Grice in the Grammar: How Dynamic Social Networks Give Rise to Honesty and Evidentials
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Grice (1975)

Maxim of Quality

Try to make your contribution one that is true:

1. Do not say what you believe to be false.
2. Do not say that for which you lack evidence.

Cooperative Principle

Make your conversational contribution such as is required, at the stage at which it occurs, by the accepted purposes or direction of the talk exchange.
I am, however, enough of a rationalist to want to find a basis that underlies these facts, undeniable though they may be; I would like to be able to think of the standard type of conversational practice not merely as something that all or most do in fact follow but as something that it is reasonable for us to follow, that we should not abandon.
Questions

- Why abide by the Maxim of Quality and the Cooperative Principle?
- What consequences for the structure of language?
Outline

1. Honesty
2. Networks
3. Language
4. Conclusion
Cooperation means that selfish replicators forgo some of their reproductive potential to help one another. But natural selection implies competition and therefore opposes cooperation unless a specific mechanism is at work.
### Prisoner’s Dilemma

<table>
<thead>
<tr>
<th></th>
<th>Cooperate</th>
<th>Defect</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cooperate</strong></td>
<td>$b - c, b - c$</td>
<td>$-c, b$</td>
</tr>
<tr>
<td><strong>Defect</strong></td>
<td>$b, -c$</td>
<td>$0,0$</td>
</tr>
</tbody>
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Prisoner’s Dilemma

<table>
<thead>
<tr>
<th></th>
<th>Cooperate</th>
<th>Defect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooperate</td>
<td>5, 5</td>
<td>−5, 10</td>
</tr>
<tr>
<td>Defect</td>
<td>10, −5</td>
<td>0, 0</td>
</tr>
</tbody>
</table>
One might expect many instances in which signalers would attempt to profit individually by conveying dishonest information.

...if dishonesty is common, it also is not obvious why receivers should respond to signals.

...if receivers fail to respond to signals, it is not obvious how signaling systems can exist at all.
Conscience is the inner voice that warns us *somebody may be looking.*
[Scott-Phillips(2008)]

1. Indices: signal form is tied to meaning
2. Handicaps: costs borne by honest senders
3. Deterrents: costs borne by dishonest senders
[Reby and McComb (2003)]
[Zahavi(1975)] [Grafen(1990)] [Spence(1973)]
Iterated Prisoner’s Dilemma

1. Each agent has rate of cooperation, $\theta \in [0, 1]$
2. Agents interact, update strength of relationship
3. Relationships below threshold are removed
Iterated Prisoner’s Dilemma
[Apicella et al. (2012)] Apicella, Marlowe, Fowler, and Christakis
Iterated Information Sharing
Iterated Information Sharing

1. Agents have information about state of the world, $\tau \in [0, 1]$
2. Agents choose to share information, $\theta \in [0, 1]$
3. Agents update strength of relationship according to reliability
4. Relationships below threshold are removed
Iterated Information Sharing
Maxim of Quality

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Cooperative Principle

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[Grice(1975)]
[Lakoff (1973)]

**Hedging**

- A robin is sort of a bird.
- A penguin is sort of a bird.
- A bat is sort of a bird.
- A cow is sort of a bird.
[Davis et al.(2007)Davis, Potts, and Speas]

**Quality Threshold [Potts(2007)]**

An utterance \( U \) by speaker \( S \) in context \( C \) satisfies quality iff its quality rating, \( \mu_C(U) \), is above the quality threshold \( C_\tau \) for \( C \).

\[
\begin{align*}
\begin{array}{c}
1 \\
\text{[Sam is a werewolf]} \\
C_\tau
\end{array}
\end{align*}
\]

**Evidentials, Modals, Hedges**

Speakers can signal quality threshold they expect an utterance to be evaluated by. Conventionally implicate commitment to some different quality threshold \( C_{\tau'} \).
Division of Pragmatic Labor

- Unmarked form associated with more frequent meaning
- Marked form associated with less frequent meaning
WALS [Dryer and Haspelmath(2013)]
WALS [Dryer and Haspelmath(2013)]

Values of Map 77A. Semantic Distinctions of Evidentiality

<table>
<thead>
<tr>
<th>Value</th>
<th>Representation</th>
</tr>
</thead>
<tbody>
<tr>
<td>No grammatical evidentials</td>
<td>181</td>
</tr>
<tr>
<td>Only indirect evidentials</td>
<td>166</td>
</tr>
<tr>
<td>Both direct and indirect evidentials</td>
<td>71</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>418</strong></td>
</tr>
</tbody>
</table>
Questions

Why abide by the Maxim of Quality and the Cooperative Principle?
- Maintenance of relationships and standing
- Still allows room for varying thresholds

What consequences for the structure of language?
- Pragmatic pressures shape linguistic structure
- Yesterday’s pragmatics is today’s morphosyntax!
Future Directions

Theoretical
- Richer notions of interactions
- Broader definition of information

Empirical
- Controlled testing of use
- Cross-linguistic comparisons
Thanks!
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