

Homework 2

L98: Introduction to Computational Semantics

Weiwei Sun and Simone Teufel

1 Question 1

Consider the following sentences:

- (1) a. Sandy threw the hay off the truck.
- b. Kim showed off his knowledge in the classroom.
- c. Kim showed Alex cacti in a garden off the highway.

Draw a phrase structure tree for these sentences, using a formalism like the one used in lectures (which is a simplified XBar grammar).)

Using your phrase structure trees, explain the different function of *off* in the two sentences. (200-300 words for the three explanations)

2 Question 2

Consider the following compound nouns:

- (2) a. hammer shark teeth
- b. hammer storage shed

For each compound noun, draw a phrase structure tree, and explain which factors were relevant in the semantic composition of the compound noun. You will receive points for meaningful composition descriptions that take the semantic properties of the parts into account, as opposed to shallow descriptions such as simple rephrasings. Are the composition styles you observe productive or idiosyncratic? (200 words)

3 Question 3

Consider the following pairs of phrases:

- (3) a. best-selling writer
- b. best-selling novel

- (4) a. prize-winning builder
- b. prize-winning house

I claim that there is a semantic difference between the two pairs. Explain what the difference is and how it comes about. Tip: Look carefully at the structure of the events concerned ("buying" and "writing"; "building" and "winning"). In your explanation, consider a) the selectional preferences of the associated verbs and b) the relevant FrameNet entries (which ones are these? What are the relevant semantic roles?). (200-300 words)

4 Question 4

Consider a world where the discourse referents are Sue, Emma, Kim, Ellen and Tim. Emma, Sue and Ellen are lazy. Tim, Emma and Ellen are lawyers. Sue is vain. Ellen gives cake to Tim. Emma kisses Sue. Sue and Kim snore.

Write down 2 statements that are true in this world, and 2 that are false. Each statement must have more than 5 words. You will get more points if these statements are maximally different from each other.

Using λ -calculus, derive a truth condition for your sentences to show that they have the truth condition you claim they have. Provide phrase structure trees for your sentences and start your analysis from these.

Give appropriate lexical entries (in λ -calculus) for "snore", "give" and "kiss".

Bonus points: List a non-trivial statement that cannot receive a truth value in this world model, and argue why this is so.