Examining some examples of realistic discourse, we can identify three phenomena which a model of discourse must be able to account for:

Discourse Segments [Example adapted from Sidner (1979).]

(1) Wilbur is a fine scientist and a thoughtful guy.
(2) He sent me a really interesting book by surface mail a while back.
(3) It was mostly about “sideways” quarks,
(4) which are completely bizarre —
(5) they’ve led to the development of a weird new theory of counter-intuitionistic physics.
(6’) Anyway, I finally got it while I was writing up my thesis.
(6’’) I finally got it while I was writing up my thesis.
(7) They’ve been fundamental to understanding “new relativity”.

Intentions [Example from Grishman (1986), pp. 157.]

A: Do you know when the train to Boston leaves?
B: Yes.
A: I want to know when the train to Boston leaves.
B: I understand.

Incoherence [Example from Grosz and Sidner (1986), citing Polanyi and Scha, “forthcoming”.]

(1) John came by and left the groceries.
(2) Stop that you kids.
(3) And I put them away after he left.

Grosz and Sidner Theory of Discourse Structure

This theory, proposed by Barbara Grosz and Candace Sidner in “Attention, Intentions, and the Structure of Discourse” (Computational Linguistics 1986), posits three components of discourse structure:

1. Linguistic Structure: groupings of utterances into discourse segments. Each discourse segment corresponds to a discourse segment purpose (DSP), the intention that the speaker wants the other conversational participant(s) to recognize.

2. Intentional Structure: relations between DSPs, where there are two types of relations (given below), and the intentional structure defined by these relations can be represented by a partially-ordered tree. Cue phrases aid in the recognition of this structure.

   • domination: satisfaction of one DSP furthers another DSP;
   • sat-precedence: satisfaction of one DSP must precede the satisfaction of another DSP.

3. Attentional Structure: groupings of discourse entities into focus spaces, indicating a salience ordering. The focus spaces for active discourse segments contain the segment’s DSP and any currently active referents; active focus spaces are maintained on the focus stack.