Foundations of Semantics and Pragmatics - Tutorial 2: Model-Theoretic Semantics

1. Types

A. Give the types corresponding to the following descriptions:
   1. functions from entities to functions from truth values to truth values
   2. functions from entities to functions from entities to functions from entities to truth values
   3. functions from functions from entities to truth values to entities
   4. functions from functions from entities to truth values to functions from functions from entities to truth values to truth values

B. Give descriptions for the following types. To use less parentheses we are using a common convention about writing down types, i.e. that grouping of types associates to the right. This means that a type like $e(tt)$ will be written as $ett$, while the parentheses in $(et)e$ cannot be removed. As another example consider $(e(e(et)))t$ which will be written as $(eeet)t$.
   1. $eet$
   2. $(et)e$
   3. $(et)(te)$
   4. $(et)(ee)t$
   5. $t(te)tt$

C. For each of the following pairs of types say if function application can be applied and if so determine the type of the application:
   1. $eet : (eet)et$
   2. $(eet)et : e$
   3. $(e(et)t)tt : e$
   4. $(ee)et : e$
   5. $(et)et : ((et)et)eeet$
2 Domains

A Let $D_e = \{a, b\}$. Write down all the members of $D_{ee}$ and $D_{(ee)\ell}$.

B Write down the characteristic function for the following denotations, given as a set or relation. You may write the characteristic function using $a \rightarrow b$ instead of $\langle a, b \rangle$, so for example the characteristic function of the set $B = \{\text{barack}\}$ is written as:

$$\{ \text{barack} \rightarrow 1, \text{george} \rightarrow 0, \text{bill} \rightarrow 0 \}$$

Take $D_e = \{\text{barack, george, bill}\}$

(a) Denotation of the verb jump, $J = \{\text{barack, bill}\}$

(b) Denotation of the verb help,

$$H = \{ \langle \text{barack, barack} \rangle, \langle \text{barack, bill} \rangle, \langle \text{george, bill} \rangle, \langle \text{bill, barack} \rangle, \langle \text{bill, bill} \rangle \}$$

3 General Question

Assume that the expression it is not the case that in the following sentence is a constituent: It is not the case that Obama lost to Romney

1. What type would you give it is not the case that? And which denotation?
2. Draw the sentence structure using a binary tree decorating it also with the denotations of each constituent.
3. What would be an equivalent sentence?
4 Types

In figure 1 below we have left three types in the structure unspecified as X, Y and Z. Give three possibilities of assigning types to X, Y and Z so that function application can go on safely.

Figure 1: fill in X, Y and Z