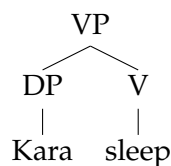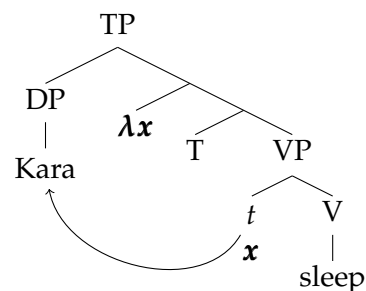# Problem Set 6

Due March 13 before class. Submit on IVLE > Files > Student Submission > PS6.

So far in class we have assumed that subjects are generated high in sentential syntax, as a daughter of S or specifier of TP. Syntactic work of the 80's and 90's motivated the idea that subjects actually are generated lower, for example in Spec,VP, and then move up to Spec,TP.[1] Here's what that might look like:

Step 1: Build VP with subject in Spec,VP   Step 2: Add T, move subject DP to Spec,TP

It turns out that adopting this **VP-internal subject hypothesis**—and *movement* more generally—allows us to simplify our semantics in many situations, as we will see in this problem set.

1. **VP-internal subject:** Compute the truth conditions for the tree for "Kara sleeps" in Step 2 above. Remember that for each node in the tree, you need to give (a) its semantic type, (b) its denotation, and (c) the rule that you used (TN, FA, PA, etc.). (Let T be the identity function of appropriate $\langle ?, ? \rangle$ type, $[\![T]\!] = $ Id.) Show your work.

2. **Negation, revisited:** In Handout 3, we looked at sentences like "Kara does not sleep" and decided that, in addition to a basic $\langle t, t \rangle$ meaning like $[\![\text{not}]\!] = (\lambda v_t . v = 0)$, we need to give *not* an additional $\langle \langle e, t \rangle, \langle e, t \rangle \rangle$ meaning, $[\![\text{not}]\!] = (\lambda P_{\langle e,t \rangle} . \lambda x_e . P(x) = 0)$.

   Show that we can now compute "Kara does not sleep" using the simpler, type $\langle t, t \rangle$ meaning for negation, by adopting the VP-internal subject hypothesis.

3. **Passive, revisited:** In PS4, you wrote a denotation for the English passive suffix *-en* that transformed the transitive verb *bite* into a transitive verb *bitten*, which takes its arguments in the reverse order. This *-en* did a lot of semantic work (reordering the arguments) and a little syntactic work: requiring the copula (*is bitten*) and requiring its non-subject argument to be introduced by *by*.

   A more common syntactic treatment for the passive involves moving the complement of the verb (underlying object) to subject position (Spec,TP):

---

[1]"Spec,XP" refers to the specifier of XP. If you're curious, see McCloskey (1997) (on IVLE) for a review of arguments for this "VP-internal subject hypothesis."
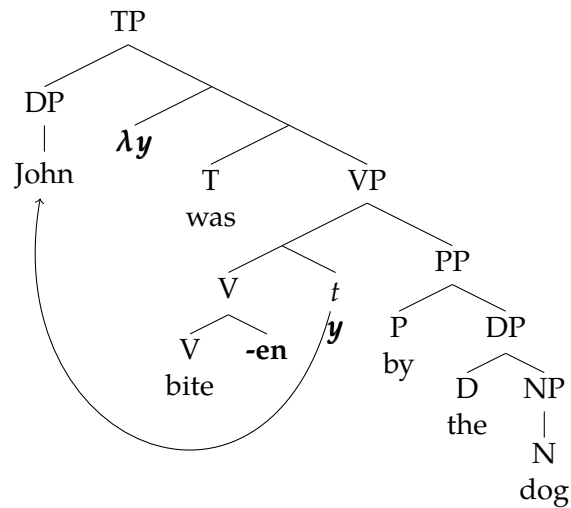
Compute truth conditions for this passive structure, showing your work. Again, assume ⟦by⟧ = Id. Along the way, you will have to answer the following questions:

(a) What is the copula ⟦was⟧ here?[2] (Hint: start by figuring out its type.)

(b) What is ⟦-en⟧ here? What work does *-en* do here, semantically and syntactically?

References

McCloskey, James. 1997. Subjecthood and subject positions. In *Elements of grammar*, ed. Liliane Haegeman, 197–235. Kluwer Academic Publishers.

---

[2]As always, ignore the contribution of tense.