Lgcs 106, Semantics. Lecture Notes. Wed 2 Feb 2011.

1. Current Class Grammar, as of the end of class Wed (2/2)

New additions are in **boldface**.

(i) Inventory of denotations. Let D be the set of all individuals that exist in the actual world. Possible denotations are:

Elements of D, the set of actual individuals.
Elements of {0,1}, the set of truth-values.
Subsets of D.
Set-theoretic intersection, union, complementation.

(ii) Lexicon

N:	⟦*Jeremy*⟧ = Jeremy, ⟦*Arianna*⟧ = Arianna, …
V:	⟦*sit*⟧ = {*x* | sit(*x*)}, ⟦*laugh*⟧ = {*x* | laugh(*x*)}, …
A:	⟦*ecstatic*⟧ = {*x* | ecstatic(*x*)}, ⟦*kind*⟧ = {*x* | kind(*x*)}, …
N_{pred}:	⟦*student*⟧ = {*x* | student(*x*)}, ⟦*astronaut*⟧ = {*x* | astronaut(*x*)}, …
P:	⟦*around*⟧ = {*x* | around(*x*)}, ⟦*out*⟧ = {*x* | out(*x*)}, …
T:	*be* (We neglect for now the semantic contribution of tense.)
Conj:	**⟦*and*⟧ = ∩, ⟦*or*⟧ = ∪**
Neg:	**⟦*not*⟧ = '**

(iii) Syntax

TP → NP T’	T’ → T VP	NP → N	
VP → V	VP → V AP	VP → V NP_{pred}	**VP → Neg VP**
AP → A	NP_{pred} → N_{pred}		

XP → XP Conj XP, where X ∈ {N_{pred}, V, A, P}

N → *Jeremy*, *Arianna*, …	V → *sit*, *laugh*, …
A → *ecstatic*, *kind*, …	N_{pred} → *student*, *astronaut*, …
P → *around*, *out*, …	T → *be*, *have*
Conj → *and*, *or*	**Neg → *not***

(iv) Semantic rules of composition

(a) If α has the form $[_{TP}$ NP T’], ⟦α⟧ = 1 iff ⟦NP⟧ ∈ ⟦T’⟧.

(b) If α is a non-branching node whose daughter node is β, then ⟦α⟧ = ⟦β⟧.

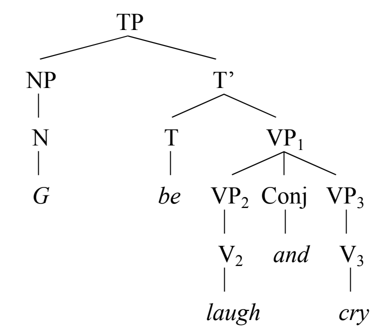
(c) If α is a terminal node, then ⟦α⟧ is specified in the lexicon.

(d) If α has the form $[_{VP1}$ VP_2 Conj VP_3], ⟦α⟧ = ⟦VP_2⟧⟦Conj⟧⟦VP_3⟧.

(e) If α has the form $[_{VP1}$ Neg VP_2], ⟦α⟧ = ⟦VP_2⟧⟦Neg⟧.

2. Example derivation of truth-conditions

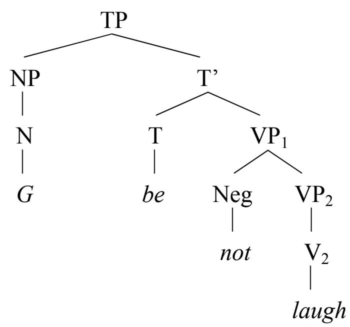
(1)



⟦TP⟧ = 1 iff

⟦NP⟧ ∈ ⟦T’⟧	(a)
G ∈ ⟦T’⟧	(b)x2, (c)
G ∈ ⟦VP_1⟧	(b)
G ∈ ⟦VP_2⟧⟦Conj⟧⟦VP_3⟧	(d)
G ∈ ⟦V_2⟧⟦Conj⟧⟦V_3⟧	(b)x2
G ∈ ⟦*laugh*⟧⟦*and*⟧⟦*cry*⟧	(b)x3
G ∈ ({x | laugh(x)} ∩ {x | cry(x)})	(c)x3

(2)



⟦TP⟧ = 1 iff

$[\![NP]\!] \in [\![T']\!]$	(a)
$G \in [\![T']\!]$	(b)x2, (c)
$G \in [\![VP_1]\!]$	(b)
$G \in [\![VP_2]\!][\![Neg]\!]$	(e)
$G \in [\![\textit{laugh}]\!][\![\textit{not}]\!]$	(b)x2
$G \in \{x \mid laugh(x)\}'$	(c)x2