24.903 Language & Structure III: Semantics and Pragmatics
Spring 2003, 2-151, MW 1-2.30
March 10, 2003

1 Handling Topicalization and Relative Clauses

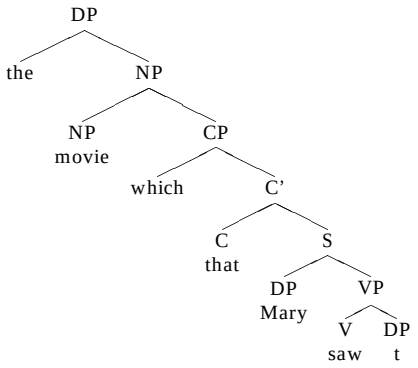
(1) Topicalization
   a. I like fish.
   b. Fish, I like.

(2) Relative Clauses 1
   a. the empty bottle
   b. the bottle [which is empty]
   c. the bottle [that is empty]

(3) Base sentence: Sandy met Joey in Oakland.
   a. The person [who$_i$ [t$_i$ met Joey in Oakland]]
   b. The person [who$_i$ [Sandy met t$_i$ in Oakland]]
   c. The place [where$_i$ [Sandy met Joey t$_i$]]

Movement: a way to create predicates from sentences
- a way to create λ-abstractions.

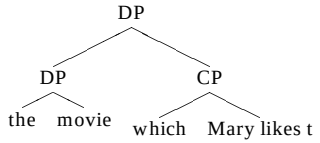
2 Handling Traces



• What do traces refer to?

An intuition: the 'head' of the NP

Another structure:



3 The Notion of 'Variable'

Traces are interpreted as variables.

Variables denote individuals, but only with respect to an assignment.

(4) If α is a trace, then, for any assignment a, $[\![\alpha]\!]^a$ = a.

• Modifying semantic composition rules to handle variable assignments.

Interpretation independent of variable assignments:

(5) For any tree α, α is in the domain of $[\![\ ]\!]$ iff for all assignments a and b, $[\![\alpha]\!]^a = [\![\beta]\!]^b$.

If α is in the domain of $[\![\ ]\!]$, then for all assignments a, $[\![\alpha]\!] = [\![\alpha]\!]^a$.

4 Predicate Abstraction

(6) *Predicate Abstraction*:
If α is a branching node, whose daughters are a relative pronoun and β then $[\![\alpha]\!] = \lambda x \in D.[\![\beta]\!]^x$.

• syncategorematicity

denotations *under* assignments $\neq$ denotations *applied* to assignments

(7) a. $[\![$**whom John likes t**$]\!]^{Tim} \neq [\![$**whom John likes t**$]\!]$(Tim)

b. $[\![$**sleeps**$]\!]^{Ann} \neq [\![$**sleeps**$]\!]$(Ann)

c. $[\![$**John likes t**$]\!]^x \neq [\![$**John likes t**$]\!]$(x)

Proof strategy: top-down or bottom-up

5 *such* that-relatives

(8) a. the book such that John bought it.
b. the book which John bought t.

Additional flexibility:

(9) a. the book such that John denied the claim that Mona wrote it
b. *the book that John denied the claim that Mona wrote t

(10) *Pronoun Rule*
If α is a pronoun, then for any assignment $a \in D, [\![\alpha]\!]^a = a$.

(11) *Predicate Abstraction* (Revised):
If α is a branching node, with β and γ as daughters, where β is a relative pronoun or *such*, then $[\![\alpha]\!] = \lambda x \in D.[\![\gamma]\!]^x$.

(12) Vacuous Binding
a. *the man such that Mary is famous.
b. *the man who Mary is famous.

6 Nested Relatives

(13) the man such that Mary reviewed the book which he wrote t

Problem: illegal capture of *he* by *which*

Solution: co-indexing and assignment functions

(14) the man such$_1$ that Mary reviewed the book which$_2$ he$_1$ wrote t$_2$

(15) A *variable assignment* is a partial function from N into D.

(16) *Traces and Pronoun Rule*
If α is a pronoun or a trace, a is an assignment function and $i \in$ dom(a), then $[\![\alpha_i]\!]^a = a(i)$.

Handling pronouns:

(17) She$_1$ likes him$_2$.

7 Assignment Functions

Modifying assignment functions:

(18) Let a be an assignment function, $i \in N$, and $x \in D$.

$a^{x/i}$ =
(a extended / modified to assign x to index i.)

(i) dom($a^{x/i}$) = dom(a) $\cup \{i\}$
(extend the domain of a to cover index i)

(ii) $a^{x/i}(i) = x$,
(assign index i to x)

(iii) for every $j \in$ dom($a^{x/i}$) such that $j \neq i$: $a^{x/i}(j) = a(j)$
(leave everything else untouched)

(19) *Predicate Abstraction*:
If α is a branching node, with β_i and γ as daughters, where β is a relative pronoun or *such*, and $i \in N$, then for any variable assignments a, then

$[\![\alpha]\!]^a = \lambda x \in D.[\![\gamma]\!]^{a^{x/i}}$.