Conflicting Interests and Language Change

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Questions

- What are the causes of language change?
- What role might “conflicts” of interest play?
Outline

1. Negation
2. Analyses
3. Signaling
4. Cycles
5. Conclusion
[Jespersen(1917)]

The Negative Cycle

1. N V
2. N V (N)
3. N V N
4. (N) V N
5. V N
The original negative adverb is first weakened, then found insufficient and therefore strengthened, generally through some additional word, and this in turn may be felt as the negative proper and may then in the course of time be subject to the same development as the original word.

Sometimes it seems as if the essential thing were only to increase the **phonetic bulk** of the adverb...
[Jespersen(1917)]

Cause and/or effect

- Phonetic
- Syntactic
- Semantico-Pragmatic
**Emphatic negation tends to increase in frequency due to pragmatically motivated overuse which is characteristic of inherently bounded evaluative scales...an obligatory element cannot be emphatic, for to emphasize everything is to emphasize nothing.**
**[Kiparsky and Condoravdi(2006)](https://example.com)**

<table>
<thead>
<tr>
<th>PLAIN</th>
<th>EMPHATIC</th>
<th>SOURCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ου...τι</td>
<td>ου-δε...εν</td>
<td>Ancient Greek</td>
</tr>
<tr>
<td>(ου)δεν...τι</td>
<td>δεν...τιποτε</td>
<td>Early Medieval Greek</td>
</tr>
<tr>
<td>δεν...τιποτε</td>
<td>δεν... πραμα</td>
<td>Greek Dialects</td>
</tr>
<tr>
<td>δεν...πραμα</td>
<td>δεν...απαντοξη</td>
<td>Modern Cretan</td>
</tr>
</tbody>
</table>
[Israel(1998)]

<table>
<thead>
<tr>
<th>y_5</th>
<th>hardest</th>
</tr>
</thead>
<tbody>
<tr>
<td>y_4</td>
<td></td>
</tr>
<tr>
<td>y_3</td>
<td></td>
</tr>
<tr>
<td>y_2</td>
<td></td>
</tr>
<tr>
<td>y_1</td>
<td>easiest</td>
</tr>
</tbody>
</table>

P: "Norm can solve y."
R: "Norm cannot solve y."
[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 $C$.

**Emphasis**

An emphatic utterance $U$ by speaker $S$ in context $C$ conventionally implicates commitment to some higher quality threshold $C'_\tau > C_\tau$. 

\[
\begin{pmatrix}
1 \\
\tau
\end{pmatrix}
\]

\[
[Sam \text{ is a werewolf}]
\]
"The tip cycle"

1. tips are given for special services rendered
2. tips are often given without any special reason
3. tips are always expected
4. a certain percentage is added to the bill
5. net prices are applied

[Dahl(2001)]
(The plain-emphatic distinction) is problematic from the present-day perspective of other Romance languages...the post-verbal negative element is heavily regulated by information-structural factors, and specifically by the discourse-old status of the denied proposition.
<table>
<thead>
<tr>
<th>DISCOURSE NEW</th>
<th>INFERRABLE</th>
<th>DIRECTLY ACTIVATED</th>
</tr>
</thead>
<tbody>
<tr>
<td>N V</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>N V N</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>V N</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

[Schwenter(2006)]
Inferability Threshold

An utterance $U$ by speaker $S$ in context $C$ satisfies inferability iff its inferability, $\mu_C(U)$, rating is above the inferability threshold $C_1$ for $C$.

Inferability

- Discourse New: $\mu_C(U) = 0$
- Inferable: $\mu_C(U) \in [0, 1]$
- Directly Activated: $\mu_C(U) = 1$
The proof is trivial! Just view the problem as a countable module whose elements are bipartite topological spaces.
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.
Crucial points for Games

1. Signaling Games
2. Nash Equilibria
3. Evolutionarily Stable Strategies
[Lewis(1969)]

One if by land, two if by sea.
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Signaling Games

- Sender observes some state of the world, $t \in T$, given probability distribution over states, $\delta$.
- Sender chooses message, $m \in M$, based on strategy $s \in [T \rightarrow M]$.
- Receiver interprets message with action, $a \in A$, based on strategy $r \in [M \rightarrow A]$.
- $U_S$ and $U_R$ are the utility functions that define preferences over $T \times A$.
- Expected utility of sender and receiver:

\[
EU_S(s, r) = \sum_t \delta(t) \cdot U_S(t, r(s(t)))
\]
\[
EU_R(s, r) = \sum_t \delta(t) \cdot U_R(t, r(s(t)))
\]
A strategy profile \( \langle s^*, r^* \rangle \) is a **Nash equilibrium** if and only if:

- \( \forall s \in S, \text{ such that } s \neq s^*, \; EU_S(s^*, r^*) \geq EU_S(s, r^*) \)
- \( \forall r \in R, \text{ such that } r \neq r^*, \; EU_R(s^*, r^*) \geq EU_S(s^*, r) \)

“Something that it is **reasonable** for us to follow.”

-Grice
An Evolutionarily Stable Strategy is a strategy that, if all the members of a population adopt it, then no mutant strategy could invade the population under the influence of natural selection.

[Maynard Smith and Price(1973)]
In the class of asymmetric games, a strategy is evolutionarily stable if and only if it is a **Strict Nash Equilibrium**.

A strategy profile \( \langle s^*, r^* \rangle \) is a **Strict Nash equilibrium** if and only if:

- \( \forall s \in S, \text{ such that } s \neq s^*, EU_S(s^*, r^*) > EU_S(s, r^*) \)
- \( \forall r \in R, \text{ such that } r \neq r^*, EU_R(s^*, r^*) > EU_S(s^*, r) \)

“Something that it is **reasonable** for us to follow, that we **should not** abandon.” -Grice
Crucial points for Cycles

1. Preferences
2. Simulations
Emphasis and Information Structure

Interpretation of game

- **$T$**: Quality of utterance, Inferability of utterance
- **$M$**: Different forms of negation
- **$A$**: Quality of utterance, inferability of utterance
Emphasis and Information Structure

Interpretation of "conflict"

- Tendency to exaggerate quality threshold diminishes information conveyed
- Tendency to assume inferability threshold is met diminishes information conveyed
[Crawford and Sobel(1982)]

Divergence

\[ U_S(t, a) = - (a - t - (1 - t)b)^2 \]
\[ U_R(t, a) = - (a - t)^2 \]  \hspace{1cm} (2)
Game structure

- Set of states $T = \{ t_0, \ldots, t_n \}, t_i < t_{i+1}$
- States equiprobable, $\delta(t_1) = \ldots = \delta(t_n) = \frac{1}{n}$
- Set of messages $M = \{ m_1, \ldots, m_k \}$
- Set of actions $A = \{ a_0, a_0^1, \ldots a_n \}, a_i < a_{i+1}^i < a_{i+1}$
- Divergence $b \in [0, 1]$
Emphasis ($n = 2$)
Information Structure ($n = 3$)
Questions

What are the causes of language change?
- Phonetic
- Syntactic
- Semantico-Pragmatic

What role might “conflicts” of interest play?
- Pragmatic pressures decrease information conveyed
- Lack of information allows for change
Theoretical

- Discrete versus continuous type space
- Different game dynamics

Empirical

- Distribution of types from corpora
- Comparison of historical changes
- Cycles versus stability
Thanks!


H.P. Grice.
Logic and conversation.

Michael Israel.
The rhetoric of grammar: Scalar reasoning and polarity sensitivity.

Otto Jespersen.
*Negation in English and other Languages.*
Host, 1917.
Bibliography III


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