HOMEWORK #5, due March 27.

Do three or four of the following. You may work in teams (identify your teams on your papers), but each person should write out the answer for themselves, being sure you understand it and asking me questions if you're not sure of something. Since the homework is not part of the assessment but is a big part of preparing for Test #2, it is really to your own advantage to struggle with this until you understand it. Feel free to write questions on your homework papers, to come see me, to e-mail me, etc.

I recommend that you do at least one of Part I and at least one of Part II, three or four in all.

Part I.
1. Write down a syntactic tree for the following sentence, and annotate each node with both the syntactic category and the appropriate semantic type. Then work out the compositional translation, and simplify it as much as you can using lambda-conversion.

   John loves Bill’s sister.

2. Do the same for: (a) Bill is a teacher of Mary’s. (b) A teacher of Mary’s arrived.
   Note carefully the different types for a teacher of Mary’s in the two sentences: the CNP teacher of Mary’s will be the same in each (consisting of a TCN teacher plus a postnominal genitive of Mary’s), but the types of a in the two NPs are different, and the types of the NPs are different.

3. (This one uses generalized quantifiers): Do the same for: Every friend of Mary’s sang.

Part II.

4. How many meanings, and of what types, can you detect for new in: new movie, new medicine, new movie star, new mother, new teacher, new car, new theater, new home, new job, new friend. [Note 1: new is simpler than old, since old is the antonym of young as well as of new. Note 2: not every language uses a translation-equivalent of new in the same range of meanings; for instance, what is called a new mother in English (namely a mother who has just given birth, especially if it’s the first time) is called a young mother in Russian, whether she is otherwise young or not. So if English is not your first language, just do your best with all of these, and if you wish, add comments on related uses of words like new in your native language.]

5. Consider the sentence A former teacher of Mary’s sings. (This is a simpler variant of the example done in part 4 of the handout.)
   Note that the CNP former teacher of Mary’s could in principle be given either of the two following structural parses: (Note: in this annotation I am using the terminology of categorial grammar to conveniently encode the semantic types together with the syntax. See the separate key to “syntactic category terminology”.)
(i) \([\text{former}_{\text{TCN}} \text{ teacher}_{\text{TCN}}] \text{ of Mary’s}_{\text{CN}}\)

(ii) \([\text{former}_{\text{CN}} \text{ teacher}_{\text{CN}} [\text{of Mary’s}_{\text{CN}}]]_{\text{CN}}\)

Work out a compositional interpretation of former teacher of Mary’s using one of these two analyses. Then work out the other one, and try to show that you get the same result either way.

6. With or without working out problem 4 above in full, try to figure out and explain why it is that former teacher of Mary’s gets the same interpretation on either parse, whereas former mansion of Mary’s, like Mary’s former mansion, has two different readings?