Linguistics 661, Issues in Semantics
Alexander Williams, Exercise
Due April 10

1. For each of the following four sentences, demonstrate whether the predicate warm, or hot, is in a monotone increasing context, or in a monotone decreasing context, globally.

   (1) John is certain that it’s warm.
   (2) John is not certain that it’s hot.
   (3) No person is not certain that it’s warm.
   (4) Every person who is not certain that it’s warm is crazy.

In case it should be helpful, assume that the extension of hot is necessarily a subset of the extension of warm.

2. Now calculate the semantic values for each node in the LFs of the same four sentences, using the semantics from Chierchia 2002, as rewritten by me in the lecture notes. Specifically, for each node \( \alpha \) in the LF, work from the bottom up to calculate:

   (a) The Plain Value: \( \llbracket \alpha \rrbracket \)
   (b) The Alternative Set: \( \text{Alt}[\alpha] \)
   (c) The Strong Value: \( \text{StrongValue}[\alpha] \)

As the basis for your calculations, use the (simplified) LFs and the lexical information on the back of this page. Assume that no lexical items other than warm and every are associated with a scale (and thus have nontrivial lexical alternatives). Continue to assume that the hot things are a subset of the warm things.

To calculate the Plain Values of the phrases, use the combinatory rules from Heim and Kratzer 1998. However, please use the following simplified rule for interpreting a node with an index \( n \) as a daughter. This will make it easier to do the derivation from the bottom up, and will allow us to avoid reference to assignment functions.

\[
\llbracket \left[ \left[ n \alpha_{(t)} \right] \right] \rrbracket = \lambda x_n.[\alpha]
\]

To calculate the Alternative Sets and Strong Values, use the rules from Chierchia 2002, but supplement these with adapted versions of the general rules from Heim and Kratzer when necessary. For example, use an appropriate adaptation of the rule for interpreting an index \( n \):

\[
\text{StrongValue( } \left[ n \alpha_{(t)} \right] \text{ ) } = \{ \lambda x_n.A \ | \ A \in \text{StrongValue}(\alpha) \ \}
\]

\[
\text{Alt( } \left[ n \alpha_{(t)} \right] \text{ ) } = \{ \lambda x_n.A \ | \ A \in \text{Alt}(\alpha) \ \}
\]
If you encounter any purely technical problems, don’t panic: be confident, and make a technical adjustment or an appropriate simplification. Just make sure to tell me what adjustments you made. Keep in mind, my main interest is that you understand the ideas that Chierchia’s system is intended to express.

1. Lexical Plain Values

(a) \([\text{John}] = j_{(e)}\)
(b) \([\text{certain}] = \lambda \phi(t) \lambda y_{(e)}. \text{certain}(y, \phi)\)
(c) \([\text{it}_n] = x_n\)
(d) \([t_n] = x_n\)
(e) \([\text{warm}] = \lambda y_{(e)}. \text{warm}(y)\)
(f) \([\text{hot}] = \lambda y_{(e)}. \text{hot}(y)\)
(g) \([\text{person}] = \lambda y_{(e)}. \text{person}(y)\)
(h) \([\text{crazy}] = \lambda y_{(e)}. \text{crazy}(y)\)
(i) \([\text{not}] = \lambda \phi(t). \neg \phi\)
(j) \([\text{no}] = \lambda P_{(e,t)} \lambda Q_{(e,t)} \neg \exists z [P(z) \land Q(z)]\)
(k) \([\text{every}] = \lambda P_{(e,t)} \lambda Q_{(e,t)} \forall z [P(z) \rightarrow Q(z)]\)

2. Lexical alternatives

(a) Alt(warm) = \{hot, warm\}
(b) Alt(every) = \{every, some\}

3. Simplified LFs