Due Date: Tuesday 5/3, at the beginning of class.
Absolutely NO LATE WORK accepted!

Working Phrase Structure Rules

(0) $S \rightarrow NP \ VP$
   $VP \rightarrow V \ (NP) \ (NP) \ (AP) \ (PP^*)$
   $NP \rightarrow (Det) \ (AP^*) \ N \ (PP^*)$
   $NP \rightarrow \{ \ Name \mid Pro \}$
   $AP \rightarrow (Deg) \ A \ (PP^*)$
   $PP \rightarrow P \ NP$

1. PP Attachment Ambiguities

   (a) Draw trees for the following sentences, following the phrase structure rules in (0). If the sentence
       is ambiguous, for each possible meaning provide a tree and a clear paraphrase in words.

       (1) The man from Kentucky sold me an apple with a worm in it.
       (2) Some people in the back of the room looked rather uneasy about the decision.
       (3) We painted the ceiling of the room green.
       (4) I slapped the orangutan with my wristwatch.
       (5) They saw the old man with binoculars from the airplane.

   (b) How many trees do the phrase structure rules in (0) generate for the following sentences?
       Draw each of the generated trees. Does each tree correspond to a natural meaning of the
       sentence? If not, explain why not. Can the orangutan in (6) have the wristwatch?

       (6) I slapped the orangutan for fun with my wristwatch.
       (7) I slapped the orangutan with my wristwatch for fun.

2. Possessives (Extra Credit)

   Assume that as far as the syntax is concerned, a word like Zelda’s is actually a sequence of two
   words: Zelda and ’s. The word ’s belongs to a special word class “Poss”, and is the only member
   of this class.

   (a) Adjust the phrase structure rules in (0) to capture the following data. Explain your revisions
       explicitly, motivating them as much as you can, and illustrating with a few well-selected trees.

       (1) Each sister acted rather hostile. (5) They solved a problem.
       (2) Zelda’s sister acted rather hostile. (6) They solved Max’s problem.
       (3) *Zelda sister acted rather hostile. (7) *They solved Max problem.
       (4) *Each Zelda sister acted rather hostile. (8) *They solved a Max problem.
       (9) Jill’s hyper kitten hissed. (12) The snake’s eyes glittered.
       (10) *The Jill’s hyper kitten hissed. (13) *The snake’s the eyes glittered.
       (11) *Jill’s the hyper kitten hissed. (14) *The the snake’s eyes glittered.
       (15) The poisonous snake’s eyes glittered.

       (16) Wilma purchased a very uncomfortable chair.
       (17) Wilma purchased Joe’s very uncomfortable chair.
       (18) *Wilma purchased very Joe’s uncomfortable chair.
       (19) *Wilma purchased very uncomfortable Joe’s chair.
(20) No mother ordered pizza.
(21) No girl's mother ordered pizza.
(22) The young girl's mother ordered pizza.
(23) The young girl's middle-aged mother ordered pizza.
(24) The girl from Denmark's mother ordered pizza.

(b) Your rules should allow you to account automatically for the fact that hyper modifies kitten but not Jill in (9); poisonous modifies snake but not eyes in (19); young modifies girl but not mother in (23). Say how your rules do this. If your rules do not allow you to account for these facts, revise further until they do.

(c) Can your rules generate the following? If so, show how. If not, revise your rules so that they do generate this sentence. (If your revised rules turn out more complicated than your original rules, try a different revision.)

(25) Jill's daughter's hyper kittens are obnoxious.

(d) The following sentences are ambiguous. For each sentence, explain the distinct meanings with clear unambiguous paraphrases. Then pick one of the four sentences and draw a tree for each of its meanings, following your revision above. (If your revised rules don't account for these ambiguities, try a different revision.)

(26) The manager of the team's equipment is in the locker-room.
(27) The rumor about Tracy's origin was ridiculous.
(28) The son of Jim's mailman's doctor is a nice guy.
(29) The tour of the area's shortcomings disappointed the crowd.