are cooperative.
Exploiting Relevance

Example (I)

From (Grice, 1975, p.54):

At a genteel tea party,

A  Mrs. X is an old bag.
B  The weather has been quite delightful this summer, hasn’t it?

Implicature: A’s remark should not be discussed.
Exploiting Relevance

Example (II)

From (Attardo, 1997, p.766):

S  Where is the Phillips screwdriver?
H  You need an Allen wrench for that screw.

**Implicature**: the location of the Phillips is irrelevant to the purpose of your question.
Exploiting Relevance

Example (III)

From the Paxman-Howard interview:

**Paxman** (Interrupting) Did you threaten to overrule him?

**Howard** I...I... was not entitled to *instruct* Derek Lewis, and I did not instruct him.

**Implicature**: whether I threaten to overrule him is irrelevant to the purpose of this conversation.