

1. Updated Grammar!

(i) Lexicon

(a) *Lexical items:*

- PrN: $[[Laure]]^s = \text{Laure}, [[Alec]]^s = \text{Alec}, \dots$
 N_i: $[[student]]^s = \{x \mid x \text{ is a student in } s\}, \dots$
 N_t: $[[representative]]^s = \{\langle x, y \rangle \mid x \text{ is a representative of } y \text{ in } s\}, \dots$
 V_i: $[[laugh]]^s = \{x \mid x \text{ laughs in } s\}, \dots$
 V_t: $[[save]]^s = \{\langle x, y \rangle \mid x \text{ saves } y \text{ in } s\}, \dots$
 A_i: $[[brave]]^s = \{x \mid x \text{ is brave in } s\}, \dots$
 A_t: $[[afraid]]^s = \{\langle x, y \rangle \mid x \text{ is afraid of } y \text{ in } s\}, \dots$
 P_i: $[[out]]^s = \{\langle x, y \rangle \mid x \text{ is out in } s\}, \dots$
 P_t: $[[behind]]^s = \{\langle x, y \rangle \mid x \text{ is behind } y \text{ in } s\}, \dots$
 Conj: $[[and]]^s = \cap, [[or]]^s = \cup$ Neg: $[[not]]^s = '$
 T: *be* D_c: *a*

Note: The following are semantically vacuous: Main V *be*; the P *of*; the D *a*.

(b) *Lexical rules:*

Existential object drop (eod).

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

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

Reflexive object drop (refl).

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

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

Passive (pass).

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

(ii) Syntactic rules

(a) *Phrase Structure rules:*

- S → DP (T) VP
 DP → D NP
 PrN
 NP → N_i
 N_t PP
 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, Carla, Alec, Mexico...*

N_i → *student, ...* N_t → *representative...*

V_i → *laugh, ...* V_t → *save, ...*

A_i → *brave...* A_t → *afraid, ...*

P_i → *around, out, ...* P_t → *behind, in...*

Neg → *not* V_c → *be*

T → *be* D_c → *a*

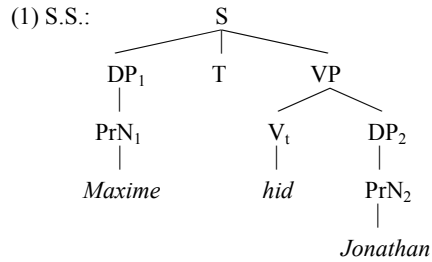
(b) *Transformations:*

V-to-T Movement: Raise main verb *be* to T, if T is empty.

(iii) Semantic rules of composition. For any situation s ,

- (a) $\llbracket [{}_S \text{ DP T VP}] \rrbracket^s = 1$ iff $\llbracket \text{DP} \rrbracket^s \in \llbracket \text{VP} \rrbracket^s$.
- (b) If α is a non-branching node whose daughter node is β , $\llbracket \alpha \rrbracket^s = \llbracket \beta \rrbracket^s$.
- (c) If α is a terminal node, $\llbracket \alpha \rrbracket^s$ is specified in the lexicon.
- (d) $\llbracket [{}_{\text{XP}_1} \text{ XP}_2 \text{ Conj XP}_3] \rrbracket^s = \llbracket \text{XP}_2 \rrbracket^s \llbracket \text{Conj} \rrbracket^s \llbracket \text{XP}_3 \rrbracket^s$.
- (e) $\llbracket [{}_{\text{XP}_1} \text{ Neg XP}_2] \rrbracket^s = (\llbracket \text{XP}_2 \rrbracket^s) \llbracket \text{Neg} \rrbracket^s$.
- (f) $\llbracket [{}_{\text{Y}_P} \text{ Y}_t \text{ ZP}] \rrbracket^s = \{x \mid \langle x, \llbracket \text{ZP} \rrbracket^s \rangle \in \llbracket \text{Y}_t \rrbracket^s\}$.

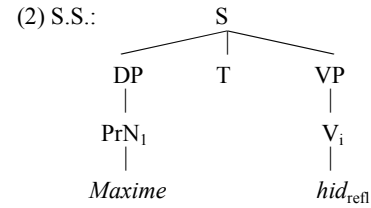
2. Example derivations



For any s , $\llbracket \text{S} \rrbracket^s = 1$ iff

- $\llbracket \text{DP}_1 \rrbracket^s \in \llbracket \text{VP} \rrbracket^s$ by (a)
- $\llbracket \text{PrN}_1 \rrbracket^s \in \llbracket \text{VP} \rrbracket^s$ by (b)
- $\llbracket \text{M} \rrbracket^s \in \llbracket \text{VP} \rrbracket^s$ by (b)
- $\text{M} \in \llbracket \text{VP} \rrbracket^s$ by (c)
- $\text{M} \in \{x \mid \langle x, \llbracket \text{DP}_2 \rrbracket^s \rangle \in \llbracket \text{V}_t \rrbracket^s\}$ by (f)
- $\text{M} \in \{x \mid \langle x, \llbracket \text{PrN}_2 \rrbracket^s \rangle \in \llbracket \text{V}_t \rrbracket^s\}$ by (b)
- $\text{M} \in \{x \mid \langle x, \llbracket \text{J} \rrbracket^s \rangle \in \llbracket \text{V}_t \rrbracket^s\}$ by (b)

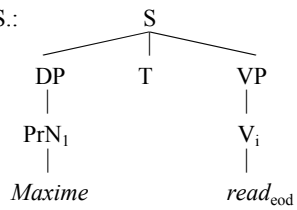
- $\text{M} \in \{x \mid \langle x, \text{J} \rangle \in \llbracket \text{V}_t \rrbracket^s\}$ by (c)
- $\text{M} \in \{x \mid \langle x, \text{J} \rangle \in \llbracket \text{hid} \rrbracket^s\}$ by (b)
- $\text{M} \in \{x \mid \langle x, \text{J} \rangle \in \{\langle y, z \rangle \mid y \text{ hid } z \text{ in } s\}\}$ by (c)
- $\text{M} \in \{x \mid x \text{ hid } \text{J in } s\}$ by def. \in
- $\text{M hid J in } s$ by def. \in



For any s , $\llbracket \text{S} \rrbracket^s = 1$ iff

- $\llbracket \text{DP}_1 \rrbracket^s \in \llbracket \text{VP} \rrbracket^s$ by (a)
- $\llbracket \text{PrN}_1 \rrbracket^s \in \llbracket \text{VP} \rrbracket^s$ by (b)
- $\llbracket \text{M} \rrbracket^s \in \llbracket \text{VP} \rrbracket^s$ by (b)
- $\text{M} \in \llbracket \text{VP} \rrbracket^s$ by (c)
- $\text{M} \in \llbracket \text{V}_i \rrbracket^s$ by (b)
- $\text{M} \in \llbracket \text{hid}_{\text{refl}} \rrbracket^s$ by (b)
- $\text{M} \in \{x \mid \langle x, x \rangle \in \llbracket \text{hid} \rrbracket^s\}$ by (c)
- $\text{M} \in \{x \mid \langle x, x \rangle \in \{\langle y, z \rangle \mid y \text{ hid } z \text{ in } s\}\}$ by (c)
- $\text{M} \in \{x \mid x \text{ hid } x \text{ in } s\}$ by def. \in
- $\text{M hid M in } s$ by def. \in

(3) S.S.:



For any s , $[[S]]^s = 1$ iff

$[[DP_1]]^s \in [[VP]]^s$

$[[PrN_1]]^s \in [[VP]]^s$

$[[M]]^s \in [[VP]]^s$

$M \in [[VP]]^s$

$M \in [[V_i]]^s$

$M \in [[read_{eod}]]^s$

$M \in \{x \mid \exists y \langle x, y \rangle \in [[read]]^s\}$

$M \in \{x \mid \exists y \langle x, y \rangle \in \{\langle z, k \rangle \mid z \text{ read } k \text{ in } s\}\}$

$M \in \{x \mid \exists y [x \text{ read } y \text{ in } s]\}$

$\exists y [M \text{ read } y \text{ in } s]$

by (a)

by (b)

by (b)

by (c)

by (b)

by (b)

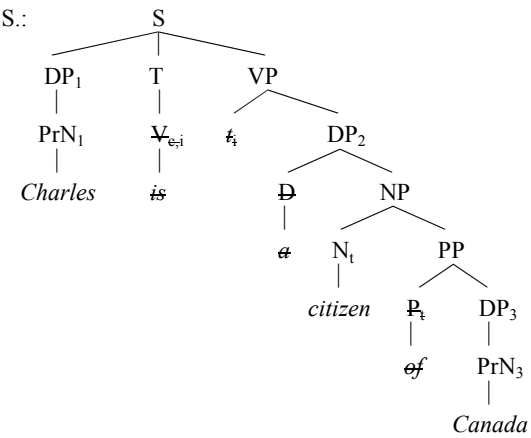
by (c)

by (c)

by def. \in

by def. \in

(4) S.S.:



For any s , $[[S]]^s = 1$ iff

$[[DP_1]]^s \in [[VP]]^s$

$[[PrN_1]]^s \in [[VP]]^s$

$[[C]]^s \in [[VP]]^s$

$C \in [[VP]]^s$

$C \in [[DP_2]]^s$

$C \in [[NP]]^s$

$C \in \{x \mid \langle x, [[PP]]^s \rangle \in [[citizen]]^s\}$

$C \in \{x \mid \langle x, [[DP_3]]^s \rangle \in [[citizen]]^s\}$

$C \in \{x \mid \langle x, [[PrN_3]]^s \rangle \in [[citizen]]^s\}$

$C \in \{x \mid \langle x, [[Canada]]^s \rangle \in [[citizen]]^s\}$

$C \in \{x \mid \langle x, \text{Canada} \rangle \in [[citizen]]^s\}$

$C \in \{x \mid \langle x, \text{Canada} \rangle \in \{\langle y, z \rangle \mid y \text{ is a citizen of } z \text{ in } s\}\}$

$C \in \{x \mid x \text{ is a citizen of Canada in } s\}$

$C \text{ is a citizen of Canada in } s$

by (a)

by (b)

by (b)

by (c)

by (b)

by (b)

by (f)

by (b)

by (b)

by (b)

by (c)

by (c)

by def. \in

by def. \in