

Ling 315 Lecture notes. 22, 24 January 2007.

1. Announcements

- Test dates: February 7th, March 14th, April 9th.
- Room change?

2. Class grammar, as of the beginning of class on Monday (22 Jan):

Lexicon

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|----------------------------------|----------------------------|
| N → kittens, squirrels, bed, ... | D → the, those, my... |
| V → love, hugged, slept, ... | C → that, whether, if, ... |
| A → happy, nice, ... | Deg → very, so, too, ... |
| P → on, near, ... | Pronoun → I, me, he, it... |

Phrase Structure Rules

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|--------------|-----------------------------|
| S → NP VP | NP → (D) (AP) N (PP) |
| NP → Pronoun | VP → V (NP) (PP) (AP) (CP) |
| AP → (Deg) A | PP → P (NP) CP → (C) S |

3. Auxiliaries. Our rules do not yet account for examples with auxiliaries, such as:

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|------------------------------|----------------------------|
| (1) The suspect will leave. | (2) The suspect has left. |
| (3) The suspect might leave. | (4) The suspect could cry. |

We can revise the grammar to account for these examples by adding a new lexical category, T:

T → might, will, should, could, be, have...

We can then revise our S rules as follows so that T is sister to NP and VP:

S → NP (T) VP

We made T optional, since examples like the following do not have an auxiliary:

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| (5) The suspect left. | (6) The suspect cries. |
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4. AP. Last class, we posited a new type of phrase, AP, to account for the italicized strings in examples like:

- (7) I feel (*very/extremely/so/too/that*) cold.
- (8) This is (*very/extremely/so/too/that*) interesting.
- (9) (*Very/extremely/so/too/that*) cold days are common.

Words like *very, extremely, so* and *too* form a new lexical category, namely, Degree:

Degree → *very, extremely, so, too, that*

The rule for AP is then:

AP → (Deg) AP

Our motivation for positing AP was that it forms a substitution class: the sequences *A* and *Deg A* have the same distribution, and thus form a substitution class.

We can also motivate AP using constituency tests, for example:

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| <i>Conjunction test</i> | (10) I feel <u>very cold</u> and barely awake. |
| <i>Fragment test</i> | (11) How do you feel? <u>Very cold</u> . |

These examples indicate that sequences like *very cold* behave like a constituent.

We can further revise the AP rule so that it accounts for the following examples, in which an A is followed by a PP:

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| (12) I feel <i>very excited about this</i> . | (13) We are <i>interested in this</i> . |
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Our rule then looks like:

AP → (Deg) A (PP)

We justified this move by showing that *very excited about this* pass the following two constituency tests:

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| <i>Conjunction test</i> | (14) I feel <u>very excited about this</u> and <u>really awake</u> . |
| <i>Fragment test</i> | (15) How do you feel? <u>Very excited about this</u> . |

5. The structure of phrases so far. Looking over the phrase structure rules for VP, AP, NP, and PP so far, we can see that these phrases share a similar internal structure: in each case, we have an obligatory element that may be followed by one or more phrases. This obligatory element is referred to as the *head* of the phrase.

The head of the phrase dictates which phrases may occur to its right, for example, the verb *mangle* requires that an NP occur as its sister:

- (16) We mangled them.
- (17) *We mangled.
- (18) *We mangled that they left.

Introducing some new terminology, we say that *mangle* *subcategorizes for* or *c-selects* an NP as its sister. The phrases that a head *c-selects* are referred to as the *complements* of the head. Thus, *mangle* *c-selects* an NP complement.

Different lexical items have different *c-selectional* features. For example, while *mangle* *c-selects* for an NP, *wonder* *c-selects* for a CP, e.g., *wondered whether she could leave*. Similarly, the adjective *excited* *c-selects* for a PP in, e.g., *excited about the snow*. We observed that neither Ns nor As ever *c-select* for NPs, and that all four categories have instances that *c-select* for CPs (see next section for examples).

6. More on CPs. Ns, Vs, As, and Ps may all *c-select* for CPs, as the following examples indicate (the CP is in each case italicized):

- (19) They think *that he lied*. V
- (20) They wondered *whether he lied*.
- (21) They are certain *that he lied*. A
- (22) They are unsure *whether he lied*.
- (23) They wondered about *whether he lied*. P
- (24) The claim *that he lied* is true. N
- (25) The idea *that he was lying* is crazy.

CPs may also occur as the subject of a sentence (i.e., in the position where we find NP dominated by S) as the following examples show:

- (26) *That he lied* was surprising. (27) *That he lied* surprised us.

To account for these examples, we modified the rule for S:

$$S \rightarrow \{NP/CP\} I VP$$

Sometimes the complementizer *that* is optional, for example:

- (28) We know (*that*) *he was lying*.

However, other times it is obligatory, for example, when the CP is subject (compare with (27) and (28)):

- (29) **He lied* is surprising.
- (30) **He lied* surprised us.

Unlike *that*, the complementizers *whether* and *if* are not optional:

- (31) They are unsure *whether* he lied.
- (32) *They are unsure he lied.
- (33) They are wondering *if* he lied.
- (34) *They are wondering he lied.

We accounted for this by saying that complementizers, like other heads, are obligatory, thus C is *not* optional: CP → C S

We then added a principle to account for the absence of *that* in certain conditions:

That-Deletion. The complementizer *that* may be optionally unpronounced when it is contained in a CP complement that is sister to a verb.

7. Conjunction. Our grammar does not yet account for the following examples:

- (35) I wrote a poem and a book. (36) I wrote to you and to him.
- (37) *I wrote a poem and to you. (38) #I wrote to you and a book.

Given this new rule, consider the following in the context of our discussion of *that*-deletion:

- (39) She thinks *they should apologize*, and *that they should leave*.

8. Features.

Properties of words matter for syntax. E.g., plural or not plural, verb or not verb.

- (40) The bear snuffles. The bears snuffle.
 *The bear snuffle. *The bears snuffles.

In English, the subject and the verb of a sentence need to *agree* in number.

Properties of words can be realized morphologically in different ways. For example, plural can be realized in different ways:

- (41) The man snuffles. The men snuffle.
 *The man snuffle. *The men snuffles.
- (42) The child snuffles The children snuffle.
 *The child snuffle. *The children snuffles.

Same *agreement* requirement, regardless of the actual morphological shape.

Thus the **abstract** property of “plural” seems to be what the grammar is sensitive to. If the subject is plural (has a plural feature) then the verb must take on a “plural” form.

Such abstract properties of words are called *morphosyntactic features*, or just *feature* for short. A feature is a property of words that the syntax is sensitive to, and which may, but need not, determine the particular shape that a word has.

Some words have no special plural form, e.g., *sheep*. In the case that *sheep* triggers plural agreement with a verb, it has a plural feature.

- (43) The deer snuffles. The deer snuffle.

Features -- such as plural -- that have a semantic effect on a word are called *interpretable* features. Features that do not have a semantic effect on a word are called *uninterpretable* features.

We can view a word as a bundle of features, as defined by its properties. The grammar assembles words into sentences. The sentence is then interpreted and pronounced.

Other features besides plural:

Category features: N, V, A, P, D...

Inflectional features:

PHI-features. Collectively, number, person, and gender features are referred to as PHI-features. These are the features that are generally involved in subject-verb agreement. They are all interpretable.

Case features. Appear to be uninterpretable:

- (44) We all thought him to be unhappy.
(45) We all thought he was unhappy.

9. Heads, projection, and checking. The head of a phrase is the most important element in it:

- (i) it is *semantically* the most important element,
- (ii) it determines the *distribution* of the phrase it projects, and
- (iii) it determines the *agreement* properties the phrase it projects, and
- (iv) it determines the types of phrases it needs as complements.

We adopt a new notion, **projection**, where features from a daughter node project onto the mother node in a syntactic object. Projection can be thought of as a copying operation: select some features on a node and copy these onto another node.

To capture the idea that the properties of a phrase are determined by its head, we will assume that the features of the head *project* up to the phrasal level.

This will also help us solve another problem: subcategorization.

Certain lexical items are unable to stand on their own; they must combine with something else. E.g., *mangle* must combine with an NP:

- (46) We mangled them.
(47) *We mangled.
(48) *We mangled that they left.

A c-selectional feature is a categorial feature on a lexical item that does not determine the distribution of the lexical item itself; rather it determines the category of the elements which will be able to serve as complements to the lexical item.

Take a word like *hugged*: this clearly has a V-feature since it is the past tense of a verb. It also has at least one c-selectional N-feature. This N-feature signifies that something that combines with *kiss* must itself have a categorial N-feature. So we can combine a noun like *the dogs* or like *Peter* with *hug*, but we cannot combine another verb, or preposition.

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To capture the idea that the distribution of a phrase is determined by its head, we will assume that the features of the head project up to the phrasal level.

- (49) Full Interpretation: The structure to which the semantic interface rules apply contains no uninterpretable features.

It follows from Full Interpretation that uninterpretable features must be eliminated from the syntax before the semantic interface rules apply.

If an uninterpretable feature enters into a syntactic relation with another feature of a particular sort, the uninterpretable feature is marked for elimination. Features which are marked in this way undergo a sort of self-destruction when they appear at the level where the semantic interface rules apply.

- (50) The **Checking Requirement**: Uninterpretable (c-selectional) features must be **checked**, and once checked, they can delete.
- (51) **Checking under Sisterhood**. An uninterpretable c-selectional feature F on a syntactic object Y is checked when Y is sister to another syntactic object Z which bears a **matching** feature F.