Semantics and Pragmatics 1 Fall 2011
Assignment 3 Due October 18

The Theta Criterion
(Or, How I Learned to Stop Worrying about Syntax and Love Semantics)

The Theta Criterion (or some equivalent constraint) is an important part of many syntactic theories, since it governs the linking between semantic roles and syntactic positions. A common formulation of the Theta Criterion is the one in (1).[1]

(1) *Theta Criterion*
Each argument bears one and only one θ-role, and each θ-role is assigned to one and only one argument.

Some questions that are not always answered in a syntax class, however, are the following: What is an argument? Where are θ-roles? How are θ-roles assigned? The semantic system we have been developing suggests the type-theoretic definitions of arguments and θ-role assigners in (2).

(2) a. An *argument* $=_{def}$ a constituent whose denotation is type e.
b. A *θ-role assigner* $=_{def}$ a constituent whose denotation is type $\langle e, \alpha \rangle$, where α is an arbitrary type.

Using these definitions, the Theta Criterion can be restated as in (3).

(3) *Theta Criterion* (revised)
Each argument must be the sister of a θ-assigner, and each θ-assigner must be the sister of an argument.

A. Does the (revised) Theta Criterion follow from the system for semantic interpretation that we have developed so far, if we assume that NPs and verbs have meanings like those you proposed in Part A of Section 2 of Assignment 2? (I.e., NPs are type e; verbs are type $\langle e, t \rangle$, $\langle e, et \rangle$, etc.), AND we assume that *and* and *not* (forget about *without* for now!!) have denotations like the corresponding logical connectives, as in (4a-b)?[2]

(4) a. $[\![and]\!] = [\lambda p_t [\lambda q_t . p = 1 \ and \ q = 1]]$
b. $[\![not]\!] = [\lambda p_t . p = 0]$

In other words, given these assumptions about meaning, *do we need to state the Theta Criterion as an independent principle of syntax, or is it simply a descriptive*

[1] If you've never heard of the Theta Criterion, don't worry: that shouldn't matter for the purposes of this assignment. The real question here is whether, given our assumptions about how semantic composition works, it is necessary to assume an independent *syntactic* constraint on the distribution of argument expressions of the sort given in (3). It doesn't really matter what we call this constraint.

[2] If (4b) is the denotation of *not*, then our syntactic assumptions in the previous assignment must be incorrect. Ignore this fact for the moment.

statement of one of the consequences of the semantic system we have adopted? Justify your answer, making sure that your argumentation is clear and complete. Illustrate and explain crucial points using concrete examples and derivations.

B. Would your answer to Part A change if we adopt the additional denotations for *and* and *not* that we hypothesized based on the data and syntactic assumptions in Part A of Assignment 2, which are shown in (5)?

(5) a. $[\![and]\!] = [\lambda f_{\langle e,t\rangle}[\lambda g_{\langle e,t\rangle}[\lambda x_e.g(x) = 1 \ and \ f(x) = 1]]]$
b. $[\![not]\!] = [\lambda f_{\langle e,t\rangle}[\lambda x_e.f(x) = 0]]$

In other words, if these modified assumptions about lexical denotations are correct, what can (if anything) we conclude about the status of the Theta Criterion?

C. Are there restrictions on interpretability that follow from our system and do not follow from the (revised) Theta Criterion?

D. Elaborate on the last paragraph of ch. 3, sec. 4, of Heim & Kratzer (top of p. 53), by spelling out concrete (if perhaps hypothetical) examples of the syntactic structures and evidence that the authors are alluding to.