Lgcs 106, Semantics. Class Grammar. 11 Feb 2010.

1. Current Grammar.

(i) *Inventory of denotations*

Let D be the set of all individuals that exist in the real world. Possible denotations are:

Elements of D, the set of actual individuals.
Elements of {0,1}, the set of truth-values.
Subsets of D.
Operations on sets: Intersection (∩), Union (∪), Complement (').

(ii) *Lexicon*

N: $[\![\textit{Emery}]\!]^s$ = Emery, $[\![\textit{Blendia}]\!]^s$ = Blendia, …
V: $[\![\textit{smile}]\!]^s = \{x \mid \text{smile}(x)(s)\}$, $[\![\textit{laugh}]\!]^s = \{x \mid \text{laugh}(x)(s)\}$
be_1 (vacuous)
V_t: $[\![\textit{smile}]\!]^s = \{x \mid \text{smile}(x)(s)\}$, $[\![\textit{laugh}]\!]^s = \{x \mid \text{laugh}(x)(s)\}$
T: be_2 (We will neglect for now the semantic contribution of the T node.)
A: $[\![\textit{nice}]\!]^s = \{x \mid \text{nice}(x)(s)\}$, $[\![\textit{weird}]\!]^s = \{x \mid \text{weird}(x)(s)\}$, …
N: $[\![\textit{student}]\!]^s = \{x \mid \text{student}(x)(s)\}$, $[\![\textit{cat}]\!]^s = \{x \mid \text{cat}(x)(s)\}$…
D: *a* (vacuous)
Conj: $[\![\textit{and}]\!]^v = \cap$, $[\![\textit{or}]\!]^v = \cup$
Neg: $[\![\textit{not}]\!]^v = '$

(iii) *Syntactic rules*

S → NP (T) VP
NP → (D) N
VP → V ({NP/AP/PP})
VP → V_t NP
AP → A
XP → Neg XP, where X ∈ $\{N_{pred}, V, A, P\}$
XP → XP Conj XP, where X ∈ $\{N_{pred}, V, A, P\}$

(iv) *Semantic rules of composition*

For any situation *s*,

(a) If α has the form $[_S$ NP (T) VP], $[\![\alpha]\!]^s = 1$ iff $[\![\text{NP}]\!]^s \in [\![\text{VP}]\!]^s$.

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

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

(d) If α has the form $[_{XP1}$ XP_2 Conj XP_3], $[\![\alpha]\!]^s = [\![XP_2]\!]^s$ $[\![\text{Conj}]\!]^s [\![XP_3]\!]^s$.

(e) If α has the form $[_{XP1}$ Neg XP_2], $[\![\alpha]\!]^s = [\![XP_2]\!]^s$ $[\![\text{Neg}]\!]$.

(f) If α has the form $[_{VP}$ V_t NP], $[\![\alpha]\!]^s = \{x \mid$