Linguistics 106, lecture notes
Linguistic terminology and practice

23 May 2002

1 What is formal linguistics?

1.1 Linguistics as the science of language

- **Linguistics** is the science of human language. Since language has many aspects, there are many subfields of linguistics—see section 2 for some of them.

- A **theory** is a description of some set of data. Often, scientific theories describe their data by postulating (a) a set of basic objects and relations, and (b) rules determining their interactions. A linguistic theory of this type will sometimes be called a **grammar**. For example,

  **Data set: The sentences of language L1**
  \[
  \begin{array}{cc}
  a1z & b2y \\
  a2z & b2y \\
  a3z & b3y \\
  \end{array}
  \]

  **Grammar for L1**
  \[
  \begin{align*}
  1. & \text{Basic elements of L1:} \\
  & \{a - z, b - y, 1, 2, 3\} \\
  & \text{2. Rules of L1: To make a sentence} \\
  & \text{of L1, select either } a - z \text{ or } b - y \text{ and} \\
  & \text{fill in the blank with either 1, 2 or 3.}
  \end{align*}
  \]

1.2 What belongs in a language?

- The main task of **descriptive grammar** or **descriptive linguistics** is to give a thorough and systematic description (i.e. theory) for any given language. It is not to prescribe which language *ought* to be spoken, for certain social purposes.

  This latter task belongs to **prescriptive grammar**.

  **Example:**
  In informal English, one regularly says things like: *Me and Mary are sisters*. Yet some people believe that formality requires: *Mary and I are sisters*.

  Descriptive linguistics has nothing to say about which variety of English one ‘should’ speak, the informal or the formal. It is concerned only to describe the actual patterns characteristic of a given language variety.
• In this course, and in linguistics generally, we are concerned only with descriptive grammar.

• Linguists generally agree that the distinction between ‘dialect’ and ‘language’ is largely political. What is called a ‘dialect’ is just a language with many important similarities to some other language, one which enjoys a certain social advantage.

• Still, we need not deny that people make mistakes. Not everything someone says ‘while speaking English’ is an expression of English.

   Suppose I said “bootfall” instead of “football”. That would not make bootfall a word of English. Likewise the utterance Who are the president? needn’t be considered a sentence of English if I happen to accidentally say it. Consequently, there is a place for informed idealization in the assemblage of data for linguistic analysis.

• In this course, we will use the term language to simply mean a given set of sentences.

• We will use the term ungrammatical descriptively, not prescriptively. A sentence will be called ungrammatical or unacceptable if it is not a sentence in the relevant language.

2 Some subtheories of linguistics

2.1 Phonetics: The acoustics, production and perception of linguistic sounds

• The basic questions of phonetics:

  1. What are the objective acoustic properties of the constituent sounds in a language?
     
     Example:
     
     The ‘sound wave’ you produce when you say bit differs from the one you produce when you say quit. How exactly do they differ?

  2. What physical gestures are used to articulate the constituent sounds in a language?
     
     Example:
     
     What do you with your tongue, larynx, lips etc., to produce the k sound at the beginning of quit?

  3. What aspects of the sounds in a language are relevant to their correct perception?
     
     Example:
     
     When you hear the difference between bit and quit, which of the (many) acoustic differences between them are you actually responding to?
2.2 Phonology: The grammar of linguistic sounds

• The basic questions of phonology:

1. What is the ‘alphabet’ of basic sounds in the language?
2. How is that ‘alphabet’ organized? That is, what sorts of systematic relations are there among its members?
3. What are the general rules for and constraints on stringing together elements of that alphabet?

• A central concept in phonology is the concept of a phoneme.

Phonemes The minimal, basic units in the sound system of the language.
A phoneme is an abstract unit, expressed by any of a class of sounds, its allophones.

Example
The syllable spelled thought is a sequence of three phonemes, which can be written: /θ/, /ɔ/, /t/.

• Two sounds count as different phonemes only if, in principle, replacing one with the other could produce a different word.

Example
In English, bat and bet are two different words. They differ only in their vowels. This shows us that these two vowel sounds—/æ/ and /e/, here spelled by “a” and “e”—express distinct phonemes in English.

• A particular phonetic difference may distinguish one phoneme from another in language X, but not in language Y.

Example
In German, /æ/ and /e/ are not distinct phonemes. Hence “bat” and “bet” could not be two different words in German.

However, German—along with French, Mandarin Chinese, Turkish and many other languages—has a phonemic distinction between:

/u/ and /ü/

These differ in where the tongue touches the roof of the mouth: in the back for /u/ and further forward for /ü/.

You can tell that this difference is phonemic in these languages from the following contrasts:

Fr. tout [/tu/] ‘all’; tu [/tu] ‘thou’
Md. lu ‘record’; lü ‘green’
Tk. tur ‘stand’; tür ‘type’

In English, the difference is not phonemic. There could not be two distinct words /tu/ and /tū/. I someone said two with /ū/ instead of a /u/, they would just be saying two in a funny way.
• A phoneme is itself an *abstract* object, since its objective realization (i.e. its pronunciation) may be different in different contexts.

**Example**

The English phoneme /k/ is pronounced differently in *kit* than in *cot*. (Feel where where your tongue is as you begin each of these words.)

Thus the phoneme /k/ is an abstract object, realized one way before “-it” and another way before “-ot”.

• The relation between phonemes and their objective, surface realizations is regulated by *phonological rules*.

**Phonological rules** Principles that describe the systematically variant realization of phonemes in different phonological environments.

**Example**

Palatalization in English:

could you → cou[l]jou
education → e[j]ucation
got you → go[ch]u

### 2.3 Morphology: The grammar of word structure

• **The basic questions of morphology:**

  1. How are words built up in the language?
  2. What is the relation between two words, where one is understood as derived from the other (as e.g. *happiness* is derived from *happy*)?
  3. Beyond effects explained by phonology, what effects does the context of a word (or a significant subpart of a word) have on its form?

• **A basic concept in morphology is the concept of a *morpheme***.

**Morphemes** The minimal units of systematic relevance to *meaning* or to *syntax* in the language.

A morpheme is an abstract unit, expressed by any of a class of phonological objects, its *allomorphs*.

**Example**

The word *reiterations* is made up of at least the four distinct morphemes: *re-*, *iterat(e)*, *-ion* and *-s*. And perhaps the root morpheme *iterat* is itself complex.

• A phonological difference does not necessarily make a morphological difference. Only phonological difference that determine different meanings or syntactic properties count.
Example
The morpheme meaning ‘plural’ is pronounced differently after kid (kid-s) than after child (child-ren).

- The relation between morpheme and their objective, surface realizations is regulated by morphological rules.

**Morphological rules** Principles that describe the systematically variant realization of morphemes in different morphological environments, beyond what can be described by phonology alone.

**Example**
Auxiliary verb ‘contraction’ in English:
That’s the cot I’ve got to buy. (gotta)
That’s the cot to buy. (*cotta)
That’s the cot I want to buy. (wanna)
That’s the cot I want Juan to buy. (*juanna)

2.4 Syntax: The grammar of phrase and sentence construction
- The basic questions of syntax:

  1. How are words put together to build phrases (e.g. noun phrases). How are phrases put together to make larger phrases (e.g. sentences)?

  2. What are the rules of word order?

  3. What effects does the syntactic context of a word or phrase have on its position or form—beyond effects explained by phonology and/or morphology?

**Example**
Here are some contrasts that should be explained by a syntax of English. Read “*” as “not a sentence of the relevant language”; here the relevant language is standard modern English.

(1) a. that filthy man
   b. * that man filthy
   c. * filthy that man
   d. * man filthy that

(2) a. Yesterday she kissed him.
   b. * Yesterday kissed she him.
   c. * Yesterday she him kissed.

(3) a. What will Mary eat?
   b. * What Mary will eat?

(4) a. Who do you know is bringing beer?
   b. I know what Mary is bringing.
   c. * Who do you know what is bringing?

(5) a. Al considers him an idiot.
   b. * Al considers he an idiot.
2.5 Semantics: The grammar of meanings

- The basic questions of semantics:

1. What basic meaning does a morpheme or word have, independently of its context?
   (This is a question *lexical* semantics.)

2. How is the meaning of a phrase related to the meanings of its parts?
   (This is a question of *compositional* semantics.)

3. What dimensions of meaning, if any, have relevance to other parts of the syntax, or other
   components of the grammar?

4. What sorts of meaning structures and meaning relations obtain in natural languages?

Example

Semantics of the Arabic numeral system:

The meaning of each of the 10 Arabic numerals, 0–9, is a particular magnitude. For
example, ‘1’ denotes the magnitude of one, ‘2’ denotes the magnitude of two, and so on.
The meaning of a sequence of n Arabic numerals is determined by the following rule:

1. Assign each numeral a value $j$. The $j$-value of any numeral is the $j$-value of the
   numeral immediately to its right, plus 1. The $j$-value of the rightmost numeral is
   0.
2. Multiply each numeral by $10^j$, where $j$ is the $j$-value of that numeral.
3. Sum up the $n$ results of step 2. The sum is the meaning of the sequence

Notice that the semantics of the Arabic numeral system is completely different from the
semantics of the Roman numeral system. Compare:

<table>
<thead>
<tr>
<th>symbol</th>
<th>meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arabic</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>one</td>
</tr>
<tr>
<td>5</td>
<td>five</td>
</tr>
<tr>
<td>15</td>
<td><strong>fifteen</strong></td>
</tr>
<tr>
<td>Roman</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>one</td>
</tr>
<tr>
<td>V</td>
<td>five</td>
</tr>
<tr>
<td>IV</td>
<td><strong>four</strong></td>
</tr>
</tbody>
</table>

Example

Here is a semantics a linguist might propose for the sentence: *Every moron is stupid*.

1. *every* denotes a function $\phi$ from an ordered pair of sets to a truth value. It yields
   true if the first set is a subset of the second, and false otherwise.
2. moron denotes the set $M$, the set of all morons.
3. stupid denotes the set $S$, the set of all stupid things.
4. $I$ denotes the identity function $I$ over sets.
5. Rule of composition: If $A$ denotes a function $\alpha$ over things of type $\kappa$, and $B$ denotes $\beta$ where $\beta$ is a thing of type $\kappa$, then the string $AB$ denotes $\alpha(\beta)$.
6. Thus, every moron is stupid denotes $\phi(<M, I(S)>)$, i.e. $\phi(<M, S>)$, an expression which is true iff $M \subseteq S$.

3 Terms of basic grammatical description

3.1 Parts of speech

Nouns John, he, reiteration, tomorrow, teaching (in ‘teaching is fun’).

Determiners the, a, each, every, some

Verbs run, chase, teach, be

Adjectives blue, former, crabby

Adverbs quickly, certainly, very, fast, only, even

Prepositions in, at, between, under, beside, through, before

Coordinating conjunctions and, but, or, yet, however

Subordinating conjunctions that, whether, if, than

Phrase A phrase is a string of words with one or more element that behaves, in some sense, as an independent unit. Phrases are generally taken to contain a distinguished word that is its ‘head’. The head determines the semantic and syntactic categories of the phrase. Thus the head of a noun phrase, like the filthy man, is a noun, man. The head of a prepositional phrase, like in room 301, is a preposition, in.

Grammatical Case Often noun phrases bear what is called ‘case’. Roughly, case is a marking of the grammatical relation(s) a noun phrase has in the sentence. In English, he bears ‘subjective case’, while him bears ‘objective case’.

3.2 Grammatical relations

Subject In descriptions of English, the first noun phrase (NP) preceding the verb is often called the subject. For example, He is the subject in He sure is fat. Notice that the pronominal subject here bears ‘subjective’ (or ‘nominative’ case).

Predicate In general, the predicate is simply everything but the subject; i.e. a clause is taken to consist of a subject and a predicate. Thus: sure is fat in He sure is fat. Conceptually, predicates are supposed to ‘say something about’ the thing referred to by the subject NP. Usually a predicate includes a verb, and the verb is considered its semantic ‘center’.

Direct object In descriptions of English, the first noun phrase (NP) following the verb is often called the direct object. For example him is the direct object in John loves him.

Indirect object An indirect object is usually an NP that receives the thing denoted by the direct object: John gave him a book, John built him a new shed. Sometimes the objects of certain prepositions in English are also counted as indirect objects: John gave a book to Bill.

Oblique object Any object that is not direct.
3.3 Phrase structure and sentence diagramming

Given the categories mentioned above, we should be able to analyze a clause into its constituent phrases, until we reach the words. Different sorts of diagrams will assign different sorts of labels to the phrases or words. For example, we might label grammatical categories or we might label grammatical relations.

*Example*

The cow swam under the bridge →

\[ s \ [np \ [det \ the] \ [n \ cow]] \ [vp \ [v \ swim]] \ [pp \ [p \ under]] \ [np \ [det \ the] \ [n \ bridge]] \]

Or:

\[ clause \ [subject \ the \ cow] \ [predicate \ swim \ under \ the \ bridge] \]