

Homework 1
11-721: Grammars and Lexicons, Fall 2007
Due Monday, September 17, 2007

1 Predeterminers, Determiners, and Adjectives

In this problem you will examine the distributional and morphological properties of three parts of speech in English: predeterminers, determiners, and adjectives. This is a realistic exercise: you are building a lexicon for your machine translation system or question answering system, and you need to decide on the parts of speech for some words. You look in a book and you find some tests for distinguishing determiners and adjectives. You have to apply the tests, imperfect as they are, and make your decisions.

The exercise has several purposes:

1. You will learn to apply tests.
2. You will learn to interpret the results of tests.
3. You will encounter problems in categorizing words into parts of speech.

1.1 The Tests: distributional and morphological properties of predeterminers, determiners, and adjectives in English

1.1.1 Determiner Test 1:

Test: Determiners do not co-occur with *the* and *a*.

Example: Is the word *this* a determiner?

Test Sentences:

- (1) a.* The this book is about linguistics.
b.* This the book is about linguistics.
c.* A this book is about linguistics.
d.* This a book is about linguistics.

Conclusion: The word *this* passes Test 1 for determiners.

1.1.2 Determiner Test 2:

Test: If a determiner can occur with singular count nouns, it makes them acceptable.

You probably need to know some background in order to understand this test. English has count nouns and mass nouns, as do many other languages. Count nouns can occur with cardinal numbers or with *a*. Mass nouns can occur with *some*.

Count nouns:

- (2) a. Two books are on the table.
- b. A book is on the table.
- c. Twenty students are in the class.
- d. A student is in the lounge.

Mass nouns:

- (3) a. Some sand is on the table.
- b.* A sand is on the table.
- c.* Two sands are on the table.
- d. Some information is available on the Web.
- e.* An information is available on the Web.
- f.* Two informations are available on the Web.

The next fact is critical for Test 2: Singular count nouns cannot occur without a determiner in English:

- (4) a.* Book is on the table.
- b.* I saw book.
- c.* Student studied.
- d.* I talked to student.

Singular count nouns are fine with a determiner:

- (5) a. The/a book is on the table.
- b. I saw the/a book.
- c. The/a student studied.
- d. I talked to the/a student.

Example: Is the word *this* a determiner?

Test Sentences:

- (6) a. This book is on the table.
- b. I saw this book.
- c. This student studied.
- d. I talked to this student.

Conclusion: *This* passes Test 2 for determiners.

Example: Is the word *these* a determiner?

Conclusion: Test 2 for determiners is not applicable to *these* because *these* only occurs with plural nouns.

1.1.3 Determiner Test 3:

Test: Determiners that are about quantities can participate in a *partitive* construction.

In Examples (7)a and b, the partitive construction is *each of the students*. It is called partitive because it is talking about part of the set of students.

- (7) a. Each of the students has studied.
- b. I talked to each of the students.

This test is not applicable to *a*, *the*, *this*, *that*, *these*, and *those* because they are not about quantities. They express definiteness and proximity.

1.1.4 Predeterminer Test:

Test: There is just one test for predeterminers. They can occur before *a* or *the*.

- (8) a. *What* a party it was!
- b. I never saw *so big* an elephant.
- c. *All* the students left.

1.1.5 Adjective Test 1:

Test: Most adjectives can occur between *the* or *a* and a noun.

- (9) a. The *blue* book is on the table.
b. A *blue* book is on the table.
c. I saw a *blue* book.
d. I saw the *blue* book.

1.1.6 Adjective Test 2:

Test: Most adjectives can occur in predicative position, after verbs like *be*, *become*, *seem*, or *look*.

- (10) a. The test seemed *difficult*.
b. The book was *blue*.
c. The cut became *infected*.
d. The cake looked *yummy*.

Some adjectives can only occur in predicative position:

- (11) a.* I saw an asleep child.
b. The child was asleep.
c.* The ahead runner won the race.
d. The runner was ahead.

1.1.7 Adjective Test 3:

Test: Adjectives that describe gradable properties have comparative and superlative forms:

- (12) a. This copy is *darker*.
b. The *darker* copy is better.
c. The *darkest* copy is not good.
d. This student is *more studious*.
e. The *most studious* student won a prize.

1.1.8 Adjective Test 4:

Test: Adjectives that describe gradable properties can be modified with *very*.

- (13) a. That book is very blue.
b. The very light print is not readable.

1.1.9 Adjective Test 5:

Test: Adjectives that describe gradable properties can be modified by *so* in predicative positions, but not pre-nominal positions:

- (14) a. That book is so blue.
b. The sky seemed so dark.
- (15) a.* I saw the so blue book.
b.* I saw so blue water.
c.* The so light print is not readable.

Don't get confused by this: an adjective with *so* cannot occur between a determiner and a noun, but it can occur as a predeterminer, before the determiner:

- (16) I never saw so big an elephant.

1.1.10 Determiner Test 4:

Test: A determiner that describes a gradable property may be modified with *so*. **In order to pass this test, the word must be in pre-nominal position.**

- (17) He made so many mistakes.

Determiner Test 4 and Adjective Test 5 are easily confusable, and in fact, some pieces of data might be relevant to both tests. In order to pass Adjective Test 5, the word must be able to appear with *so* in predicative position, but not in prenominal position. In order to pass Determiner Test 4, the word must be gradable and occur with *so* in prenominal position.

1.1.11 Adjective Test 6:

Test: Another partitive construction: Gradable adjectives may occur in this construction.

- (18) a. The *largest* of the books couldn't fit in the box.
b. I have addressed the *most important* of your criticisms.

Determiner Test 3 and Adjective Test 6 are easily confused. Determiner Test 3 is about partitive constructions like *many of the students*. Adjective Test 6 is about a construction that involves a superlative plus a partitive (*the largest of the boxes*).

1.2 Applying the tests and interpreting the results

Write two things in each cell of the following table: (1) P if the word passed the test or F if the word failed and (2) the number of the example that supports your conclusion. Leave the cell blank if there was no relevant data. Use my grammaticality judgments.

There are a few possibilities:

- There was no relevant data: leave the cell blank.
- There is one piece of relevant data: put the example number and the test result (P or F) in the cell.
- There is more than one piece of relevant data, and both have the same result. We will count it right if you list one example number in the cell.
- There is more than one piece of relevant data, and the results are different. This might or might not arise depending on how you interpret the tests. If you think you have found a case like this, write both results and both example numbers in the cell.

	enough	sufficient	much	many
PreDet				
Det1				
Det3				
Det4				
Adj1				
Adj3				
Adj4				
Adj5				
Adj6				

- (19) a.* Enough the books were given to the class.
 b.* The schoolboard provided the enough books.
 c. The student has read enough of the books.
 d.* The bank gave them so enough money.
 e.* The funds were so enough.
 f.* The funds were very enough.
 g.* The most enough of the funds.

(20)

- a. The accounts were filled with the sufficient funds.
 - b. The banker gave them a sufficient amount.
 - c.* Sufficient of the books were given to the class.
 - d. These funds were very/so/more sufficient.
 - e. The most sufficient of the funds.
- (21)
- a.*Much the/a water was spilled.
 - b.*The much water was spilled.
 - c. Much of the water was spilled.
 - d. So much water was spilled.
 - e. The water was so much.
- (22)
- a. Many a student has taken this class.
 - b. I remember the many students who have taken this class.
 - c. Many of the students have taken this class.
 - d. I saw very many students.
 - e. So many students have taken this class.
 - f. The problems were so many.

Extra Credit: One half point for each comment or question about this exercise.

Actually, you will only get extra credit if your comments or questions show an understanding of the material. It's ok to disagree, because there certainly is a lot to question and criticize.

Some ideas for extra credit:

- **What do you think of the claim that parts of speech can be identified by their distribution and morphological properties? Does it satisfy the scientific criteria of falsifiability and reproducibility? Maybe the claim is basically right, but it's really hard to get the tests right. Or maybe you have another idea for a better theory of parts of speech, maybe something statistical or probabilistic?**
- **Re-formulate or disqualify some of the tests.**

- Supply additional relevant data. You might want to consider these. (Add your own grammaticality judgments.) *the so sufficient funds, I gave them so sufficient funds, most enough funds, most sufficient funds, very much water, very many students*
- Draw a conclusion about whether each word is a predeterminer, determiner, or adjective, or whether it falls into more than one of these categories, or whether it falls into none of these categories.

2 Based on Radford, Exercise XVI, page 225

Assume the following phrase structure rules:

S --> NP VP

VP --> V'

VP --> V' PP

V' --> V

V' --> V N''

PP --> P N''

N'' --> (Det) N'

N' --> N' PP

N' --> N PP

N --> N CONJ N

N' --> N' CONJ N'

N'' --> N'' CONJ N''

Det --> that

Det --> his

Det --> the

CONJ --> and

V --> like

VP --> just don't get on

N --> picture

N --> pushchair

N --> workers

N --> managers

N --> factory

N'' --> I

N'' --> him

P --> of

P --> in

Question 1: Note that *I* and *him* are N' and not N. Write an ungrammatical sentence that would be generated if “I” and “him” were N's. This grammar generates a lot of ungrammatical sentences, so be sure to write one that is ungrammatical for the right reason.

Question 2: Note that *his* is a determiner. Write an ungrammatical sentence that would be generated if “his” were an N. Write a sentence that could not be generated if “his” were an NP.

Question 3: Assuming that there is an attachment ambiguity in *I like that picture of him in his pushchair*, what are the two meanings?

Question 4: The phrase structure rules don't generate a tree that corresponds to one of the meanings. Which one is it?

Question 5: Draw a phrase structure tree for the meaning that is generated.

Question 6: There is also an attachment ambiguity in *The workers and the managers in the factory just don't get on*. What are the two meanings?

Question 7: The phrase structure rules don't generate a tree that corresponds to one of the meanings. Which one is it?

Question 8: Draw a phrase structure tree for the meaning that is generated.

Question 9: Radford suggests to reformulate the rule that introduces PP adjuncts into three rules, one for adjuncts to X, one for adjuncts to X', and one for adjuncts to X". Write the new phrase structure rules.

Question 10: Using the new rules, draw a tree for the meaning of *I like that picture of him in his pushchair* that wasn't previously generated.

Question 11: Using the new rules, draw a tree for the meaning of *The workers and the managers in the factory just don't get on* that wasn't previously generated.