Ling 320 Semantics. Lecture Notes. 25 Oct 2007.

(i) Lexicon

(a) *Lexical items:*

PrN: $[\![Jonathan]\!]^s$ = Jonathan, …

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

N_t: $[\![fan]\!]^s = \{<x, y> \mid x \text{ is a fan of } y \text{ in } s\}$, …

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

V_t: $[\![save]\!]^s = \{<x, y> \mid x \text{ saves } y \text{ in } s\}$, …

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

A_t: $[\![fond]\!]^s = \{<x, y> \mid x \text{ is fond of y in } s\}$, …

P_i: $[\![out]\!]^s = \{<x, y> \mid x \text{ is out in } s\}$, …

P_t: $[\![behind]\!]^s = \{<x, y> \mid x \text{ is behind } y \text{ in } s\}$, …

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

D: $[\![every]\!]^s = \{<A, B> \mid A \subseteq B\}$, $[\![some]\!]^s = \{<A, B> \mid A \cap B \neq \emptyset\}$

$[\![no]\!]^s = \{<A, B> \mid A \cap B = \emptyset\}$

D_c: *a* T: *be*

<u>Note</u>: 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, $[\![V_{eod}]\!]^s = \{x \mid \exists y[<x,y> \in [\![V]\!]^s]\}$.
Condition: Only applies to certain verbs in the lexicon: *eat*, *bake*, *read*…

Reflexive object drop (refl).
If V is a relation, $[\![V_{refl}]\!]^s = \{x \mid <x,x> \in [\![V]\!]^s\}$.
Condition: Only applies to certain verbs in the lexicon: *shave*, *hid*, *undress*…

Passive (*pass*).
If V is a relation, $[\![V_{pass}]\!]^s = \{x \mid \exists y[<y,x> \in [\![V]\!]^s]\}$.

(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*, *Alec*, …

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*	
D → *every*, *some*, *no*	D_c → *a*	T → *be*

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

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

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

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

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

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

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

(h) $[\![[_{DP} \text{ PrN}]]\!]^s = \{A \mid [\![\text{PrN}]\!]^s \in A\}$.

2. References on Generalized Quantifiers

Barwise, John and Robin Cooper. 1981. Generalized Quantifiers and Natural Language. *Linguistics and Philosophy* 4, pp. 159-219.

Lewis, David. 1972. General Semantics. In D. Davidson and G. Harman (Eds.) *Semantics of Natural Languages*. Dordrecht: Reidel. ppp. 169-218.

Montague, Richard. 1974. Formal philosophy, selected papers of Richard Montague. New Haven: University Press. Edited by R. Thomason.

Mostowski, A. 1957. On a Generalization of Quantifiers. *Fundamenta Mathematica*, 44, pp. 12-36.

Stanford Encyclopedia of Philosophy. http://plato.stanford.edu/entries/generalized-quantifers/

3. Subclasses of Predicates and Plurality.

Last class, we looked at two subclasses of predicates that we would ultimately want our grammar to account for. Roughly speaking, individual-level predicates are stable, while stage-level predicates are transient.

The main insight of the solution we considered was to say that different predicates are predicated of different *sorts* of things. Specifically, individual-level predicates predicate something of an individual, while stage-level predicates predicate something of a *stage* of an individual:

(1) $[\![\textit{intelligent}]\!] = \{x \mid x \text{ is intelligent}\}$ *I-level*

(2) $[\![\textit{naked}]\!] = \{x \mid \text{there is a stage of } x \text{ that is naked}\}$ *S-level*

This gives us a contrast in the interpretation of the following examples:

(3) Kevin is handsome/intelligent/from Greenland.
(4) Kevin is drunk/naked/in the cruiser.

A third type of predicate appears to predicate something of a *kind*. Assuming that bare plurals such as *dinosaurs* denote kinds, we get examples like:

(5) Dinosaurs are extinct/widespread/rare.

(6) $[\![\textit{extinct}]\!] = \{k \mid k \text{ is extinct}\}$

When stage-level predicates are predicated of a kind, we get an interpretation such that some stage of the kind satisfies the predicate:

(7) Dinosaurs were drunk/naked/in the cruiser.

When individual-level predicates are predicated of a kind, we get an interpretation such that individual instantiations generally satisfy the predicate:

(8) Dinosaurs were intelligent/handsome/from Greenland.