Problem Set 9

Due November 16, by 23:59. Submit PDF on Luminus > Files > Student Submission > PS9.

1. **Two definites:** from *IFS* p. 273:

   Both *The king of France is bald* and *The opera by Mozart is boring* have an undefined value (#) relative to the actual world, but for different reasons. Explain the difference.

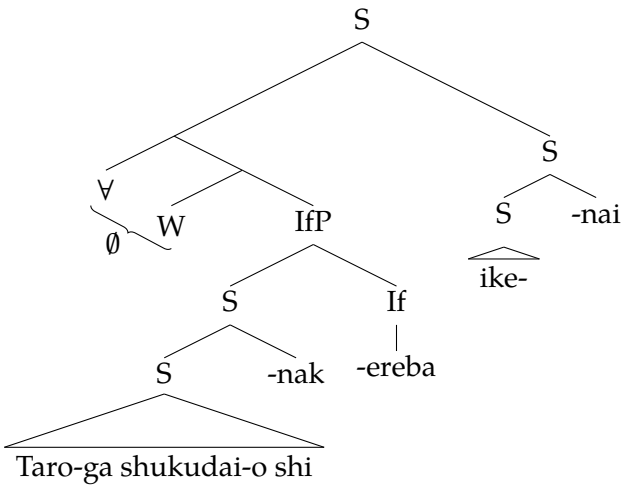
   (You may have to learn relevant facts about France and Mozart first.)

2. **Deontic necessity in Japanese:**

   Japanese does not have a modal verb/auxiliary for deontic necessity, like English *must* or Mandarin *bìxū*. Instead, the complex expression *nak-ereba ike-nai* is used.

   (1) Taro-ga shukudai-o shi-**nak-ereba ike-nai**.
   Taro-GA homework-o do-not-if acceptable-not
   'Taro **must** do homework.'
   Literally: 'It's **not acceptable if** Taro **doesn't** do homework.'

   Use the tree here and lexicon below to compute ⟦(1)⟧. Show your work. Explain how this expression, *nak-ereba ike-nai*, works to communicate deontic necessity.



   Recall from Week 12 that ∀ with domain W (all worlds) is the unpronounced modal assumed for interpreting conditionals without a modal.

Lexicon:

- $[\![\text{Taro-ga shukudai-o shi}]\!]^w$ = Do(Taro, homework, w)
- $[\![\text{ike-}]\!]^w$ = Acceptable(w) i.e. things are acceptable in w
- $[\![\text{-nak/nai}]\!]$ = $(\lambda v_t \,.\, \neg v)$
- $[\![\text{-ereba}]\!]$ = $\lambda p_{\langle s,t\rangle} \,.\, \lambda q_{\langle s,t\rangle} \,.\, \lambda w_s \,.\, p(w) \wedge q(w)$
- $[\![\forall]\!]$ = $\lambda p_{\langle s,t\rangle} \,.\, \lambda q_{\langle s,t\rangle} \,.\, \forall w\, [p(w) \rightarrow q(w)]$
- $[\![\text{W}]\!]$ = $\lambda w_s \,.\, 1$