

Coherence & Discourse Structure

B. Senthil Kumar
Asst. Professor, CSE
Natural Language Processing



Agenda

- Coherence relations
- Discourse structure

Coherence relations

- The possible connections between utterances in a discourse can be specified as a set of **coherence relations**
- Types of relations:
 - Result
 - Occasion
 - Explanation
 - Parallel
 - Elaboration

Result

- The terms S_0 and S_1 represent the meanings of the two sentences being related.
- Result:
 - Infer that the state or event asserted by S_0 causes or could cause the state or event asserted by S_1

The Tin Woodman was caught in the rain. His joints rusted.



Explanation

- Infer that the state or event asserted by S_1 **causes** or could cause the state or event asserted by S_0

John hid Bill's car keys. He was drunk.

$cause(e_j, e_i) \Rightarrow Explanation(e_i, e_j)$



Parallel

- Infer $p(a_1, a_2, \dots)$ from the assertion of S_0 and $p(b_1, b_2, \dots)$ from the assertion of S_1 , where a_i and b_i are similar, for all i .

John bought an Acura. Bill leased a BMW.

buy (John, Acura)

lease (Bill, BMW)

Elaboration

- Infer the **same proposition P** from the assertions of S_0 and S_1 .

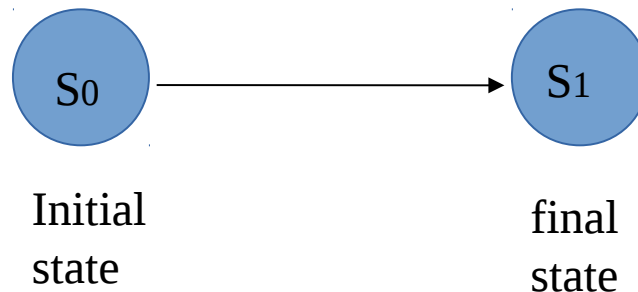
Dorothy was from Kansas. She lived in the midst of the great Kansas prairies.

Occasion

- A change of state can be inferred from the **assertion of S_0** , whose final state can be inferred from S_1 , or

A change of state can be inferred from the **assertion of S_1** , whose initial state can be inferred from S_0 .

John bought an Acura. He drove to the beachside.



Discourse structure

- The *coherence relationship* between the sentences result in the discourse structure.

- Identify the structure of the following discourse:

S1: John went to the bank to deposit his paycheck.

S2: He then took a train to Bill's car dealership.

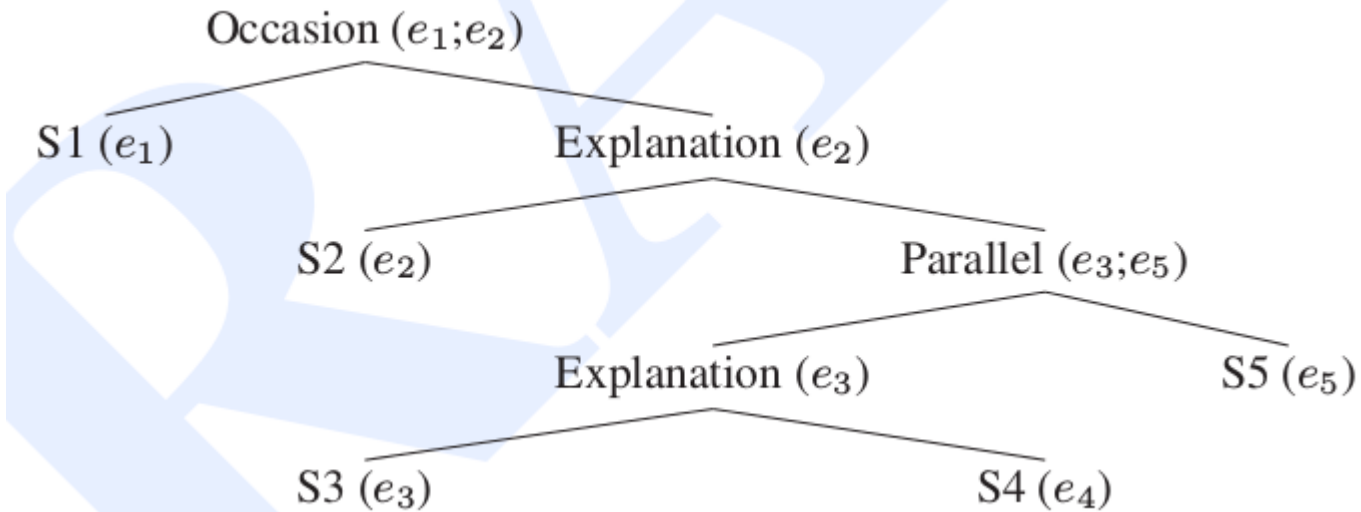
S3: He needed to buy a car.

S4: The company he works for now isn't near any public transportation.

S5: He also wanted to talk to Bill about their softball league.

- S1 and S2 are sequence of events.
- S3, S5 => S2 and S4 => S3 (=> related to)

Discourse structure



Explanation assumes only one argument – only *effect*, whereas Parallel and Occasion pass a combination of both arguments

References

- *Speech and Language Processing*, Daniel Jurafsky, Martin, Pearson, 2006.
- *Anaphora Resolution*, Ruslan Mitkov, Pearson Education, 2002.