

23.3) a) i) shoots the duck well well well
has a nonzero probability as a VP

b) $P(\text{"is well well"})$ copula \rightarrow is

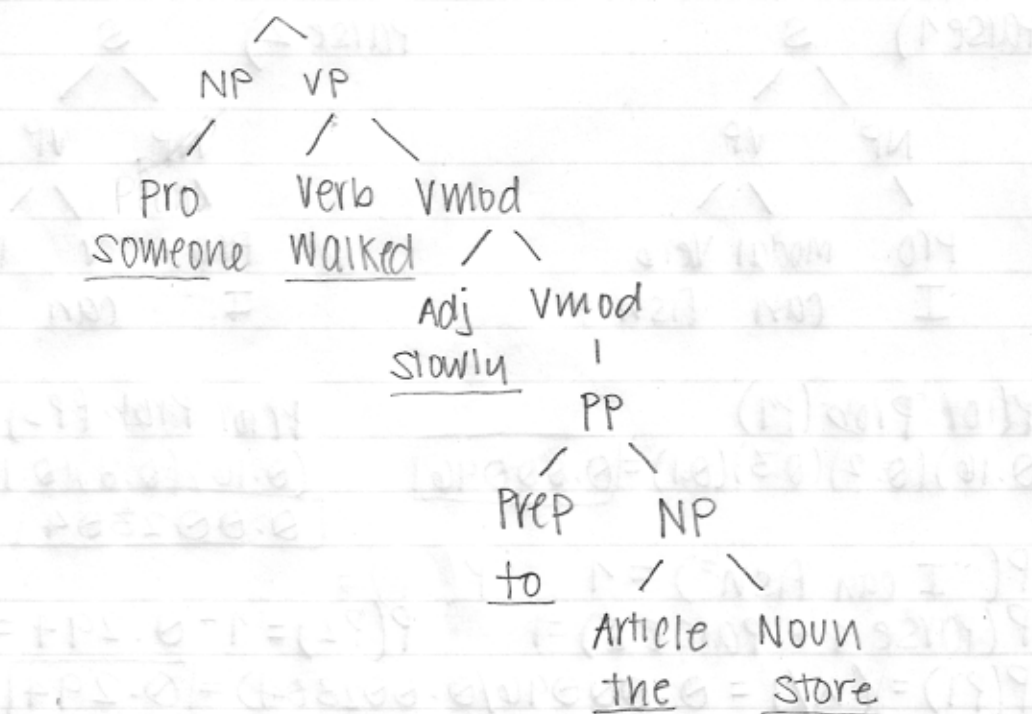
First parse = $(\text{VP} \rightarrow \text{VP Adverb}) \times (\text{VP} \rightarrow \text{VP Adj}) \times (\text{VP} \rightarrow \text{Verb}) \times (\text{Verb} \rightarrow \text{is}) \times (\text{Adj} \rightarrow \text{well}) \times (\text{Adv} \rightarrow \text{well})$
 $= (0.2) \times (0.2) \times (0.8) \times (0.5) \times (0.5) = \boxed{0.008}$
 VP \rightarrow copula Adj Adj \rightarrow well Adv \rightarrow well

Second parse = $(\text{VP} \rightarrow \text{VP Adj}) \times (\text{VP} \rightarrow \text{VP Adj}) \times (\text{VP} \rightarrow \text{Verb}) \times (\text{Verb} \rightarrow \text{is}) \times (\text{Adj} \rightarrow \text{well}) \times (\text{Adj} \rightarrow \text{well})$
 $= (0.2) \times (0.2) \times (0.1) \times (0.5) \times (0.5) \times (0.5) = \boxed{0.0005}$

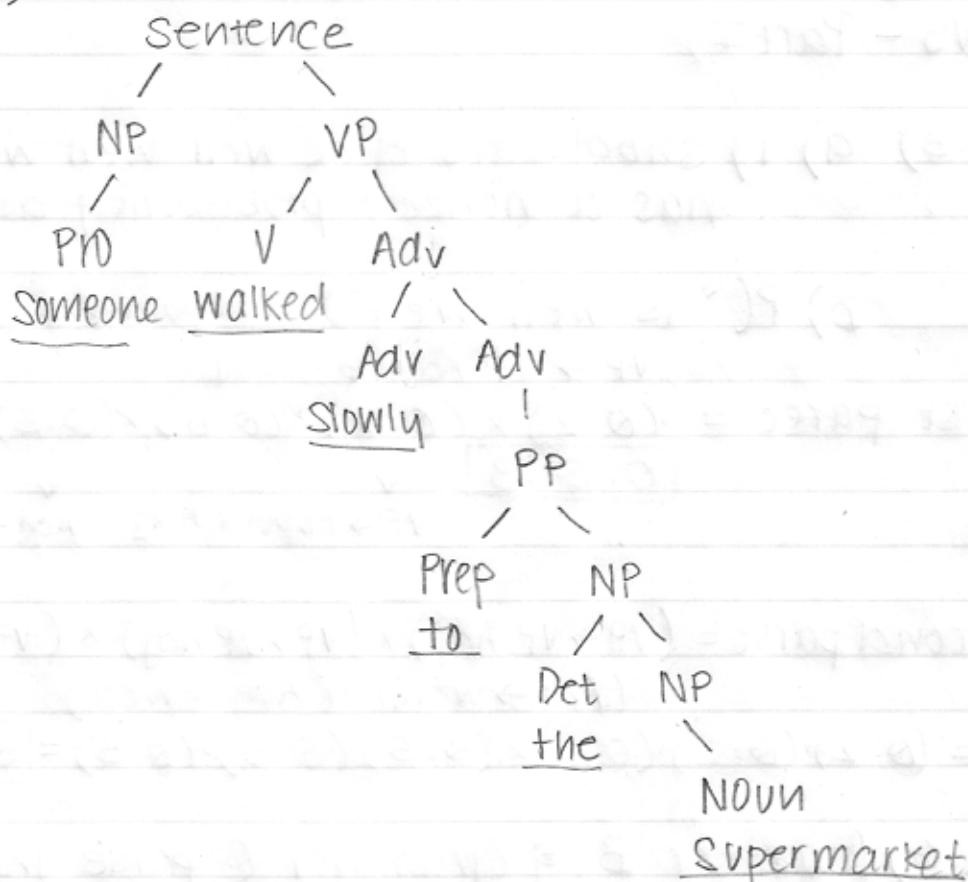
23.6) Grammar B & Grammar C parse the sentence

Grammar B)

Sentence

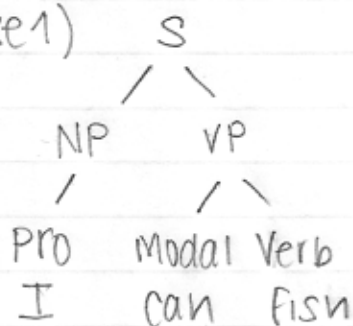


Grammar C)

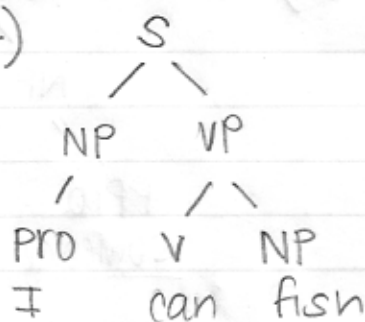


23.10) "I can fish" has two parses

Parse 1)



Parse 2)



Prior Prob (P1)

$$(0.16)(0.2)(0.3)(0.1) = \boxed{0.00096}$$

Prior Prob (P2)

$$(0.16)(0.8)(0.1)(0.6)(0.3) = \boxed{0.002304}$$

$$P(\text{"I can fish"}) = 1$$

$$P(\text{Parse 1} + \text{Parse 2}) = 1$$

$$P(P2) = 1 - 0.294 = \boxed{0.706}$$

$$P(P1) = (x/1 = 0.00096/0.002304) = \boxed{0.294}$$