

Pragmatics and Prosody of Implicit Discourse Relations: The Case of Restatement

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Outline of the approach

Motivation and Critique

A Gricean approach to discourse interpretation:

- a discourse must be relevant, i.e. fulfil its communicative goal
- each utterance is associated with a goal/topic/QUD
- deriving coherence relations from relations between topics
- explaining rather than postulating coherence

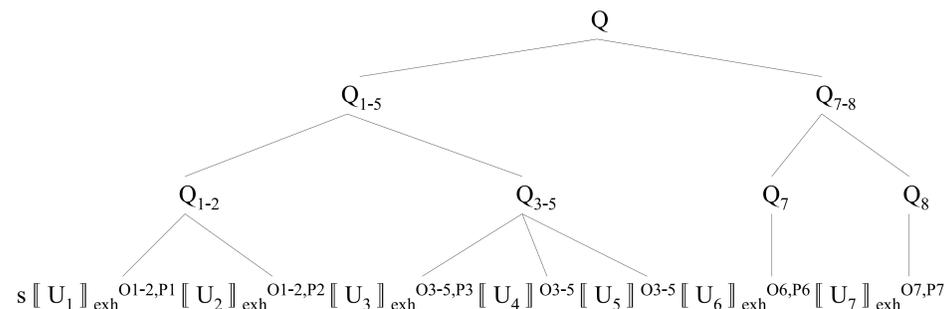
Grice, Neo-Griceans, Relevance Theory, Grosz & Sidner (1986), etc.

Asher and Lascarides' (2003) critique:

- lacking formalisation
- sentential character of Gricean theories
- reasoning with speakers' intentions/goals is generally unnecessary for the inference of discourse relations
- speakers' intentions/goals are not generally accessible to the hearer

Topic Continuity: By default, the discourse topic (QUD) does not change.

Exhaustivity: By default, an utterance is interpreted exhaustively.



The Question under Discussion - QUD

Who smokes in the hallway?

Sue has a suspicion that someone smokes regularly in the hallway of the department building, which is a non-smoking area, and she is that kind of unpleasant character who would immediately complain to your boss once she finds out that you are doing some mischief. However, before Sue can reasonably complain, she needs to find out:

- the identity of the person(s) that smoke(s) in the hallway; and
- to which departments those persons belong.

However, even Sue has a soft spot for her. An hour ago she met a charming guy called Bill, who she perhaps would not tell on, no matter in which department he is and no matter if it is in fact him who smokes in the hallway. In other words, Bill is irrelevant as a possible culprit.

smoke →	{j, m, b}	{j, m}	{j, b}	{j}	{m, b}	{m}	{b}	∅
ling → {j, m, b}	W11	W12	W13	W14	W15	W16	W17	W18
math → ∅								
ling → {j, m}	W21	W22	W23	W24	W25	W26	W27	W28
math → {b}								
ling → {j, b}	W31	W32	W33	W34	W35	W36	W37	W38
math → {m}								
ling → {j}	W41	W42	W43	W44	W45	W46	W47	W48
math → {m, b}								
ling → {m, b}	W51	W52	W53	W54	W55	W56	W57	W58
math → {j}								
ling → {m}	W61	W62	W63	W64	W65	W66	W67	W68
math → {j, b}								
ling → {b}	W71	W72	W73	W74	W75	W76	W77	W78
math → {j, m}								
ling → ∅	W81	W82	W83	W84	W85	W86	W87	W88
math → {j, m, b}								

- apart from Bill, John and Mary smoke and are both linguists
- apart from Bill, John (a linguist) and Mary (a mathematician) smoke
- apart from Bill, John (a mathematician) and Mary (a linguist) smoke
- apart from Bill, John and Mary smoke and are both mathematicians
- apart from Bill, only John smokes and he is a linguist
- apart from Bill, only John smokes and he is a mathematician
- apart from Bill, only Mary smokes and she is a linguist
- apart from Bill, only Mary smokes and she is a mathematician
- no one smokes apart from Bill

Relevance Orderings

Relevance order $<_{rel}$ on propositions:

$p <_{rel} p'$ iff $\{ q \in Q | p \subseteq \neg q \} \subset \{ q \in Q | p' \subseteq \neg q \}$

Relevance order $<_p$ on sets:

$X <_p Y$ iff

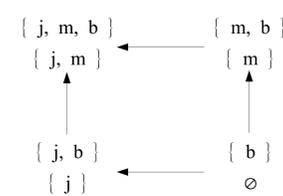
$\{ w | X \subseteq F(P)(w) \} <_{rel} \{ w | Y \subseteq F(P)(w) \}$

Relevance order $<_p$ on worlds:

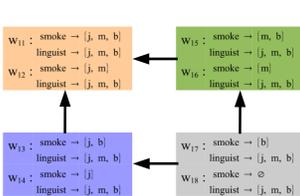
$w_1 <_p w_2$ iff

- $F(P)(w_1) <_p F(P)(w_2)$, and
- for all independent R : $F(R)(w_1) = F(R)(w_2)$

$<_{smoke}$ and $<_{linguist}$ on sets:



$<_{smoke}$ on worlds:



Formal details

Optimal Interpretation

Optimal interpretation function:

$O(P)(w) = \min_{\subseteq} (\max_{\subseteq} (\mathcal{P}(F(P)(w))))$

Optimal exhaustive update:

$s \llbracket \phi \rrbracket_{exh}^{O,P} = s \llbracket \phi \rrbracket^O \cap \min_{\subseteq} (s_0 \llbracket \phi \rrbracket^O)$

Optimal non-exhaustive update:

- $s \llbracket R(x_1, \dots, x_n) \rrbracket^O = \{ \langle w, g \rangle \mid \langle g(x_1), \dots, g(x_n) \rangle \in O(R)(w) \}$, if x_1, \dots, x_n are defined in s
- $s \llbracket \neg \phi \rrbracket^O = s - s \llbracket \phi \rrbracket^O$
- $s \llbracket \phi \wedge \psi \rrbracket^O = s \llbracket \phi \rrbracket^O \llbracket \psi \rrbracket^O$
- $s \llbracket \exists x \phi \rrbracket^O = s \llbracket \phi \rrbracket^O$, if x is undefined in s

$O(\text{smoke}) =$	{j, m, b}	{j, m}	{j, b}	{j}	{m, b}	{m}	{b}	∅
$F(\text{ling}) = \{j, m, b\}$	W11	W12	W13	W14	W15	W16	W17	W18
$O(\text{ling}) = \{j, m\}$	W21	W22	W23	W24	W25	W26	W27	W28
$F(\text{ling}) = \{j, m\}$	W31	W32	W33	W34	W35	W36	W37	W38
$O(\text{ling}) = \{j, b\}$	W41	W42	W43	W44	W45	W46	W47	W48
$F(\text{ling}) = \{j\}$	W51	W52	W53	W54	W55	W56	W57	W58
$O(\text{ling}) = \{j\}$	W61	W62	W63	W64	W65	W66	W67	W68
$F(\text{ling}) = \{m, b\}$	W71	W72	W73	W74	W75	W76	W77	W78
$O(\text{ling}) = \{m\}$	W81	W82	W83	W84	W85	W86	W87	W88
$F(\text{ling}) = \{m\}$								
$O(\text{ling}) = \{m\}$								
$F(\text{ling}) = \{b\}$								
$O(\text{ling}) = \{b\}$								
$F(\text{ling}) = \emptyset$								
$O(\text{ling}) = \emptyset$								

Who smokes in the hallway? - A linguist. Mary.

- $s_0 \llbracket \exists x [\text{linguist}(x)] \wedge \text{smoke}(x) \rrbracket^O$
- $s_0 \llbracket \exists x [\text{linguist}(x)] \wedge \text{smoke}(x) \rrbracket_{exh}^{O, \text{smoke}}$
- $s_0 \llbracket \text{smoke}(m) \rrbracket^O$
- $s_0 \llbracket \text{smoke}(m) \rrbracket_{exh}^{O, \text{smoke}}$

Empirical issues

Implicit Discourse Relations

Restatement vs. List:

- Alena broke her skis (↘).
She lost her main transportation means (↘).
 - Alena broke her skis (↘).
And (she) lost her main transportation means (↘).
 - Alena broke her skis (↗),
(she) lost her main transportation means (↗) ...

Nominal restatement vs. List:

- Who smokes in the hallway?
Two linguists (↘). John and Mary (↘).
 - Two linguists (↗), John and Mary (↗) ...

Restatement vs. Elaboration proper:

- ?? The council built the bridge (↘).
The architect drew up the plans (↘).
 - The council built the bridge (↘).
The architect drew up the plans (↗) ...

Narration:

- ?? The lone ranger jumped on his horse (↘).
He rode into the sunset (↘).
 - The lone ranger jumped on his horse (↗),
he rode into the sunset (↗) ...

And in Spontaneous Speech

The conjunction *and* is much more frequent in spoken than in written narrative (Chafe, 1982).

Narration: (Schiffrin, 1987)

- You lived in West Philly? Whereabouts?
 - Well, I was born at 52nd and em... tsk... oh: I forgo- well..... I think its 52nd and Chew.
And um... and uh I grew up really in the section called Logan.
And then, I went into the service, for the two years,
and then when I came back, I married... I- I- I got married.
And I- then I lived at uh 49th and Blair.

Asyndetic connection is used with relations other than *Narration*, in particular with *Restatement* and *Explanation*:

Restatement:

- Do either one of your daughter in laws work?
 - No but they did.
Both my daughters in laws worked.
- And uh; that's- that's the answer.
That's why I say they're the most prejudiced.

Explanation:

- I used t'go every summer.
My mother'd send me down with relatives.
But I used t'cry I wanted to go home.
I didn't like it.
- Even this teacher, this one that- she laughed.
She couldn't help it!

Prosody in Spontaneous Speech

Nakajima & Allen (1993) compare utterance-final pitch at „elaboration class“ and „speech act continuation“ boundaries.

speech act continuation \approx **Narration:** \rightarrow higher final pitch

- now let's uhh
assume the oranges are already loaded into the boxcar B6
S: hnn-hnn
H: and we'll take the engine that's at city H
we'll move the boxcar with engine down to city A

elaboration class \approx **Restatement:** \rightarrow lower final pitch

- are there oranges available in warehouses in both cities H and I
S: uhh let's see
there're oranges available in uhh yes, in H and in city I
They have oranges in both places, enough for uhh uhm
several boxcars of oranges

Development of Written Language

Early Modern English, 1500-1710 (Dorgeloh, 2004):

And vpon the Wednesdays folowynge was enactyd that Rycharde late Kyng of Englonde schulde for his missegoernaunce of the Realme be holdyn in such Pryson as the Kyng wolde assygnye duryng his naturall Life. And than ye Kyng graunted to all persones generall pardons so that they were sette out of Chauncerye by Alhalowentyde nexte folowynge excepte such persones as were present at the murder of the Duke of Gloucetyr. And in this whyle was the Archbyssshop of Cauntorbury and Doctour Roger whiche ... (Fabian/The New Chronicles of England)