Competing BiOT-perspectives on functional morphemes

Atle Grønn & Kjell Johan Sæbø
University of Oslo
OT workshop
Berlin, February 8, 2008
Competing BiOT-perspectives:

- “competition” between strong and weak BiOT
- “competition” between BiOT in terms of conditional probability vs. BiOT with markedness/harmony constraints.
3 different cases in lexical pragmatics:

- Specific vs. general items ("knife" vs. "cutter")
- Partial blocking of underspecified items ("kill" vs. "cause to die")
- Deblocking and second round optimization ("cow" vs. "beef")
Research questions:

- How do various functional morphemes at the (morpho-)syntax-semantics interface fit into this classification?
- Which BiOT-architecture is required for functional morphemes?
1. Specific vs. general

- "knife" vs. "cutter"
- "Wasser" vs. "Flüssigkeit"
- Pragmatic strengthening of the general item follows from Blutner’s strong BiOT (1998) with conditional probability.
A pair \(<f,c>\) is optimal iff
- there is no \(<f',c>\) such that 
  \(P(c/[[f']]) > P(c/[[f]])\) and
- there is no \(<f,c'>\) such that 
  \(P(c'/[[f]]) > P(c/[[f]])\)
Total blocking (pragmatics)

total blocking in strong BiOT given the following assumptions:

- complexity of form is at most nominal
- equal probability distribution over states
"A pragmatic strategy"  
(Benz et. al 2004)

<table>
<thead>
<tr>
<th>$P(\cdot \land \lbrack \cdot \rbrack)$</th>
<th><em>knife</em></th>
<th><em>cutter, but not knife</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;knife&quot;</td>
<td>$\Rightarrow 1$</td>
<td>0</td>
</tr>
<tr>
<td>&quot;cutter&quot;</td>
<td>.5-c</td>
<td>$\Rightarrow .5-c$</td>
</tr>
</tbody>
</table>
Non-equal probability distribution

- Potential problem for strong BiOT: context and/or items in competition may force a non-equal probability distribution:

<table>
<thead>
<tr>
<th>$P(\cdot[[\cdot]])$</th>
<th><em>water</em></th>
<th><em>liquid, but not water</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Wasser</td>
<td>$\Rightarrow 1$</td>
<td>0</td>
</tr>
<tr>
<td>Flüssigkeit</td>
<td>.7</td>
<td>.3</td>
</tr>
</tbody>
</table>
The “semantic strategy” (Benz et. al 2004) should probably not be analysed in BiOT (no pragmatic strengthening)

<table>
<thead>
<tr>
<th>Form</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wasser</td>
<td>water</td>
</tr>
<tr>
<td>Flüssigkeit</td>
<td>liquid</td>
</tr>
<tr>
<td>Flüssigkeit aber nicht Wasser</td>
<td>liquid but not water</td>
</tr>
</tbody>
</table>
1.1 Special case: quantifiers and scalar implicatures

- Scalar implicatures follow from the first part of Grice’s Maxim of Quantity (“say as much as you can”)
- Scalar implicatures follow from strong BiOT with conditional probability.
### Some vs. all

<table>
<thead>
<tr>
<th>$P(\cdot \vee [[\cdot]])$</th>
<th>all</th>
<th>some, but not all</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;all&quot;</td>
<td>$\Rightarrow 1$</td>
<td>0</td>
</tr>
<tr>
<td>&quot;some&quot;</td>
<td>.5</td>
<td>$\Rightarrow .5$</td>
</tr>
</tbody>
</table>
(1) ”Some girls and some but not all boys went to the party”
● purely ”semantic” use of underspecified ”some”
● context-sensitive deblocking of pragmatic strengthening
● maybe game theoretical approaches have more to say about such cases
Can we reduce Heim’s familiarity condition and novelty condition (Heim 1982) to more general principles?

Heim’s own proposal (without the novelty condition from 1982) in "Artikel und Definitheit" (1991):

(123) In utterance situations where the presupposition of "(the b) c" is known to be satisfied, it is forbidden to utter "(a b) c". (our translation)
(in)definites (cont.)

- Heim comments:
- It would be desirable to derive (123) from more general principles. It is unclear, however, how that should be done. (123) is reminiscent of a scalar implicature, but a derivation from the Maxim of Quantity is problematic. *(our paraphrase)*
(in)definites (cont.)

- The “American” (MIT) solution:
- ”Maximize presuppositions: Use the most informative presupposition that is satisfied” (Heim/Percus/Sauerland).
Sauerland (2007):

- Definites presuppose existence and uniqueness (inherent presupposition)
- Indefinites carry the inverse presupposition, i.e. novelty (implicated presupposition)
- Maximize Redundancy (cf. also Schlenker’s ”Be articulate!”): “If pq and q can be uttered felicitously in a syntactic context a__b, apqb is preferable to aqb”
- No further pragmatic reasoning
(in)definites in "European" BiOT


<table>
<thead>
<tr>
<th>P(·[[·]])</th>
<th>identity with given referent</th>
<th>no identity with given referent</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;the&quot;</td>
<td>⇒.9</td>
<td>.1 (accommodation)</td>
</tr>
<tr>
<td>&quot;a&quot;</td>
<td>.5</td>
<td>⇒.5</td>
</tr>
</tbody>
</table>
“Lamb” and “sheep” are equally brief and the concepts baby sheep and adult sheep are equally informative. We want to be able to say that uttering “sheep” implicates adult sheep, but BiOT gives us no reason to do so. (Ross, 2006:108)
OK with conditional probability

| \( P(\cdot|[[\cdot]]) \) | baby sheep | adult sheep |
|---------------------------|------------|-------------|
| "lamb"                    | \( \Rightarrow 1 \) | 0           |
| "sheep"                   | .5         | \( \Rightarrow .5 \) |
2. Partial blocking

- “kill” vs. “cause to die”
- Benz 2006 shows that the assumption of initial underspecification/ambiguity is problematic …
- but perhaps less problematic for functional morphemes
A pair \( <f,c> \) is weakly optimal iff

(i) there is no \( <f´,c> \) such that \( P(c/[[f´]]) > P(c/[[f]]) \) and \( <f´,c> \) is weakly optimal and

(ii) there is no \( <f,c´> \) such that \( P(c´/[[f]]) > P(c/[[f]]) \) and \( <f,c´> \) is weakly optimal
2.1 Number, scope and Russian nominals (bare sing. vs. bare plur.).

(2) Vse devushki v etom klasse vljubleny v mal’chika_bare.sg./ mal’chikov_bare.pl.
   All the girls in this class are in love with a boy_wide scope/ a boy_narrow scope, >1 boy

(3) All my friends have married a Norwegian.
   Vse moi podrugi vyshli zamuzh za norvezhcev_bare.pl. (23/23)
Russian nominals (cont.)

- Is the bare plural semantically more restricted?

(4) Alle studenter i min gruppe utarbeider et prosjekt. (truly ambiguous)

\[Vse\text{ }\textit{studenty\text{ }moej\text{ }gruppy\text{ }razrabatyvajut\text{ }proekt\_bare\_sg.\text{ }{(24/24)}\]
Russian nominals (cont.)

- Implicature cancellation test (van Kuppevelt 1996)

(5)

A: Kakie devushki v etom klasse vljubleny v mal’chika_bare.sg?

 Which girls in this class are in love with a boy?

B: Ira i Vika (vljubleny v mal’chikov_bare.pl.)

(6)

A: Kakie devushki v etom klasse vljubleny v mal’chikov_bare.pl?

 Which girls in this class are in love with a boy (boys)?

B: Ira i Vika vljubleny, no v odnogo i togo zhe.

Ira and Vika are in love, but with the same boy.
If the semantically restricted form has the most stereotypical meaning, we need weak BiOT, but not complexity of forms.

NB! disjunct contents, no entailment relations.

<table>
<thead>
<tr>
<th></th>
<th>$P(\cdot[[\cdot]])$</th>
<th>$\exists$, but $\forall$</th>
<th>$\forall$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bare plural</td>
<td>$\Rightarrow 1$</td>
<td>$0$</td>
<td></td>
</tr>
<tr>
<td>Bare singular</td>
<td>$.7$</td>
<td>$\Rightarrow .3$</td>
<td></td>
</tr>
</tbody>
</table>
2.2 GT vs. BiOT (van Rooy’s scenario)

- $f_1$ is a lighter expression than $f_2$: $f_1 > f_2$
- $c_1$ is more stereotypical than $c_2$: $c_1 > c_2$.
- The meaning of $f_1$ is underspecified, while $f_2$ can only mean $c_1$.
- Van Rooy’s claim:
  - BiOT predicts that $c_2$ cannot be expressed. Van Rooy takes this as an argument for GT.
**OK with conditional probability**

<table>
<thead>
<tr>
<th>$P(\cdot\mid\cdot)$</th>
<th>$c_1$</th>
<th>$c_2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>f1</td>
<td>.7</td>
<td>$\Rightarrow$.3</td>
</tr>
<tr>
<td>f2</td>
<td>$\Rightarrow 1$-complex</td>
<td>0</td>
</tr>
</tbody>
</table>
Simplex forms vs. progressive

(7) I ran in the park (f1)
(8) I was running in the park (f2)

- \( C = \{ \text{singular on-going event (c1), habitual-iterative events (c2)} \} \)
- \( \text{Gen} = F \times C \rightarrow \{<f2,c2>\} \)
Assumptions:

- Singularity of events is more stereotypical than plurality, hence $c_1 > c_2$.
- Ranking on forms in terms of complexity: $f_1 > f_2$. 
Simplex vs. Progressive (cont.)

- Wrong predictions in BiOT with markedness/harmony constraints:

  \[
  \begin{array}{c|c}
  & c1 & c2 \\ \hline
  f1 & \text{gcd} & \bullet \\
  & \uparrow \\
  f2 & \bullet \\
  \end{array}
  \]
## OK with conditional probability

<table>
<thead>
<tr>
<th>$P(\cdot\land[\cdot])$</th>
<th>$c1$</th>
<th>$c2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>f1</td>
<td>.7</td>
<td>$\Rightarrow .3$</td>
</tr>
<tr>
<td>f2</td>
<td>$\Rightarrow 1$-complex.</td>
<td>0</td>
</tr>
</tbody>
</table>
2.3 Bare nominals in Germanic

- “in jail” vs. “in the jail”
- if both forms are compatible with both meanings, we need complexity of form and weak BiOT
- conditional informativity – Blutner 2000
<table>
<thead>
<tr>
<th>(de Swart &amp; Zwarts – first version)</th>
<th>*F</th>
<th>*M</th>
</tr>
</thead>
<tbody>
<tr>
<td>🤷‍♂️ (a) “in jail”, imprisoned</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>(b) “in the jail”, imprisoned</td>
<td>*</td>
<td>✓</td>
</tr>
<tr>
<td>(c) “in jail”, just visiting</td>
<td>✓</td>
<td>*</td>
</tr>
<tr>
<td>🤷‍♀️ (d) “in the jail”, just visiting</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>
in jail vs. in the jail (cont.)

- Graphical representation (Dekker & van Rooy)
- Pragmatic strengthening
- Horn strategy
- Iconicity
- What is simply described, is stereotypically exemplified.

<table>
<thead>
<tr>
<th></th>
<th>impri</th>
<th>visit</th>
</tr>
</thead>
<tbody>
<tr>
<td>bare</td>
<td>🍃</td>
<td>●</td>
</tr>
<tr>
<td>the</td>
<td>●</td>
<td>🍃</td>
</tr>
</tbody>
</table>
### in jail vs. in the jail (cont.)

<table>
<thead>
<tr>
<th>$P(\cdot \land [\cdot])$</th>
<th>imprisoned</th>
<th>visiting</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;in jail&quot;</td>
<td>$\Rightarrow .7$</td>
<td>.3</td>
</tr>
<tr>
<td>&quot;in the jail&quot;</td>
<td>.7-c</td>
<td>$\Rightarrow .3$-c</td>
</tr>
</tbody>
</table>
in jail vs. in the jail (cont.)

- “BiOT helps us to understand why formally less is semantically more” (de Swart & Zwarts, to appear).
- The contents imprisoned and just visiting are not logically compatible, hence in what sense do we have “more meaning” with “in jail”?
- “Semantically more” cannot mean “more informative”.
In fact, de Swart/Zwart end up with a different tableau (replacing *M with “the strongest meaning hypothesis”).
# in jail vs. in the jail (cont.)

<table>
<thead>
<tr>
<th>(de Swart &amp; Zwarts – final version)</th>
<th>F</th>
<th>Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>♦ (a) “in jail”, ( \lambda x. \text{in}(x,y) ) &amp; jail (y) &amp; impris (y,x)</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>(b) “in the jail”, ( \lambda x. \text{in}(x,y) ) &amp; jail (y) &amp; impris (y,x)</td>
<td>*</td>
<td>✓</td>
</tr>
<tr>
<td>(c) “in jail”, ( \lambda x. \text{in}(x,y) ) &amp; jail (y)</td>
<td>✓</td>
<td>*</td>
</tr>
<tr>
<td>♦ (d) “in the jail”, ( \lambda x. \text{in}(x,y) ) &amp; jail (y)</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>
“the stereotypical meaning is usually more informative, stronger than the non stereotypical meaning … and the sentence with a bare predicate typically entails the sentence with the corresponding full predicate”
(de Swart & Zwarts)
But this is not partial blocking or division of pragmatic labor (no anti-stereotypical meaning) – it is rather a mixture of a pragmatic and semantic strategy.

Alternatives in Blutner’s BiOT should be disjunct.

All candidate meanings are specifications.
3. Deblocking

- “cow” vs. “beef” (“Hindus are not allowed to eat cow”)
- Context-sensitivity, e.g. Russian aspect, reference time parameter (Grønn 2008)
- Perspective shift (suspension of CG elements) (Aloni, Sæbø)
- Second round optimization (Beaver & Lee)
4. Open issues

- "The error in many formulations of pragmatic inferences is that synchrony and diachrony are confused" (Blutner & Zeevat, to appear)
- Diachrony vs. synchrony: the more conventionalized the more diachronic...
Open issues (cont.)

- Expert vs. inexpert speaker
- From Heim (1991):
  (9) Yesterday evening, Richard heard the Beaux-Arts Trio and afterwards he had a beer with a pianist.
- The inference to non-identity with the indefinite is dependent on the assumption of an expert speaker.