Nouns and verbs

- Nouns have a category feature [N].
  - Books [N, pl]
- Verbs have a category feature [V].
  - Complained [V]
- Two independent features.
- Four predicted categories.

\[ ±N, ±V \]

Privative? Or binary?

- There's something kind of uncomfortable about saying the prepositions simply lack category features.
- We can soothe ourselves somewhat by adopting binary category features instead of privative features.
- Same predictions, but more in line with our intuition about what “category” should be.

\[ ±N, ±V \]

\[ ±N, ±V \]

- The \([±N, ±V]\) category system may seem a bit “out of the blue.” But it does yield some descriptive benefit. To wit:
  - Consider what \textit{un} - can attach to:
    1) untie, unfold, unwrap, unpack
    2) unhappy, unfriendly, undead
    3) *uncity, *uncola, *unconvention
    4) *unupon, *unalongside, *unat

[±N, ±V]
**Russian case**

- Case is a morphological form nouns take on depending on where they are in the sentence (subject vs. object). English pronouns show this distinction: I like her, she likes me. Some languages (like Russian) show differing case forms on all nouns.
- When Russian nouns are modified by an adjective, the adjective is also marked for case.

**Russian case**

- What gets marked for Case in Russian?

  1) Krasivaya dyevushka vsunula chornuyu koshku v pустую korobku
      'The beautiful girl put the black cat in the empty box.'

**Lexical and functional**

- Nouns, verbs, adjectives, adverbs: These are lexical categories. They carry significant and arbitrary meaning, and they are open-class (new ones can be invented).
- But not all words are of this kind (except maybe those on telegrams).†

†Telegram (n.): An ancient form of texting.

**Lexical and functional**

- Sentences are held together by little “function words” as well. These are the functional categories. We will discuss these more later.

  1) I expect that the CEO will want to retire.

**Functional categories/ syntactic “glue”**

- Determiners: the, a(n), some, every, that, ...
- Pronouns: you, him, they, my, your, ...
- Infinitival to: to
- Auxiliaries/modals: have, be, do, can, should, ...
- Complementizers: that, for, if, ...

**Determiners**

- Determiners generally come before a noun, and come in a few different types. There are differences between the types, though for now we’ll lump them together. Category: [D].
- Articles: the, an
- Quantificational determiners: some, most
- Interrogative determiner: which
- Demonstratives: that, this
- Possessive pronouns: my, your, their
**“Pre-noun things” vs. determiners, adjectives**

- Can we lump determiners together with adjectives?
- They both come before nouns.
- They both seem to “modify” the noun.
- If we didn’t need both categories (if they don’t matter for syntax/distribution), we’d have a simpler theory putting them together.
- *Tall building, that building, a building, my building.*

**Determiners vs. adjectives**

1) The big fluffy pink rabbit
2) *The my rabbit*
3) *The that rabbit*
4) *Every my rabbit*

- Determiners cannot co-occur with other determiners, must precede any adjectives.
- Adjectives can occur with other adjectives.

To properly describe the distribution of these elements, we really need to separate them into two classes. Lumping them together will not give us a simpler descriptive systems.

**Pronouns**

- Pronouns differ from nouns in a couple of ways (example: case marking), and should be considered a functional category.
- The pronouns of English express person, number, and gender.
  - 1st person: I, me, we, us
  - 2nd person: you
  - 3rd person: he, she, him, her, they, them, it.

**Pronouns are Ds.**

- We’ll come back to this again later on, but we will treat pronouns as having category [D], like, say, the or which.
  1) We linguists must stick together.

**Auxiliaries and modals**

- Different from verbs: have, be, do, will, can, might, must, should, could, would, ...
- In questions, auxiliaries “invert” with the subject, verbs don’t.
  - Will you leave? Can you leave? Do you leave often? *Leave you often?*
- Auxiliaries occur before not, verbs don’t
  - *You will not leave. You did not leave.*
  - *You left not.*
- Notice the extra do— “do-support”
- Auxiliaries are responsible for things like tense, mood, modality, aspect, voice.
- We abbreviate their category as [T] (“tense”).
**Infinitival to**

1) I like to go to the movies.

- Kind of looks like a preposition, but it’s not. Prepositions take nouns, to as a P has a kind of contentful meaning (endpoint of a path). Infinitival to takes (bare) verbs only, means nothing (apart from “untensed”).
- It might be more like a modal: To and modals (can, might, should) seem to appear in the same place (between the subject and a bare verb form).

**Complementizers**

1) Pat will leave.
2) I heard that Pat will leave.
3) I wonder if Pat will leave.
4) I am anxious for Pat to leave.

- It is perfectly possible to embed a sentence inside another one. When we do this, it is indicated with a complementizer (introducing a complement clause). Category: [C].

**The P for v. the C for**

- For is of course a preposition (I looked for you for three hours), but not when it is introducing clauses.
- He headed right for the back row.
- *He’d like right for the class to be over.
- *He expressed interest in the class to be over.
- Who would you vote for in the election?
- *Who are you anxious for to win the election?

**The D that v. the C that**

- Same kind of thing holds for that.
  1) I liked that movie.
  2) I heard that movie involved guinea pigs.
- Sometimes you can replace for clauses with that clauses.
  1) It is important that Pat votes.
  2) It is important for Pat to vote.

**Regrouping**

- Lexical categories:
  - N: noun, V: verb, A: adjective, P: preposition
- We started a feature decomposition of these by proposing that they are labels for feature bundles like $[\pm N, \pm V]$, which can characterize certain natural classes across categories.
Regrouping

- But there are many more than four categories.
- Aux: auxiliary, C: complementizer, Adv: adverb, D: determiner, PRN: pronoun, T: modals, ...
- So, we would need more features to make all of the distinctions. We won't pursue that, however—we'll just use the labels like N, V, A, P, D, T, C, etc.)

Feature grouping

- Features themselves seem to be grouped.
- And this is the way we'll think of them for much of the course.
- Consider: category.
- \([\pm N]\) is a feature, \([\pm V]\) is a feature. There must be others to handle D, T, C, etc. But together they constitute the syntactic category.

Feature grouping

- We can write this like \([\text{Cat}: +N–V]\), and in fact we'll generally just write \([N]\) as a shorthand for that.
- We'll see other groupings. E.g., Number could be \([\text{Number}: sg, pl]\) (or dual). Although number will in fact be part of a larger grouping including gender and person.

Lexical items

- Recall that part of our language knowledge is the knowledge of the lexicon.
- The lexicon is a list of the "words".
- More accurately, it is a list of the things sentences are made of.
- It is traditionally considered to be where "unpredictable" information is stored. The sound, the meaning, the grammatical category, and other features.

Features of lexical items

- A lexical item is a bundle of properties. It is a meaning, linked with instructions for pronunciation, linked with syntactic properties like category.
- We represent these properties as features.

Features of lexical items

- Any given lexical item has:
  a. Semantic features
  b. Phonological features
  c. Syntactic features
- When it comes to syntax, syntactic features certainly matter. But no language seems to arrange its sentences such that words that start with t are first.
- Hypothesis: Syntax can only "see" syntactic features.
English pronouns

- The English pronouns make several distinctions over and above a singular/plural distinction.
- One distinction is person, which is sensitive to who is talking and to whom.
- English (and most languages) distinguish three persons.

<table>
<thead>
<tr>
<th></th>
<th>singular</th>
<th>plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>first person</td>
<td>I</td>
<td>we</td>
</tr>
<tr>
<td>second person</td>
<td>you</td>
<td>you</td>
</tr>
<tr>
<td>third person</td>
<td>he/she/it</td>
<td>they</td>
</tr>
</tbody>
</table>

English pronouns

- We could model person with [1], [2], and [3]—except that that predicts eight distinctions, and we have only three.

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English pronouns

- Rather, we want to use two features, which only predict four. Slightly better.
- By eliminating [3], we predict a system like that below—as well as a [1,2] combination that is not morphologically distinguished in English.

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English pronouns

- What about [1,2]? There's no special pronoun form, but what would it mean?
- Well, [1] is the speaker, [2] is the person being spoken to. So [1,2,pl] would be we (including you). Not the same as [1,pl], we (excluding you).

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</tbody>
</table>

English pronouns

- Some languages distinguish inclusive and exclusive we morphologically, e.g., Dakota.
- No languages seem to distinguish 8 persons.

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Gender

- Many languages distinguish nouns on the basis of “gender” as well.
- English: she/he/it (3rd person pronouns)
- Gender often comes in 2-3 flavors (masculine, feminine, neuter) which often corresponds roughly to biological gender where applicable.
Phi-features

- Collectively, person, number, and gender features are referred to as \( \phi \)-features.
- These are the features that are generally involved in subject-verb agreement.
- We group them together because they seem to have their effects together (that is, not separately).

Case features

- English pronouns change form also depending on where they are in the sentence.
  1) He left. I saw him. He saw me.
- The information about syntactic position is encoded by case features.
  - In English, case is only visible on pronouns.
  - In many other languages, case is visible on all nouns (and sometimes on words modifying nouns, like adjectives or determiners).

Case names

- In English, we distinguish nominative (on subjects), genitive (on possessors), and accusative (elsewhere)

<table>
<thead>
<tr>
<th>Singular</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nom</td>
<td>Acc</td>
</tr>
<tr>
<td>I</td>
<td>me</td>
</tr>
<tr>
<td>you</td>
<td>you</td>
</tr>
<tr>
<td>he</td>
<td>him</td>
</tr>
<tr>
<td>she</td>
<td>her</td>
</tr>
<tr>
<td>it</td>
<td>it</td>
</tr>
</tbody>
</table>

Features & pronunciation

- Lexical items are bundles of features. Like [Acc, I, sg, PRN].
- The syntactic system arranges these lexical items into sentences, and then hands the result off to the A-P and C-I systems (at the interfaces)

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</tr>
<tr>
<td>he</td>
<td>him</td>
</tr>
<tr>
<td>she</td>
<td>her</td>
</tr>
<tr>
<td>it</td>
<td>it</td>
</tr>
</tbody>
</table>

Features & pronunciation

- Not every distinction:
  - Only 3rd person singular distinguishes gender.
  - 2nd person does not distinguish number or between Nom and Acc.
  - 3rd person singular feminine doesn’t distinguish between Acc and Gen.

Verbal features

- Some features are specific to verbs.
  - [past], for example, differentiating write from wrote, kick from kicked. This is a tense feature.
  - Some languages have a special form of the verb for the future as well; [future].
**Verbal features**

- We can characterize present tense as being non-past, non-future.
- In English, future is expressed in other ways, with a modal (will) or with the verb go. English does not seem to make use of the [future] feature; in English there is just past and non-past.
- Cf. duals and the use of [sg] on nouns.

**Participles**

- English verbs can also take on a participle form: writing, written.
- Not tense, but aspect.
  - The -ing form (“present participle”) comes after be, indicating a continuing event.
  - The -en form (“past participle”) comes after have, indicating a completed event.
- Tense can still be expressed—on the auxiliary: I have written, I had written, I am writing, I was writing.

**Participles**

- Adger’s proposal:
  - Present participle: [V, part] (writing)
  - Past participle: [V, part, past] (written)
- I distance myself from that because it is not at all clear that the [past] feature in Adger’s past participle has anything in common with the [past] feature in an actual past tense. A better name would be, e.g., [perf].

**Bare verb/infinitive**

1) I want to win the lottery.
- The bare form of the verb (often appearing after to) is the infinitive.
- We will assign infinitive forms the feature [Inf].
- The fact that the infinitive is a bare verb (no suffixes or other inflection) in English may be something of a coincidence. Other languages mark the infinitive with a special verb form, on a par with participles or tensed verbs.

**Verb agreement**

- Verbs very often (across languages) agree with the subject in $\phi$-features as well.

1) I eat bagels.
2) He eats bagels.
3) They eat bagels.
- However, eat isn’t really “plural” in any sense. Plurality is a property of the subject, but it is reflected in the morphology of the verb.

**Verb agreement**

- In English, only finite verbs show agreement (those that are not infinitives or participles).
- In fact, only present tense verbs do, with the single exception of the copula (be).
- In other languages, agreement sometimes appears on other forms. Participles, for example, sometimes agree with their object. Infinitives very rarely agree with anything.
A brief excursion

• We’ve determined that English differentiates past and nonpast, and Adger suggests looking at this as a privative distinction, between having the feature [past] and not having it.
• So far, this makes the same combinatorial predications as a binary feature [±past] would
• Is there any way to decide which is better?

The morphology of be

There are only five different pronunciations of the verb be for the 12 cells in the paradigm.

Suppose our features are privative.

Suppose that our pronunciation rules at the interface look at the feature bundle and determine the pronunciation.

<table>
<thead>
<tr>
<th>[past]</th>
<th>[pl]</th>
<th>[pl]</th>
</tr>
</thead>
<tbody>
<tr>
<td>[1] am</td>
<td>are</td>
<td>was</td>
</tr>
<tr>
<td>[2] are</td>
<td>are</td>
<td>were</td>
</tr>
<tr>
<td>is</td>
<td>are</td>
<td>was</td>
</tr>
</tbody>
</table>

Pronunciation rules:

- [pl, past] = were
- [pl] = are

The way this works is that the most specific rule that matches the features takes priority.

Features not mentioned don’t matter.

[1, pl, past] yields “were”, [1, pl] “are”, ...

Pronunciation rules:

- [pl, past] = were
- [pl] = are
- [1, past] = was
- [2 past] = were
- [3, past] = was
- [pl] = are
- [1] = am
- [2] = are
- [3] = is

More rules than pronunciations! Two rules each for were, was, and are.

But what if we could refer to the absence of [pl]?

If our features were binary, we could come up with a much more economical set of pronunciation rules, one per pronunciation.

More rules than pronunciations! Two rules each for were, was, and are.

But what if we could refer to the absence of [pl]?

If our features were binary, we could come up with a much more economical set of pronunciation rules, one per pronunciation.

Notice also that were which occupies the most cells in the paradigm, is treated as a default. You pronounce were if no other rule matches.
The morphology of be

- Possible support for viewing these features as binary valued rather than privative. You can write pronunciation rules either way, but one system is significantly more elegant.

Pronunciation rules

- $[-2,+1,-\text{past},-\text{pl}] \rightarrow \text{am}$
  - [-past]  [+]past
  - [-pl]    [+pl]
  - [-1]     [+]1
  - [-2]     [-2]
- $[-2,-\text{past},-\text{pl}] \rightarrow \text{is}$
  - [-past]  [+]past
  - [-pl]    [+pl]
  - [-1]     [+]1
  - [-2]     [-2]
- $[-\text{past}] \rightarrow \text{are}$
  - [+1]     [-2]
  - am       are       was       were
- $[-2] \rightarrow \text{was}$
  - [-1]     [+]2
  - are      are       were       were
- $[] \rightarrow \text{were}$
  - [-1]     [-2]
  - is       are       was       were

Bibliographical note, comment on the future

- This view of the syntax-morphology interface, when you get out to the literature, generally goes by the name “Distributed Morphology”—so named because the pronunciation rules are relatively separated from the syntactic rules. The primary reference is Halle & Marantz (1993) (in Adger’s bibliography).

Comment on the future

- For our purposes in this class, we will not actually spend much more time analyzing pronunciation rules or even worrying about whether the features should be privative or binary—we will usually simply label feature bundles like $[+N,-V]$ as $[N]$, $[-\text{pl}]$ as $[sg]$. But this is a convenience, there are interesting questions to explore at this lower level as well—outside of this class, though, because we have plenty of other things to do.