From words to sentences: Syntax

Syntax studies how one can combine words into sentences.

from Greek: syn tax
together arrange

So what is there to be studied?

(1) a. *He in the arm was shot by a tall man.
   b. *The baby seems sleeping.
   c. *Peter generally laughs on such ideas.
   d. *I go to the often cinema.
   e. *Sylvia heard George to go.
   f. *Morris walked the hill up.
   g. *I saw the destroyed of the city.

What is there to be studied?

• the order in which words can occur in sentences
• the form the word have to take in a sentence

Based on those observations we can distinguish classes of words which
• can take each other’s place in a sentence
(2) John bought a green car on Thursday.
   Mary wrecked the dirty house before Christmas
   I sold some neat bicycle in Chicago
   He washed every beautiful toy near Germany
• occur together in a sentence

Which words occur in a sentence?

Words often require the presence of other words and phrases in the same sentence.

(3) a. I laugh.
   b. I give her the book.
   c. I said that she left.

(4) a. *I laugh her the book.
   b. *I give that she left.
   c. *I said.

(5) a. He said that Sting is playing in Columbus tonight.
   b. He said Sting is playing in Columbus tonight.
   c. *He said whether Sting would play in town tonight.

(6) a. He asked whether Sting is playing in Columbus tonight.
   b. *He asked Sting is playing in Columbus tonight.
   c. *He asked that Sting is playing in Columbus tonight.

Words are said to select or subcategorize for other words or phrases.

It’s not (just) meaning

(7) a. Paul ate a steak.
   b. Paul devoured a steak.

(8) a. Paul ate.
   b. *Paul devoured

Also, even for sentences that make no sense, the order and form of the words matters:

(9) a. Colorless green ideas sleep furiously.
   b. *Sleep ideas colorless furiously green.
   c. *Colorless green ideas sleepeed furiously.
Some examples for what syntax needs to explain (I)

(10) a. Peter will win the race.
    b. * Peter will won the race.
    c. * Peter will to win the race.

(11) a. Peter has won the race.
    b. * Peter has win the race.
    c. Peter has to win the race. (→ means something different)

(12) a. Peter seems to win the race.
    b. * Peter seems win the race.
    c. * Peter seems won the race.

Some examples for what syntax needs to explain (II)

(13) a. He left.
    b. * Him left.

(14) a. She sees him.
    b. * She sees he.

(15) a. She sees him leave.
    b. * She sees he leave.

Word classes

Certain classes of words behave alike in terms of where they can occur in a sentence and what form they can take. Based on this, we can define word classes (lexical categories, parts of speech).

To illustrate that we implicitly know about possible word orders and forms, we can try to classify newly created words:

(16) He fasras rather well, don’t you think?
(17) I saw an expensive frasra today.
(18) The frasra house is already sold.

Jabberwocky by Lewis Carroll
(from Through the Looking-Glass and What Alice Found There, 1872)

'Twas brillig, and the slithy toves
Did gyre and gimble in the wabe;
All mimsy were the borogoves,
And the mome raths outgrabe.

'Beware the Jabberwock, my son!
The jaws that bite, the claws that catch!
Beware the Jubjub bird, and shun
The frumious Bandersnatch!'

He took his vorpal sword in hand:
Long time the manxome foe he sought—
So rested he by the Tumtum tree,
And stood awhile in thought.

And, as in uffish thought he stood,
The Jabberwock, with eyes of flame,
Came whiffling through the tulgey wood,
And burbled as it came!

One two! One two! And through and through
The vorpal blade went snicker-snack!
He left it dead, and with its head
He went galumphing back.

And hast thou slain the Jabberwock?
Come to my arms, my beamish boy!
'O frabjous day! Callooh! Callay!'
He chortled in his joy.

'Twas brillig, and the slithy toves
Did gyre and gimble in the wabe;
All mimsy were the borogoves,
And the mome raths outgrabe.
**Open and closed word classes**

**Open class**
- New items are added to the class over time.
- Nouns, verbs, adjectives, and adverbs

**Closed class**
- Classes with few words, to which new words are never or rarely added
- Determiners, pronouns, prepositions, conjunctions

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**Verbs (V)**

- **morphology** – form third person, past tense, past participle, present participle:
  - walk: walks, walked, walking
  - go: goes, went, going
  - buy: buys, bought, buying
  - run: runs, ran, run, running

- **syntax**:
  1. Can combine with an auxiliary:
     - will go, have seen, should run, must leave, is swimming
  2. Can be modified by an adverb:
     - Adverb _ or _ Adverb
     - usually sleep, read carefully

- **semantics** – usually describes an action, a process or a state of being
  - But: problem with some verbs (know, remember)
  - But: hard to distinguish from nouns describing actions (a thump)

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**Nouns (N)**

- **morphology** – most nouns form plural
  - cat-s, house-s, kiss-es, men, sheep
- **syntax** – usually has a determiner (except proper names like John) and can be modified by an adjective:
  - Determiner (Adjective) _
  - a cat, many kisses, few men, several sheep
  - a small cat, many exciting kisses, few clever men, several bored sheep
- **semantics** – name of a person, thing or place.
  - But: problem with abstract nouns (beauty, anger, aspect) and actions (a thump).

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**Adjectives (A, Adj)**

- **morphology**:
  1. Form comparative and superlative forms:
     - cool: cooler, coolest, successful: more successful, most successful, good: better, best
  2. Many can be changed into adverbs by the -ly suffix:
     - sad: sadly, funny: funnily, nice: nicely, beautiful: beautifully
- **syntax**:
  1. Can modify a noun: Determiner _ _ N
     - a tall man, a cool day, a wonderful trip
  2. Can be modified by an adverb: Adverb _ _
     - very clever, extremely clever, unusually hot
- **semantics** – usually describes a quality or attribute
Adverbs (Adv)

quickly, soon, morally, today, here, very, before

- morphology – often formed from adjectives by the -ly suffix.
  But: good – well, fast – fast, friendly – friendly, eastward
- syntax – can modify verbs (hence ad-verbs), adjectives & often other adverbs.
  1. \( V \_ \) or \( _V \)
     stop abruptly, usually eat
  2. \( _\text{Adj} \)
     amazingly cheap, very bad (very cannot modify a verb), quite nice
  3. \( _\text{Adv} \)
     very quickly, quite soon

Determiners (Det)

articles (a, the), quantifiers (many, any, all, several), possessives (my, your, his, her)

Syntax – come before nouns: \( \_ \) (Adj) N

Summary of open classes

<table>
<thead>
<tr>
<th>Morphology</th>
<th>Syntax</th>
<th>Semantics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noun</td>
<td>plural</td>
<td>D (Adj) _ the big house</td>
</tr>
<tr>
<td></td>
<td>house – houses</td>
<td></td>
</tr>
<tr>
<td>Verb</td>
<td>tenses, . .</td>
<td>combines with an Aux would walk</td>
</tr>
<tr>
<td></td>
<td>walk – walked</td>
<td></td>
</tr>
<tr>
<td>Adj</td>
<td>comparative, superlative</td>
<td>D _ N the big house</td>
</tr>
<tr>
<td></td>
<td>big – bigger – biggest</td>
<td></td>
</tr>
<tr>
<td>Adverb</td>
<td>often has -ly suffix</td>
<td>modifies V, Adj, Adv a really big house</td>
</tr>
<tr>
<td></td>
<td>really, but: well</td>
<td></td>
</tr>
</tbody>
</table>

Auxiliary verbs (Aux)

will, may, must, shall, would, can, have

Syntax:

1. Is followed by a verb: \( _V \)
   It will rain. You must be quiet.
2. Is negated directly: \( _\text{not} \)
   He cannot swim. She would not come.
   *He doesn’t can swim. *She doesn’t would come.

Normal verbs vs. Auxiliary verbs:
### Prepositions (P)

- **in, on, about, with, at, to, of, under**

Syntax: stand before noun phrases (see later, simply NP = Det (Adj) N)

Semantics: usually express spacial, temporary, etc. relations.

- on the table, with nice colors, about mammals

### Verbs

#### Auxiliary verbs

<table>
<thead>
<tr>
<th>Negation</th>
<th>Needs aux do</th>
<th>Directly</th>
</tr>
</thead>
<tbody>
<tr>
<td>*I don't want it.</td>
<td>*I will not come.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question</th>
<th>Needs aux do</th>
<th>Inversion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you know it?</td>
<td>*Do you will come?</td>
<td>Will you come?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Agreement</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>He knows it.</td>
<td>*He wills come</td>
<td>He will come</td>
</tr>
</tbody>
</table>

*Be, have and do are sometimes normal verbs and sometimes auxiliary verbs. (I don't have it. vs. I have not seen it.)*

### Pronouns (Pron)

Words that stand for a noun or a whole noun phrase.

*I, you, he, she, it, we, they, me, him, her, us, them*

Note: It is better to classify possessive pronouns (traditionally called possessive pronouns) as determiners since they behave differently: pronouns act as nouns, but possessives modify nouns:

- Pronoun: *I run. vs. *My run.*
- Possessive: *John likes I house. vs. John likes my house.*

Pronoun: Based on Latin pro (for) + noun

### Conjunctions (Conj)

- **and, or, but, . . .**

Syntax connect two words or phrases on the same level

1. N _ N (women and men)
2. V _ V (run or walk)
3. Adj _ Adj (warm but rainy)
4. S _ S (I will talk and he will write.)
5. etc.
Words belonging to more than one lexical category

Some words belong to several categories:

- They have similar meaning:
  - *She talks very much.* vs. *She is giving three talks.*
  - *It’s cold.* vs. *I got a cold.*
- They have completely different meanings:
  - *I can’t bear the noise.* vs. *There is a bear in the wood.*
  - *tree barks* vs. *the dog barks*

Virtually all English nouns can be turned into verbs.