Ling 320: Semantics. Lecture Notes. November 20th, 2007.

1. Pronoun Ambiguity and VP Ellipsis. For the past two classes, we have been focusing on the interpretation of pronouns.

The generalization that has emerged so far is that pronouns may receive two types of interpretations: they may be *referential*, in which case they refer to some individual that is salient in the discourse, or they may be interpreted as *bound variables*, in which case they are abstracted over to form a set.

In some cases, both interpretations are possible, while in others, only one is. For example, when a *quantificational* DP antecedes a pronoun, as in (1) (where the co-indexing indicates that the DP antecedes the pronoun) the pronoun must be interpreted as a bound variable, as in (2).

(1) $[_{DP}$ No man$]_i$ is calling his$_i$ mother.

(2) $\{x \mid x \text{ is a man in } s\} \cap \{x \mid x \text{ is calling } x\text{'s mother in } s\} = \varnothing$

In contrast, when a *referential* DP antecedes a pronoun, as in (3), we cannot tell whether the pronoun is interpreted as a bound variable, (4), or referentially, (5):

(3) $[_{DP}$ Charles$]_i$ is calling his$_i$ mother.

(4) Charles $\in$ $\{x \mid x$ is calling Charles' mother in $s\}$

(5) Charles $\in$ $\{x \mid x$ is calling x's mother in $s\}$

Do we want to choose one interpretation over the other in cases like these? It turns out that there is evidence for allowing *both* interpretations here. This comes from examples in which the ambiguity comes to light. We have looked at two such cases so far:

The first comes from examples involving *only* (see previous handout). The second comes from VP Ellipsis. A review of the VP Ellipsis argument runs as follows.

First, we observed that a VP may be elided just in case it is identical in meaning to a VP in the antecedent discourse (e.g., a previously occurring VP). We can see this in examples like (6).

(6) a. Alexis sent a message to every professor.
b. Catherine did __, too.

Although the interpretation of the VP in (6a) is ambiguous, whichever interpretation holds for (6a) must also hold for the deleted VP. Thus, apparently the interpretation of the missing VP must be identical in meaning to its anteceding VP.

Given this identity requirement on VP Ellipsis, the ambiguity of examples like (7b) at first seems puzzling. Assume here, as indicated by the indexing, that *Charles* antecedes *his*.

(7) a. $[_{DP}$ Charles$]_i$ is calling his$_i$ mother.
b. Every man is.

Intuitions tell us that the missing VP can have two interpretations:

(8) a. Every man is calling Charles' mother. *strict reading*
b. Every man is calling his own mother. *sloppy reading*

The first type of reading is often referred to as a *strict* reading of the elided VP, and the second type of reading is often referred to as a *sloppy* reading of the elided VP.

We saw that we can account for this ambiguity, without violating the condition that the VPs must be identical in meaning, if we assume that the antecedent VP can be interpreted in two ways:

(9) a. $\{x \mid x$ is calling Charles' mother in $s\}$ *referential interpretation*
b. $\{x \mid x$ is calling x's mother in $s\}$ *bound variable interpretation*

Since the pronoun in the first VP can be interpreted as either referentially or as a bound variable, we allow for two possibilities for the interpretation of the elided VP.

Summarizing, VP Ellipsis thus gives us reason to think that pronouns that have referential antecedents may have two interpretations: allowing for the pronoun to be ambiguous in (7a) accounts for the ambiguity in the interpretation of the elided VP.

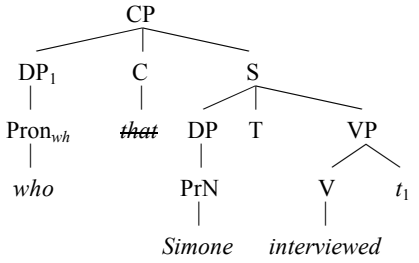
Practice: Why is the elided VP in (10) unambiguous? Why is the one in (11)?

(10) Every woman grows up to be her mother: it is her curse.
No man does, and that is his. (Oscar Wilde)

(11) No woman is calling his sister. Every man is.

2. The Interpretation of Relative Clauses. We are assuming that relative clauses have the following internal structure:

(12)

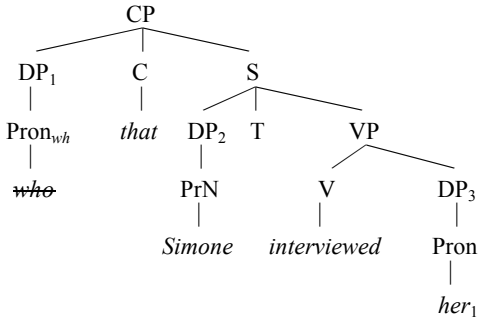


Again, our aim is to come up with a rule to interpret this structure (this is rule (j), which we considered at the end of class last Thursday). Here are the ingredients for coming up with that rule: First, we know that we want the whole CP to denote a set:

$\{x \mid \text{Simone interviewed } x \text{ in } s\}$.

Thus, we know that we want t_i to be interpreted as a bound variable. We also know that across languages, the position of the trace may sometimes be occupied by a pronoun.

(13)



This fits with what we already know about pronouns: they too can be interpreted as bound variables. That is *her* is interpreted as a bound variable x in $\{x \mid$ Simone interviewed x in $s\}$. We also know that we can interpret pronouns as receiving their interpretation from the assignment function:

(14) $[\![she_i]\!]^{s,g} = g(\text{i})$

Given that pronouns and traces occur in the same position in relative clasues, we posit an analysis of traces just like pronouns: they receive their interpretation from the assignment:

(k) $[\![t_i]\!]^{s,g} = g(\text{i})$

Putting all of this together, one way of getting the semantics of the relative clause in (13) to come out is to posit the following rule:

(j) $[\![[_{\text{CP}}\ \text{DP}_i\ \text{C S}]]\!]^{s,g} = \{x \mid [\![\text{S}]\!]^{s,g[\text{i} \to x]} = 1\}$

Note that '$g^{[\text{i} \to x]}$' reads as 'g modified so as to map i to x'.

What this rule does is create a set that abstracts over any pronoun or trace in S that shares its index with the moved *wh*-phrase. The rule accomplishes this by (a) forming a set of individuals, x, and (b) modifying the assignment function so that it maps whatever index is on the *wh*-word onto x. Here is the calculation:

(15) For any s, g, $[\![[_{\text{CP}}\ \text{DP}_1\ \text{C S}]]\!]^{s,g} =$

$\{x \mid [\![\text{S}]\!]^{s,g[1 \to x]} = 1\}$	(j)
$\{x \mid [\![\text{VP}]\!]^{s,g[1 \to x]} \in [\![\text{DP}_2]\!]^{s,g[1 \to x]}\}$	(a)
$\{x \mid [\![\text{VP}]\!]^{s,g[1 \to x]} \in \{A \mid [\![\text{PrN}]\!]^{s,g[1 \to x]} \in A\}\}$	(h)
$\{x \mid [\![\text{PrN}]\!]^{s,g[1 \to x]} \in [\![\text{VP}]\!]^{s,g[1 \to x]}\}$	$\in$
$\{x \mid \text{Simone} \in [\![\text{VP}]\!]^{s,g[1 \to x]}\}$	(b), (c)
$\{x \mid \text{Simone} \in \{y \mid \langle y, [\![\text{DP}_3]\!]^{s,g[1 \to x]} \rangle \in [\![\text{V}]\!]^{s,g[1 \to x]}\}\}$	(f)
$\{x \mid \langle \text{Simone}, [\![\text{DP}_3]\!]^{s,g[1 \to x]} \rangle \in [\![\text{V}]\!]^{s,g[1 \to x]}\}$	$\in$
$\{x \mid \langle \text{Simone}, [\![\text{Pron}]\!]^{s,g[1 \to x]} \rangle \in [\![\text{V}]\!]^{s,g[1 \to x]}\}$	(b)
$\{x \mid \langle \text{Simone}, [\![t_1]\!]^{s,g[1 \to x]} \rangle \in [\![\text{V}]\!]^{s,g[1 \to x]}\}$	(b)
$\{x \mid \langle \text{Simone}, \text{x} \rangle \in [\![\text{V}]\!]^{s,g[1 \to x]}\}$	(k)
$\{x \mid \langle \text{Simone}, \text{x} \rangle \in [\![\textit{interviewed}]\!]^{s,g[1 \to x]}\}$	(b)
$\{x \mid \text{Simone interviewed } x \text{ in } s\}$	(c), $\in$

Here is the calculation for a particular situation, s_0, and assignment [1 → MJ, 2→ E]:

(16) $[\![[_{CP}\ DP_1\ C\ S]]\!]^{s0,[1 \to MJ,\ 2 \to E]} =$

$\{x \mid [\![S]\!]^{s0,[1 \to x,\ 2 \to E]} = 1\}$ (j)

$\{x \mid [\![VP]\!]^{s0,[1 \to x,\ 2 \to E]} \in [\![DP_2]\!]^{s0,[1 \to x,\ 2 \to E]}\}$ (a)

$\{x \mid [\![VP]\!]^{s0,[1 \to x,\ 2 \to E]} \in \{A \mid [\![PrN]\!]^{s0,[1 \to x,\ 2 \to E]} \in A\}\}$ (h)

$\{x \mid [\![PrN]\!]^{s0,[1 \to x,\ 2 \to E]} \in [\![VP]\!]^{s0,[1 \to x,\ 2 \to E]}\}$ ∈

$\{x \mid \text{Simone} \in [\![VP]\!]^{s0,[1 \to x,\ 2 \to E]}\}$ (b), (c)

$\{x \mid \text{Simone} \in \{y \mid \langle y, [\![DP_3]\!]^{s0,[1 \to x,\ 2 \to E]}\rangle \in [\![V]\!]^{s0,[1 \to x,\ 2 \to E]}\}\}$ (f)

$\{x \mid \langle \text{Simone}, [\![DP_3]\!]^{s0,[1 \to x,\ 2 \to E]}\rangle \in [\![V]\!]^{s0,[1 \to x,\ 2 \to E]}\}$ ∈

$\{x \mid \langle \text{Simone}, [\![Pron]\!]^{s0,[1 \to x,\ 2 \to E]}\rangle \in [\![V]\!]^{s0,[1 \to x,\ 2 \to E]}\}$ (b)

$\{x \mid \langle \text{Simone}, [\![t_1]\!]^{s0,[1 \to x,\ 2 \to E]}\rangle \in [\![V]\!]^{s0,[1 \to x,\ 2 \to E]}\}$ (b)

$\{x \mid \langle \text{Simone, x} \rangle \in [\![V]\!]^{s0,[1 \to x,\ 2 \to E]}\}$ (k)

$\{x \mid \langle \text{Simone, x} \rangle \in [\![\textit{interviewed}]\!]^{s0,[1 \to x,\ 2 \to E]}\}$ (b)

$\{x \mid \text{Simone interviewed } x \text{ in } s_0\}$ (c), ∈

On modified assignments: For any given assignment *g*, we can modify *g* by resetting the value which *g* maps to a given index. For example, we can modify *g* to the new assignment $g^{[1 \to x]}$. This new assignment, $g^{[1 \to x]}$, is just like the old *g*, only it maps 1 to *x*.

So, say g = [1 → MJ, 2 → E]. We can modify this assignment so that it maps 1 → *x* as follows:

$[1 \to MJ,\ 2 \to E]^{[1 \to x]}$

By doing so, we reset the value assigned to 1:

$[1 \to MJ,\ 2 \to E]^{[1 \to x]} = [1 \to x,\ 2 \to E]$

===In the following grammar, new rules are marked by *, and rules we won't get till until Thuresday are marked by **.

3. Class Grammar.

(i) Lexicon

(a) *Lexical items:*

PrN: $[\![\textit{Laure}]\!]^{s,g}$ = Laure, …

N_i: $[\![\textit{girl}]\!]^{s,g} = \{x \mid x \text{ is a girl in } s\}$, …

N_t: $[\![\textit{governor}]\!]^{s,g} = \{\langle x, y\rangle \mid x \text{ is a governor of } y \text{ in } s\}$, …

V_i: $[\![\textit{laugh}]\!]^{s,g} = \{x \mid x \text{ laughs in } s\}$, …

V_t: $[\![\textit{save}]\!]^{s,g} = \{\langle x, y\rangle \mid x \text{ saves } y \text{ in } s\}$, …

A_i: $[\![\textit{brave}]\!]^{s,g} = \{x \mid x \text{ is brave in } s\}$, …

A_t: $[\![\textit{fond}]\!]^{s,g} = \{\langle x, y\rangle \mid x \text{ is fond of y in } s\}$, …

P_i: $[\![\textit{out}]\!]^{s,g} = \{\langle x, y\rangle \mid x \text{ is out in } s\}$, …

P_t: $[\![\textit{behind}]\!]^{s,g} = \{\langle x, y\rangle \mid x \text{ is behind } y \text{ in } s\}$, …

Conj: $[\![\textit{and}]\!]^{s,g} = \cap$, $[\![\textit{or}]\!]^{s,g} = \cup$ Neg: $[\![\textit{not}]\!]^{s,g} =$ '

D: $[\![\textit{every}]\!]^{s,g} = \{\langle A, B\rangle \mid A \subseteq B\}$, $[\![\textit{no}]\!]^{s,g} = \{\langle A, B\rangle \mid A \cap B = \varnothing\}$,

$[\![\textit{some}]\!]^{s,g} = \{\langle A, B\rangle \mid A \cap B \neq \varnothing\}$

Pronoun: $[\![\textit{she}_i]\!]^{s,g} = g(i)$, $[\![\textit{he}_i]\!]^{s,g} = g(i)$, $[\![\textit{it}_i]\!]^{s,g} = g(i)$

Semantically vacuous: Main V *be*; the P *of*; the D *a*; C; $Pron_{wh}$.

(b) *Lexical rules:*

Existential object drop (eod).

If V is a relation, $[\![V_{eod}]\!]^{s,g} = \{x \mid \exists y[\langle x,y\rangle \in [\![V]\!]^{s,g}]\}$.

Condition: Only applies to certain verbs in the lexicon: *eat*, *bake*, *read*…

Reflexive object drop (refl).

If V is a relation, $[\![V_{refl}]\!]^{s,g} = \{x \mid \langle x,x\rangle \in [\![V]\!]^{s,g}\}$.

Condition: Only applies to certain verbs in the lexicon: *shave*, *hid*, *undress*…

Passive (*pass*).

If V is a relation, $[\![V_{pass}]\!]^{s,g} = \{x \mid \exists y[\langle y,x\rangle \in [\![V]\!]^{s,g}]\}$.

(ii) Syntactic rules

(a) *Phrase Structure rules*:

S	→	DP (T) VP		
DP	→	D NP	PrN	Pron
NP	→	N_i	N_t PP	
		NP PP	AP PP	*NP CP
*CP	→	C S		
VP	→	V_i	V_t DP	V_c {AP/PP/DP}
AP	→	A_i	A_t PP	
PP	→	P_i	P_t DP	
XP	→	XP Conj XP	where X ∈ {V, A, P, N, D}	
XP	→	Neg XP	where X ∈ {V, A, P, D}	

PrN → *Laure*, …	*C → *that*	
N_i → *guy*, …	N_t → *governor*…	
V_i → *laugh*, …	V_t → *save*, …	
A_i → *brave*…	A_t → *fond*, …	
P_i → *out*, …	P_t → *behind*…	
Neg → *not*	V_c → *be*	
D → *every*, *some*, *no*	D_c → *a*	T → *be*
*Pron → *she*, *he*, *her*, *him, it*	*$Pron_{wh}$ → *who*, *which*	

(b) *Transformations*:

V-to-*T Movement*:	Raise main verb *be* to T, if T is empty.
**Wh-Movement*:	Raise a *wh*-phrase to the left of C.
***Quantifier Raising*:	Raise a quantificational DP to the left of S.

(iii) Semantic rules of composition.

For any situation *s* and assignment *g*,

(a) $[\![[_S \text{ DP T VP}]]\!]^{s,g} = 1$ iff $[\![\text{VP}]\!]^{s,g} \in [\![\text{DP}]\!]^{s,g}$

(b) If α is a non-branching node whose daughter node is β, $[\![\alpha]\!]^{s,g} = [\![\beta]\!]^{s,g}$.

(c) If α is a terminal node, $[\![\alpha]\!]^{s,g}$ is specified in the lexicon.

(d) $[\![[_{XP1} \text{XP}_2 \text{ Conj XP}_3]]\!]^{s,g} = [\![\text{XP}_2]\!]^{s,g} [\![\text{Conj}]\!]^{s,g} [\![\text{XP}_3]\!]^{s,g}$

(e) $[\![[_{XP1} \text{ Neg XP}_2]]\!]^{s,g} = ([\![\text{XP}_2]\!]^{s,g})\ [\![\text{Neg}]\!]^{s,g}$

*(f) $[\![[_{YP} \text{ Y}_t \text{ Z}]]\!]^{s,g} = \{x \mid \langle x, [\![\text{Z}]\!]^{s,g} \rangle \in [\![\text{Y}_t]\!]^{s,g}\}$

(g) $[\![[_{DP} \text{ D NP}]]\!]^{s,g} = \{A \mid \langle [\![\text{NP}]\!]^{s,g}, A \rangle \in [\![\text{D}]\!]^{s,g}\}$

*(h) $[\![[_{DP} \text{ X}]]\!]^{s,g} = \{A \mid [\![\text{X}]\!]^{s,g} \in A\}$
Condition: Only applies to DPs in subject position.

(i) $[\![[_{NP} \text{ XP YP}]]\!]^{s,g} = [\![\text{XP}]\!]^{s,g} \cap [\![\text{YP}]\!]^{s,g}$

*(j) $[\![[_{CP} \text{ DP}_i \text{ C S}]]\!]^{s,g} = \{x \mid [\![\text{S}]\!]^{s,g[i \to x]} = 1\}$

*(k) $[\![t_i]\!]^{s,g} = g(i)$

**(l) $[\![[_{S1} \text{ DP}_i \text{ S}_2]]\!]^{s,g} = 1$ iff $\{x \mid [\![\text{S}]\!]^{s,g[i \to x]} = 1\} \in [\![\text{DP}_i]\!]^{s,g}$