The grammar of discourse: The case of *then*

María Biezma
maria.biezma@uni-konstanz.de
University of Konstanz

Main Claims

- In order to understand natural language utterances we need a system that takes into account the order of discourse moves and the link between conventional form and discourse structure.
- There are particles that conventionally establish a relation with discourse moves.
- *Then* is such a particle: it establishes an anaphoric relation with discourse moves.

The data: *Then* in conditionals and across discourse

Then in conditionals

Conditionals that accept *then*

(1) Well, if you finished your homework, then you can go play outside.

Conditionals that do not accept *then*

(2) Even if Smith is dead, (#then) the Sheriff wants him.
(3) Whether Smith is dead or alive, (#then) the Sheriff wants him. (*unconditional*)
(4) If you are hungry, (#then) there is pizza in the fridge. (*biscuit conditional*)

Observation: *Then* is not possible if the antecedent exhaustifies logical space (but this alone does not explain (4)).

Then across discourse (Sample of sequences)

(5) Assertion - Imperative
A: I'm cold.
B: Then put on a sweater!

(6) Question - Assertion
A: What does "lambda" mean?
B: Then you didn't understand the lecture.

(7) Imperative - Assertion
A: He must confess! Cut off his fingers!
B: Then you really are a sadist.

(8) Assertion - Question
A: He was cranky this morning.
B: Then you told him?

Observation: The presence of *then* signals that (discursively) what follows *then* is explained by what precedes it (the antecedent).

Previous proposals: *Then* in conditionals

Iatridou (1994) and von Fintel (1994): The meaning contribution of *then* explains the infelicity in (2)–(4)

- Iatridou (1994): *then* in the conditional *if* p, *then* q triggers the inference that there are $\neg p$ alternatives in which q is not true
- von Fintel (1994): *then* triggers a conventional implicature that *only* the p worlds are q worlds.

Some empirical problems

(9) I'm certainly taking a job, but so far all the opportunities require me to start working at 7:00 a.m. Yes, as incredible as it sounds, if I take the Taco Bell job, then I also start at 7:00 a.m.

The speaker is not assuming that there are alternatives to taking the job at Taco Bell in which (s)he does not start at 7:00

(10) If Jim had asked Jack for help, then there would (have to) have been no quarrel yesterday.

(10) does not convey that only the situations in which Jim asked Jack for help are situations in which there was no quarrel

Selected References

von Fintel, Kai. 1994. Restrictions on quantifier domains. Doctoral Dissertation, University of Massachusetts Amherst.
Gunlogson, Christine. 2008. A question of commitment. *Belgian Journal of Linguistics* 22:101–136.
Heim, Irene. 1992. Presupposition Projection and the Semantics of Attitude Verbs. *Journal of Semantics* 9:183–221.
Iatridou, Sabine. 1994. On the contribution of conditional *then*. *Natural Language Semantics* 2:171–199.

Proposal

Proposal at a glance

- *Then* contributes (non-truth-conditional) meaning: *Then* is a discourse marker.
- The same *then* is present in conditionals and across discourse.
  - In conditionals there are two layers of modal relations.
- *Then* signals that the utterance of the embedded clause is motivated by information gained from the previous discourse move (that information is the *antecedent*).
- The utterance of a *then*-clause leads the hearer to reconstruct
  - what the speaker learned from the previous discourse move and
  - the (modal) relation it bears to the information gained from the *then*-clause (the consequent).

Implementation

Discourse move: A *discourse move* M_i is the utterance of a sentence structure syntactically headed by a force operator: $[_A[S]]$; $[_Q[S]]$ **or** $[_{Imp}[S]]$.

Commitment slate: (based on Gunlogson 2008) $cos_{\mathrm{B},\mathrm{M_n}} = \{p :$ B commits to p after $M_n\}$

Information gain: $I_{B,M_i} = \{p : p \in cos_{B,\ M_i}\ \&\ p \notin\ cos_{B,\ M_{i-1}}\}$, where M_{i-1} is the move immediately preceding M_i and cos_{B,M_i} is B's commitment slate after M_i.

Then

- *Then* "coordinates" a conditional-like relation at the level of discourse.
  - The antecedent "explains" the consequent

(11) Let g be an assignment function, P and MB Kratzer-style conversational backgrounds, $s_@$ the utterance situation, and $\textsc{Max}_{P(s_@)}(X)$ the P-best situations in a set of worlds X,

$[\![[_{\mathrm{CP}}$ Then $[\ M_{i+1}]]]\!]^g(s_@) = [\![M_{i+1}]\!](s_@)$, defined only if
$\forall s \in \textsc{Max}_{P(s_@)}([\cap \textsc{MB}(s_@)] \cap g(i)),\ g(i+1)(s) = 1$
Where for any discourse move M_j, $g(j) \in I_{A,M_j}$ and A utters the *then*-clause.

- The meaning of *then* appeals to *discourse moves*.
- *Then* imposes felicity-conditions on the relation between two propositions identified by the assignment g (a Kratzer-style conditional relation)

Case studies

(12) A: I'm cold. $[M_1]$
B: Then put on a sweater. $[M_2]$

(13) $I_{B,\ M_1}$ ={A is cold; A wants to be warmer}
cs_{B,M_2}= {A is cold; A wants to be warmer; A putting on a sweater makes him warmer}
$I_{B,\ M_2}$ ={A putting on a sweater makes him warmer}

By uttering the *then*-clause, B *implicitly committed* to the fact that A wanted to be warmer (not just to that A is cold), and stated that the best situation in which A is warmer are situations in which A puts on a sweater (bouletic modality).

(14) If there is light in John's room, then he is home.

Inspired by Heim (1992):

$[M_1]$ There is light in John's room.
$[M_2]$ John is home.

(15) $I_{B,\ M_1}$ ={There is light in John's room}
cs_{B,M_2}= {There is light in John's room; that there is light in John's room indicates that he is home}
$I_{B,\ M_2}$ ={that there is light in John's room indicates that he is home}

The presence of *then* adds that it is *because* the antecedent is true (or assumed to be true), that the consequent is true: *then* signals that the utterance of the consequent is motivated by the information gained from the antecedent.

Predictions

When are *then*-clauses infelicitously uttered?

- Out of the blue: *Then* needs an antecedent.
- When the antecedent and the consequent are orthogonal: the antecedent doesn't provide an explanation.
- When it is not possible to identify an antecedent and a consequent standing in a modal relation.