~~A theo~~ The Grosz/Sidner theory of discourse structure   global

[· copies of handout from last time]

· A2 · printout: the Kasparov dialog for annotation

[· load up the YouTube intentions video?]

‹ start w/ screen ~~up~~ ›
but ∞ laptop display on.

— no class Tues.

·? lessons learned from pilot studies?
(no time, most likely)

add to prior notes:
'actually' in quarks

Last lecture we looked @ some suggestive discourse
examples that provided evidence of hidden structure.
I want to remind you of this one : used anaphora
resolution as lens
#2(a): lines 3-~~5~~ : ‹project on board›
    2. (book)
    3. a. (
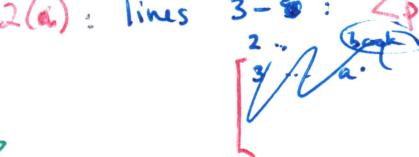
skip centering as being
a theory of local
structure (pairwise
relationships).

Centering is presumably
the phenom. behind
'brown & round'
@ discourse.

@ first, start off
describing segments
as topic-based.
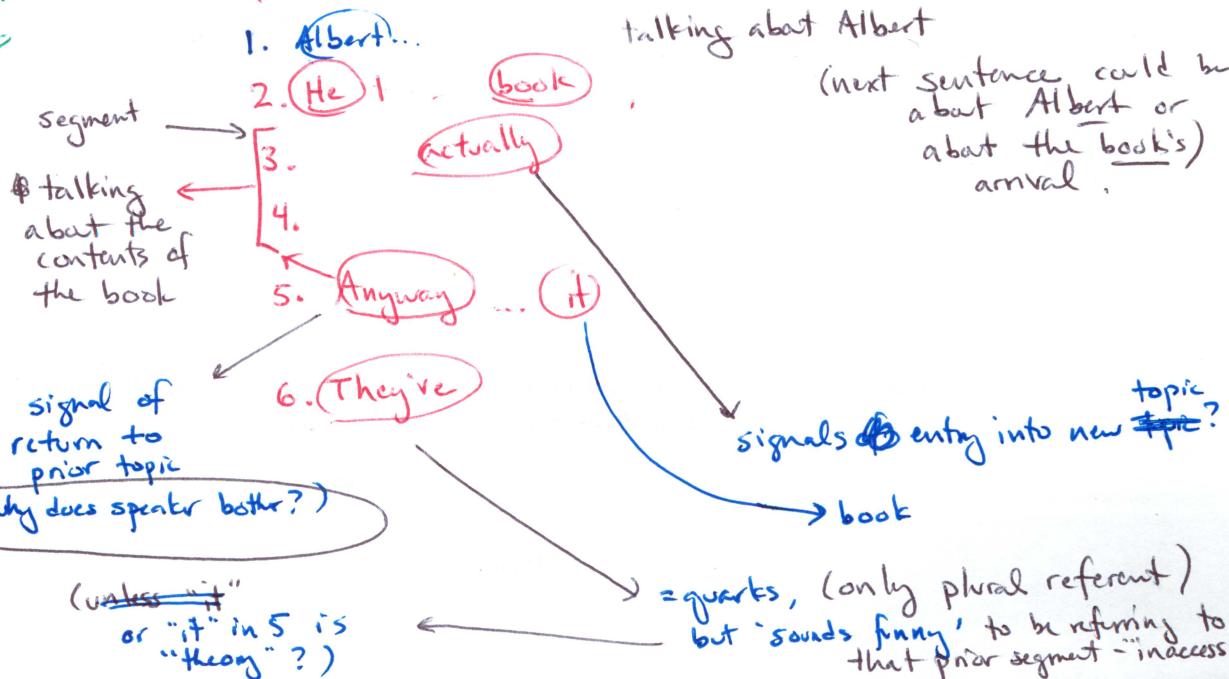
1. (Albert)...   talking about Albert

2. (He) 1   (book)   (next sentence could be
                            about Albert or
segment →   3. (actually)   about the book's)
                            arrival.
@ talking   4.
about the
contents of
the book   5. (Anyway) ... (it)

signal of   6. (They've)
return to
prior topic
(why does speaker bother?)   signals ~~of~~ entry into new ~~topic~~?   topic

                                    → book

(~~unless it~~
or "it" in 5 is   ←   = quarks, (only plural referent)
"theory"?)   but 'sounds funny' to be referring to
                        that prior segment - "inaccessible"

[see paper on ~~deciding~~ 'so' as discourse marker, although broader citation better for webpg?]

(SJ) ~~what we're observing here~~

two ~~points~~ concepts arising here:

- existence of discourse segments
- incoherence when expected segment structure violated

↓

Now, before I ~~we~~ kind of argued that you wouldn't expect to see a discourse like 2c in real life.
~~So you might conceive of incoherence as an acceptance criter~~

~~But incoherent~~

But incoherent discourses happen all the time in real life!
And actually, they are not always a bad thing at all.
Consider #4 on handout. I'm picking at this particular incoherent ~~dis~~ discourse due to the pedagogical point I'm driving @.

• incoherent, b/c (b) → an interruption

(and it is an interruption, ~~so~~
(or alternatively the interleaving of two conversations).
o.w. "them" would refer to the "kids"
(although maybe if the kids are badly enough behaved, you would want to put the kids away).

• incoherent, but normal
→ important to be, in this case
• ~~speaker wants, [in some sense] to be incoherent.~~

If the kids are ~~busy~~ about to microwave the new puppy, the speaker does not want to wait to finish their gripping tale of the saga of ~~b~~ the Groceries before telling the kids to knock it off .

→ ~~to~~ listeners (humans or systems) must recognize (; adapt to) incoherence.
In this case, presumably the speaker gives a lot of cues that the listener can pick up on: turning, change in volume,

So, two points so far that a theory of global discourse structure should take into account:
- existence of
- structural units or segments
- coherence; incoherence (maybe amounts to understanding the relations btwn segments.

Now, one more thought-provoking discourse example, this one involving 2 people (finally).

#5.   ~~one assu~~

or actually, once you read it, it seems more like one human being and one ~~still~~ somewhat flawed AI system.

<read>

· clearly this is a conversation going off the rails.
  [bulletproof glass joke from Grishman?]

what's the problem?
  B's responses are, from some perspective, totally rational:
    answer to 1st q is truthful
    and second utterance by A isn't a q, so B doesn't technically have to do anything,
    but B acknowledges A ~~anyget~~ anyway, which is nice ; polite.

  Crucially, though, B is failing to recognize A's ~~x~~ intentions when making these stmts, and that failure to take attention into account is causing all sorts of hard feelings, one presumes.

So: ~~third elt. the in~~
  third elt: importance of recognizing intentions.
    After all, perhaps the most important thing to note about conversations is that people ~~to~~ generally have them for a ~~x~~ reason (even if those reasons aren't very good).

Grosz ; Sidner [1986] theory: ~~x~~ has really influenced my thinking when I pay attention to daily conversation

  primary atoms: discourse segment purpose (DSP)
          ~ a single intention, the recognition of which motivates the discourse segment. ↑q: ok to use phrasing that is culturally specific?

  ex in 5: DSP= find out the time
        ≠ check that B knows the time ; ≠ test an AI. system (even if true)

this explains why A continues the conversation, and does so by repeating the point @ they're doing another attempt to get their intent recognized. re: time.

~~DSP relations~~ relations btwn DSPs : ⊚ DSP1 dominates DSP2 if satisfying
minimal set of
~~DSP1 doms DSP2~~   DSP2 furthers DSP1.

contrast w/ more rhetoric-based theories like "elaboration", "evidence", "contrast", which are more about the segments, rather than the DSPs.

this kind of relation naturally suggests a tree.

ex: [Jurafsky & Martin] (from back in the day when people called travel agents)

DSP1: caller : agent books flight

DSP2 : a : c gives departure   DSP3: a : c gives destination

note: a "coherent" conversation could
β: ~~Can a convert~~   DSP4: a : c explains which
be "incoherent" w.r.t. participants.   ⊚ "Ithaca".
Should coherence be a property of the
conversation mutually, or the participants individually?
~~note that both parties~~

q re: why does co-pilot speak indirectly to pilot, who outranks them, as opposed to saying directly what they mean? ("a storm is brewing", not "don't steer that way".)
- foreshadows, a bit, the Pinker video: it can't be "out there" mutually that the dominance hierarchy ~~is being~~ can be challenged.

• note that the intentions of both parties are in the tree.

~~this~~

• also note that this structure is a property of the joint conversation, not ~~of env~~ necessarily the viewpoint that either participant themselves has.

So the fact that overt agendas are what's interesting makes a lot of sense;
you get the same structure whether or not the caller is a valid customer or, say, someone from a rival company that's trying to tie up the phone line.

DSP tree structure ⇒ embedded discourse segments.
~~with/~~ w/in the DS for DSP3 is a ~~step~~ DS for the disambig.

But none of this theory so far explains why some referents seem to somehow disappear.
How to account for?
Well, parse trees relate to pushdown automata,
so it's ~~useful~~ to think of trees being related to stacks.
(semi-) natural

attentional component:
  conversation has a stack of focus spaces, one per discourse segment.
   contains PSP : salient entities
      - draw a segment:stk so people know what to do on A2.
  pop f.s, when DSP is recognized/realized.
    • orders possible referents,
    • explains why there are "missing" (or "inconvenient") referents, like "the theory" disappearing.
    • ease cognitive load by reducing the # of possible referents you have to look for

      q: how deep can people's stacks be?
         (talk about Walker's queue theory)

      q: do parts of trees stay around beyond boundary of the conversation
         (i.e., over multiple days)
         It's probably true that true intentions last across sessions, and shared culture keeps some always 'at the bottom of the stack'.

    - incoherence: stack doesn't match the tree.

Some implications:
    • ~~hearers un~~

      hearers must ack. understanding of DSP for speaker to be satisfied.
        ("closure": Clark '96, Norman '88).

        - ack can consist of attention
          (if I keep staring @ you after ~~I~~ you've told me what time
           it is this seems weird)
          (if you don't look @ me while I'm trying to convey a complex point .)
        - speakers can close segmts w/ acts (thanks, great)

        - ~~hearers can~~ provide next expected contribution (disclaim a compliment,
           to show you know it was just meant to be polite)

          - paraphrasing or repeating

Q: if it's all about getting your DSP recognized, why don't people just 'say what they mean'?
A: b/c there are other ~~relati~~ factors (and hence intentions) @ play also controlling phrasing.
    ex: status, ~~oth~~ common knowledge

        <show youtube video - from youtube directly! Better bandwidth >

DSB
g.wds
DSP1
Dack
DSP1 Att
A1b
← no "they've" referent