Relative clauses and movement

Notes:

- As you prepare for your papers, for writing advice, I encourage you to go to the ELL writing center. Write `nicola.mah@u.nus.edu` or stop by AS5 03-13 during the hours below: Tues: 10am–12nn; Wed, Thurs: 10am–12nn and 3-5 pm; Fri: 10am–12nn.
- Answers file updated with the passive from PS4.

1 Relative clauses

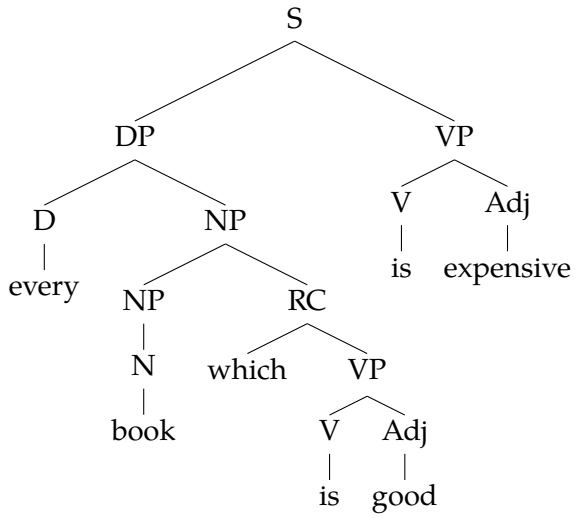
(1) Every book which is good is expensive.

What does (1) mean? Is it the same as (2)?

(2) Every book is good and every book is expensive.

The relative clause *which is good* must be part of the *restrictor* (first argument) of *every*.

Hypothesis 1:
The relative clause is a kind of VP adjoined to NP, and we simply ignore *which*: ⟦which⟧ = Id.



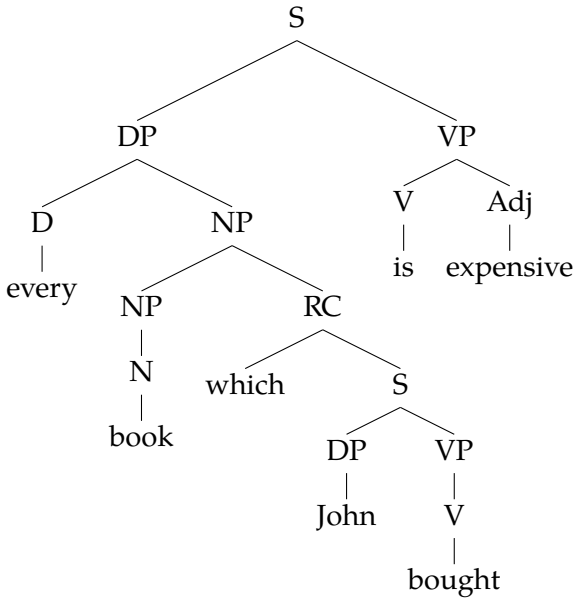
Exercise: Compute this. Does this give us the desired truth conditions?

This works ok for a *subject relative* like (1). But consider:

(3) Every book which John bought is expensive.

A problem is that (3) clearly includes a sentence with a gap in it. *Buy* is a transitive verb, but it appears to have no object.

Hypothesis 2: Relative clauses include full sentences with gaps. Just ignore the gap. Nothing is interpreted in that position.



Assume ⟦which⟧ = Id again. The types in this tree will work out, but the meaning is incorrect! There are also more complicated relative clauses where we wouldn't even be able to get the types to work.

(4) Every book which Mary said John bought is expensive.

Hypothesis 3:

Relative clauses always involve *movement* of the relative pronoun (for example *which*) from the *gap* position to Spec,CP (Chomsky, 1977, and many others). Now we need a semantics for movement...

2 Interpreting movement

"...the peculiar genius of the relative clause is that it creates from a sentence '...x...' a complex adjective summing up what that sentence says about x." — Quine (1960, §23)

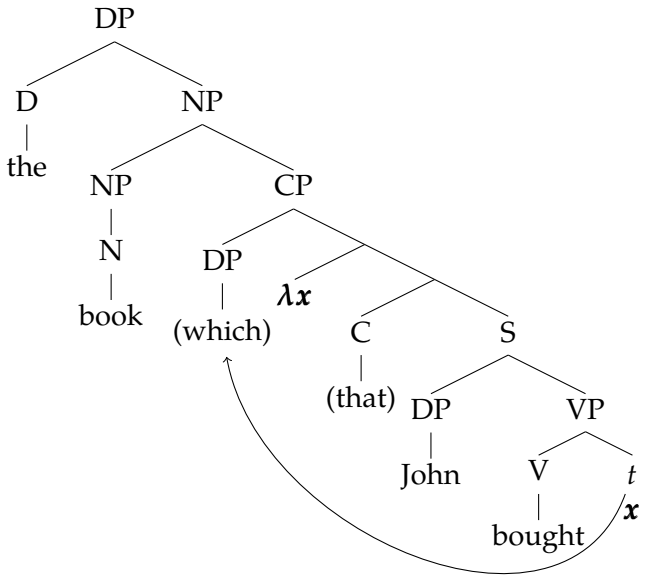
(5) **The interpretation of movement:** (to be revised next week)
Pick an arbitrary variable, such as x.

a. The base position of movement is replaced with a *trace*; $[\![t]\!] = x$, type e.

b. A *λ-binder* λx is adjoined right under the target position of the movement chain.

(6) **How to interpret λs in trees:** (also to be revised next week)

$$\left[\!\!\left[\begin{array}{c} \diagup\diagdown \\ \lambda x \quad \ldots x \ldots \end{array} \right]\!\!\right] = \lambda x \,.\, \ldots x \ldots$$



Exercise: Compute this structure. Assume ⟦that⟧ = Id and ⟦which⟧ = Id.
Notes:

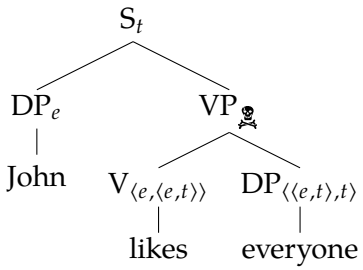
- The λx does not have a type. It does not compose using FA. It uses the special rule in (6).
- We assume that, syntactically, the complementizer *that* (C) triggers movement of the relative pronoun to Spec,CP. They are both optionally pronounced, and they cannot both be pronounced at the same time:

(7) a. the book John bought ____
b. the book which John bought ____
c. the book that John bought ____
d. * the book which that John bought ____

Following Chomsky and Lasnik (1977), we assume a "Doubly Filled COMP Filter" that states that both positions cannot be pronounced at the same time, explaining (7d). Subject relatives, like (1), require *that* to be pronounced if the relative pronoun is not pronounced.

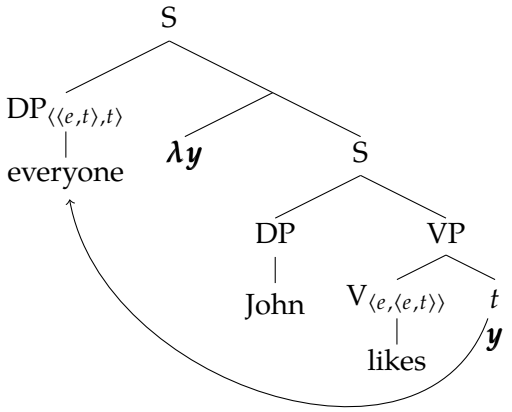
3 Quantifiers in object position

(8) John likes everyone.



But notice that DPs of type $\langle\langle e, t\rangle, t\rangle$ can be interpreted easily if they are moved:

(9) Everyone, John likes ____.



Exercise: Make sure this works.

A solution to the problem of quantifiers in object position, like (8), is to *pretend this movement happened anyway*. The arrow is dashed because it's a *covert* movement, not reflected in pronunciation.

(10) LF for (8): everyone, John likes ____.

We call this movement *Quantifier Raising* (QR) (May, 1977). QR is required for quantifiers that are not in subject position, in order to avoid the type problem in (8).

4 Logical Form

In the last section, we have opened up the possibility that *what we pronounce* is different than *what we interpret*.

(11) Structure is built in Syntax. Syntax has two outputs:

a. Phonological Form (PF): what is pronounced

b. Logical Form (PF): what is interpreted

Additional operators may take place at these "interfaces"—in particular, covert movement (like QR) and reconstruction may take place at LF.

A hypothesis developed by May (1977); Huang (1982) and others is that operations at LF are *syntactic* operations, (generally) subject to the same constraints as visible syntax. Here is one argument for this. Consider example (12):

(12) **A sentence with a scope ambiguity:** (ex from Fox, 2003) A (different) student likes every professor.

a. 1 iff there exists a student x [for every $y \in D_e$ [y is a professor $\rightarrow$ x likes y]]

b. 1 iff for every $y \in D_e$ [y is a professor $\rightarrow$ there exists a student x [x likes y]]

Suppose the second reading in (12) is the result of covert movement (QR) of *every professor* to a position higher than *a student* at LF:

(13) LF: [every professor] λx a student likes x

Now recall that *overt* movement is subject to the Coordinate Structure Constraint (14):

(14) **The Coordinate Structure Constraint (Ross, 1967):**

a. Which professor does John like ___?

b. * Which professor does John [[like ___] and [hate the dean]]?

(15) **Embedding within a conjunction blocks wide scope of *every professor*:**
A (#different) student [[likes every professor] and [hates the dean]]. (ex from Fox, 2003)

a. ✓ 1 iff there exists a student x [for every $y \in D_e$ [y is a professor $\rightarrow$ x likes y and x hates the dean]]

b. * 1 iff for every $y \in D_e$ [y is a professor $\rightarrow$ there exists a student x [x likes y and x hates the dean]]

References

Chomsky, Noam. 1977. On *wh*-movement. In *Formal syntax*, ed. Peter Culicover, Thomas Wasow, and Adrian Akmajian, 71–132. New York: Academic Press.

Chomsky, Noam, and Howard Lasnik. 1977. Filters and control. *Linguistic Inquiry* 8:425–504.

Fox, Danny. 2003. On logical form. In *Minimalist syntax*, 82–123. Blackwell.

Huang, Cheng-Teh James. 1982. Logical relations in Chinese and the theory of grammar. Doctoral Dissertation, Massachusetts Institute of Technology.

May, Robert Carlen. 1977. The grammar of quantification. Doctoral Dissertation, Massachusetts Institute of Technology.

Quine, Willard Van Orman. 1960. *Word and object*. Cambridge.

Ross, John Robert. 1967. Constraints on variables in syntax. Doctoral Dissertation, Massachusetts Institute of Technology.