

Discourse Representation

Chris Potts, Ling 390a: Controlling the Discourse, Fall 2007

Oct 26

1 Discourse referents

Consider a device designed to read a text in some natural language, interpret it, and store the content in some manner, say, for the purpose of being able to answer questions about it. To accomplish this task, the machine will have to fulfill at least the following basic requirement. It has to be able to build a file that consists of records of all the individuals, that is, events, objects, etc., mentioned in the text and, for each individual, record whatever is said about it. Of course, for the time being at least, it seems that such a text interpreter is not a practical idea, but this should not discourage us from studying in abstract what kind of capabilities the machine would have to possess, provided that our study provides us with some insight into natural language in general.

2 Boxes: Discourse representations

- The top line in the box records the discourse referents.
- The space below the top line records information about the discourse referents.
- As the discourse proceeds, we add information to the boxes.

(1) A student arrived.

x
student (x) arrive (x)

(2) A student arrived.

x
student (x) arrive (x)

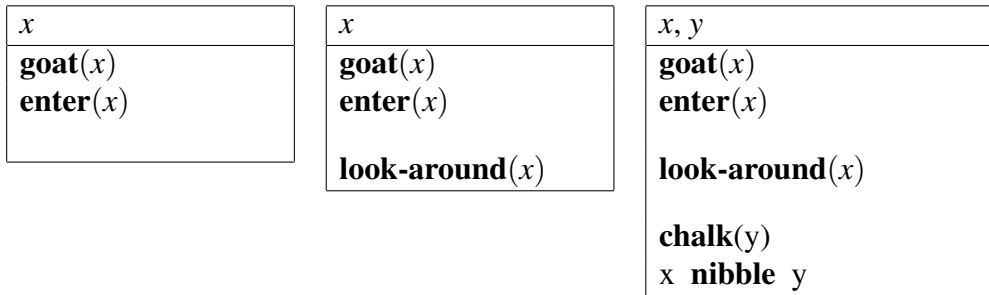
A dog barked.

x, y
student (x) arrive (x) dog (y) bark (y)

3 Discourse-old information

Information is discourse-old at a time t just in case it has been explicitly mentioned in the discourse at some time before t . Our boxes represent all and only this information.

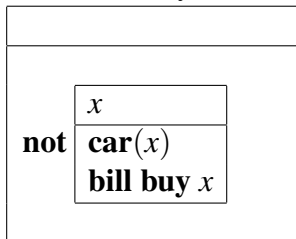
- (3) A goat entered. It looked around. It nibbled chalk.



4 Negation

- Negation introduces a sub-box.

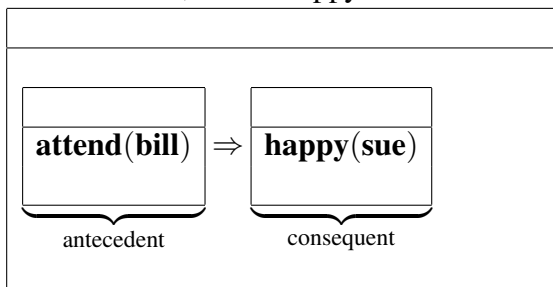
- (4) Bill didn't buy a car.



5 Conditionals

- Conditionals introduce a pair of sub-boxes, the antecedent and the consequent.

- (5) If Bill attends, Sue is happy.



6 Indefinites (new information)

- (6) A student_x entered. #A student_x was tired.
- (7) A student_x entered. #A linguist_x was tired.

Hypothesis Indefinites introduce novel discourse referents

- (8) A student_x arrived. #A linguist_x was tired.

<i>x</i>	<i>x</i>
student (<i>x</i>) arrive (<i>x</i>)	student (<i>x</i>) arrive (<i>x</i>) tired (<i>x</i>)

7 Pronouns and definite descriptions

- (9) #He is tired.
- (10) #The jackalope is tired.

Hypothesis Pronouns and definite descriptions say things about existing discourse referents.

- (11) A student arrived. She was tired.

<i>x</i>	<i>x</i>
student (<i>x</i>) arrive (<i>x</i>)	student (<i>x</i>) arrive (<i>x</i>) tired (<i>x</i>)

8 Additional data towards additional principles

- (12) Bill has [a car]_x.
- a. It_x is black.
- b. [The car]_x is black.
- (13) Bill doesn't have [a car]_x.
- a. #It_x is black.
- b. #[The car]_x is black.
- (14) a. If [a linguist]_x attends, she_x is inspired.
- b. If [a linguist]_x attends, she_x is inspired. #She_x likes language.
- (15) [A linguist]_x attended. If she_x was inspired, she_x raised her hand.
- (16) Ed wants to catch [a fish]_x and eat it_x for supper. #It_x is big.