SYNTAX (Part 3)

TRANSFORMATIONS

Phrase structure rules cannot account for *all* syntactic phenomena.

INVERSION IN *YES-NO* QUESTIONS
                    ↓
        the expected answer is *YES* or *NO*

        Examples: *Should John leave?*
                Can Mary do it?

Problem: the Aux is positioned to the left of the NP, in contrast to the usual position:

        John should leave.
        Mary can do it.

Solution: Add a transformational rule to the grammar by retaining the original rule.

Transformation: a syntactic rule that can move an element from one position to another.

In case of YES-NO questions the transformational rule that applies is known as INVERSION.
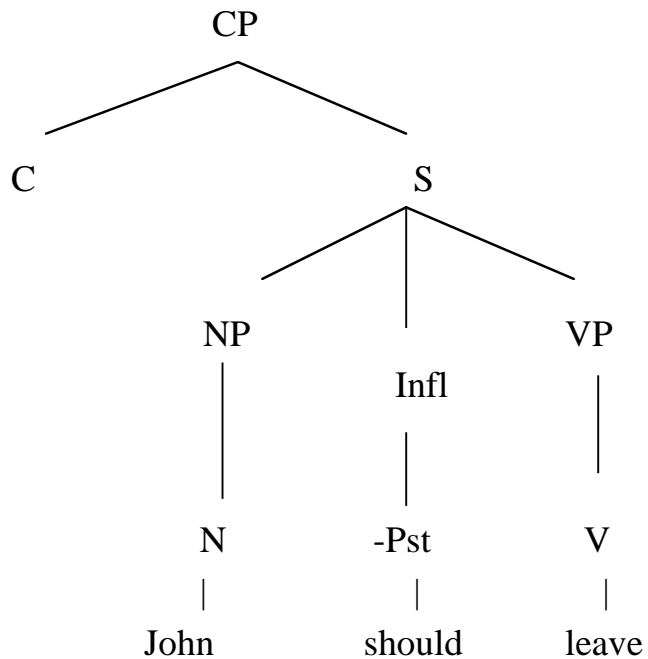

        John should leave.

Inversion: Move Infl to the left of the subject NP.
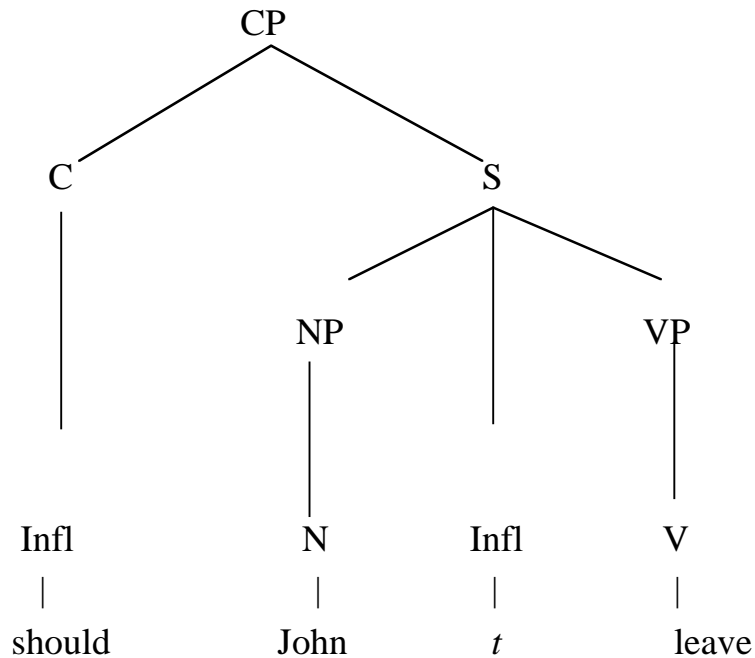
Should John __ leave?

Assumption: all sentences (S) occur within CPs. A CP should be considered a shell that forms a larger structure around an S.

(When S is embedded, the CP has a complementizer in the C position; elsewhere the C position is left empty.)

```
                     CP
                 ____/\____
               /            \
              C              S
                         ___/|\___
                        /    |    \
                      NP    Infl   VP
                      |      |      |
                      |      |      |
                      N    -Pst     V
                      |      |      |
                    John   should  leave
```

S is inside a CP shell!!

Inversion: Move Infl to C

```
                          CP
                _____/  _____
               /                      \
              C                        S
              |                 _____/|_____
              |                /         |        \
              |              NP         |         VP
              |               |         |          |
              |               |         |          |
            Infl             N        Infl         V
              |               |         |          |
           should           John        t        leave
```

(*t* = stands for *trace*)
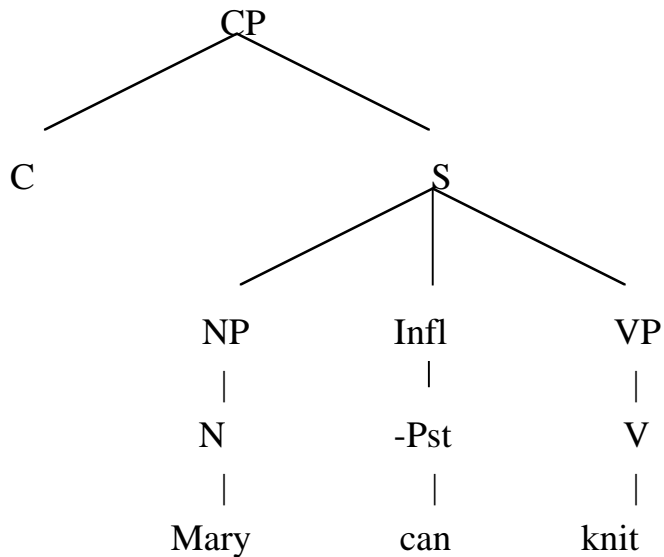

Advantages of the Inversion Transformation:

1.   We don't have to work with two types of Aux verbs (one occurring at the beginning
      of the sentence, the other in the usual position in VP).
2.   The Inversion Transformation captures the fact that both sentences are formed with
      the same set of Phrase Structure Rules -- thus, sharing the same structure; they only
      differ in that the question structure undergoes transformation.

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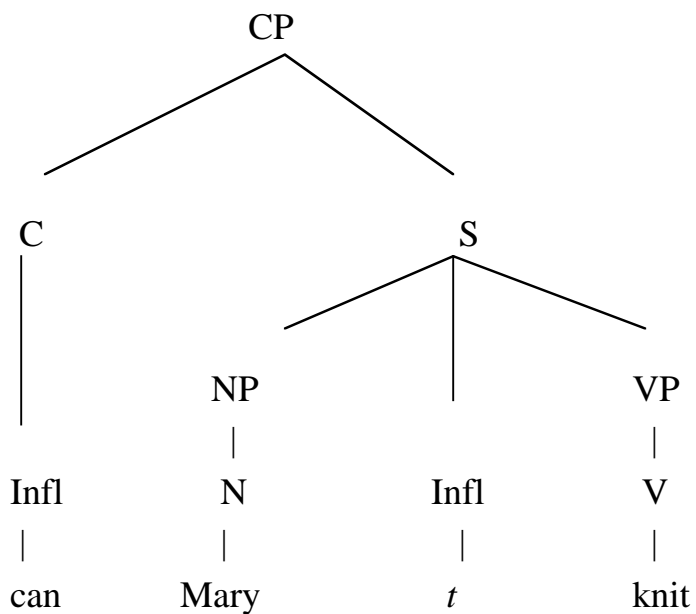There are two levels of syntactic representation:

DEEP STRUCTURE: The structure generated by the Phrase Structure Rules in accordance with the subcategorization properties of the heads.

SURFACE STRUCTURE: the structure that results from the application of transformation rules.

Deep structure: *Mary can knit.*

```
                    CP
           _____/_____
          /                  \
         C                    S
                     _____/|_____
                    /         |         \
                   NP        Infl        VP
                   |          |          |
                   N         -Pst        V
                   |          |          |
                 Mary        can        knit
```

Surface structure: *Can Mary knit?*

```
                     CP
            _____/_____
           /                  \
          C                    S
          |            _____/|_____
          |           /       |       \
          |          NP       |        VP
          |          |        |        |
        Infl         N       Infl       V
          |          |        |         |
         can       Mary       t        knit
```

Steps of rule application: DERIVATION.

THE SYNTACTIC COMPONENT OF THE GRAMMAR

Phrase Structure Rules (XP Rules)
↓
Deep Structure ← (subcategorization: restricts choice of complements)
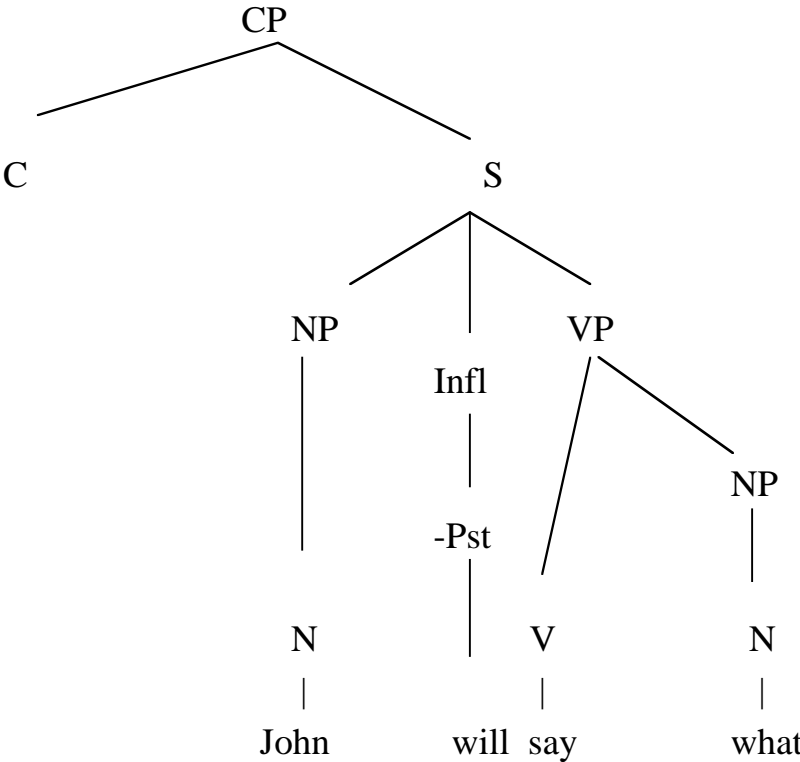↓
Transformational Rules
↓
Surface Structure
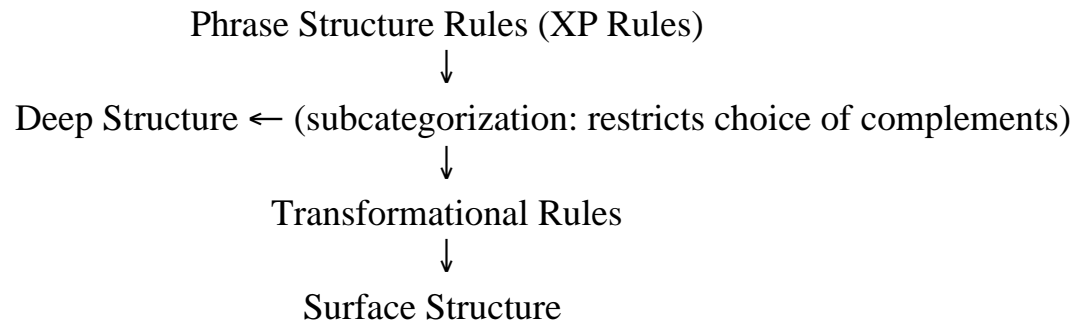
WH MOVEMENT

Wh questions: Sentences with question words starting with *wh-* (*what, who, which*, etc.)

who and *what* are treated as nouns; *which* is treated as a determiner (see below)

   What will John say?

1.   Deep structure:

```
                      CP
               ┌──────┴──────┐
               C             S
                      ┌───────┼───────┐
                     NP      Infl      VP
                      │       │     ┌───┴───┐
                      │      -Pst   V       NP
                      N       │     │       │
                      │       │     │       N
                    John    will   say      │
                                          what
```

2.   *WH* MOVEMENT (move the *wh* phrase into the Specifier position under CP):

```
                        CP
              /          |          \
            NP           C           S
            |                      / | \
            N                    NP Infl VP
            |                     |   |  / \
          what                    N   V    NP
           ↑                      |   |    |
           |                    John will say   t
           |_____|
```

3.   INVERSION (move Infl to C)

```
                         CP
                        /|\
                       / C \
                      /  |   \
                     /   |    S
                    /    |   /|\
                   /     |  / | \
                 NP      | NP |  VP
                  |      |  |  |  /\
                  |      |  |  | /  \
                  |      |  |  |/    \
                  N      |  N Infl V  NP
                  |      |  |  |  |   |
                what    will John t say  t
                          ↑_____|
```
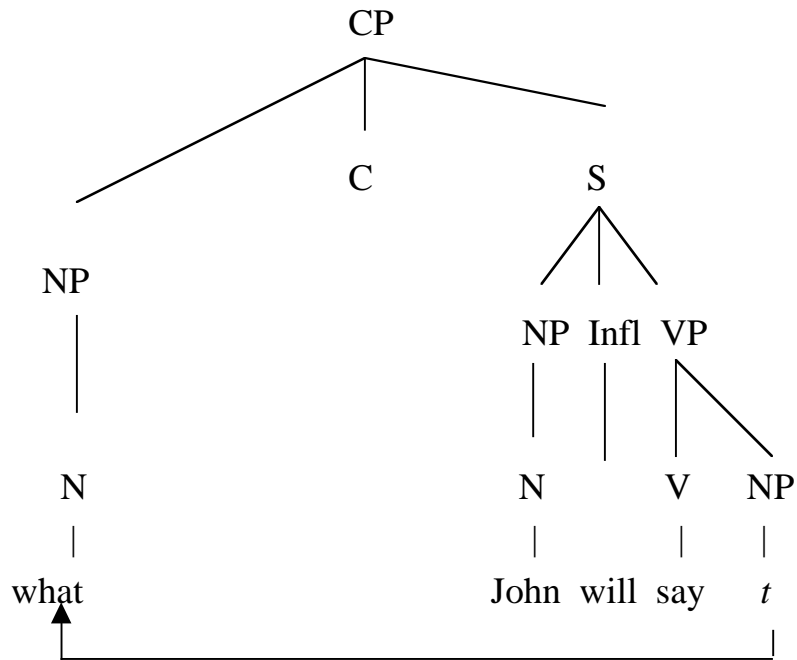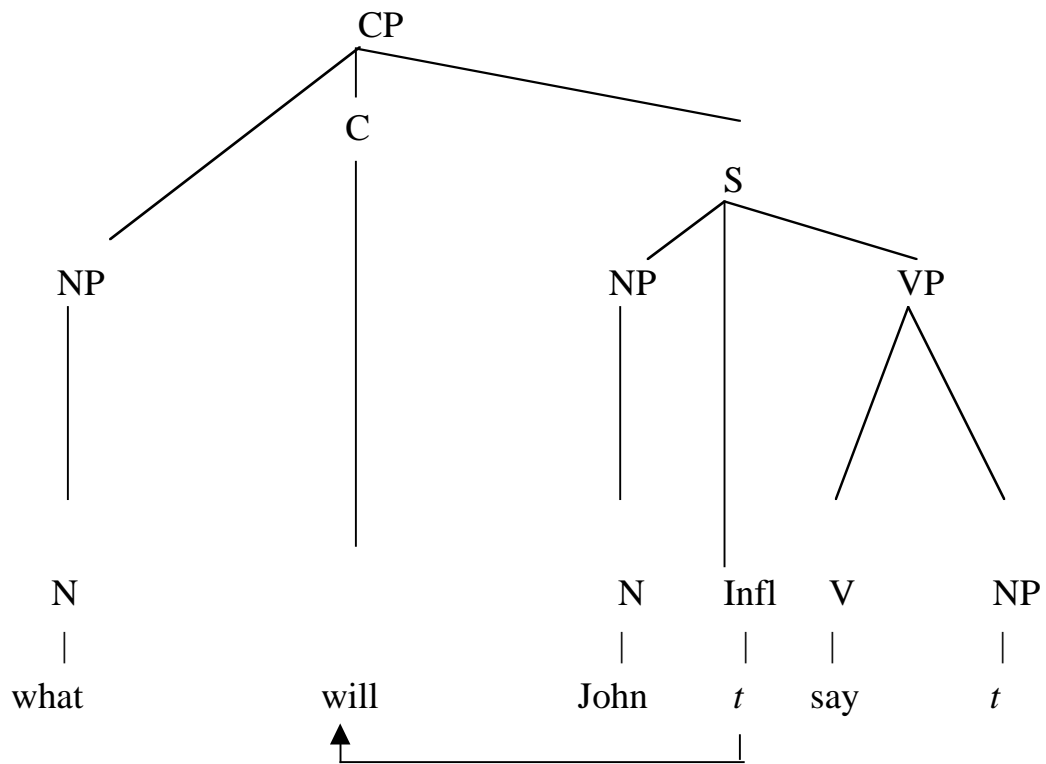
Which car should the man fix?

Deep structure:

    The man should fix which car

Wh Movement and Invertion:

Which car should the man ___ fix ____

↑   ↑ Inversion

Wh Movement
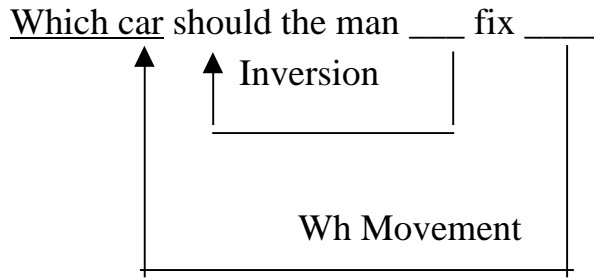
AMBIGUOUS PHRASES AND SENTENCES

old men and women

a.
```
                    NP
                  /    \
                AP      N
                |      /|\
                A    N Con N
                |    |  |  |
               old  men and women
```

(Con = Conjunction)

b.
```
                         NP
                    /     |     \
                  NP      |      NP
                 / \      |       |
               AP   \     |       |
               |     \    |       |
               A      N   C       N
               |      |   |       |
              old    men  and   women
```

Judy hit the man with an umbrella

a.

```
                        S
          _____|_____
         |               |               |
         NP             Infl             VP
         |               |          _____|_____
         |              +Pst       |            NP
         |                         |       _____|_____
         |                         |      |      |      PP
         |                         |      |      |    ___|___
         N                         V     Det  N   P        NP
         |                         |      |   |   |       /__\
        Judy                      hit    the man with   an umbrella
```

b.

```
                S
            ____|____
           |    |    |
          NP   Infl  VP
           |    |    |_____
           |   +Pst  |     |      |
           |         |    NP     PP
           |         |    /\    __|__
           N         V  Det  N  P    NP
           |         |   |   |  |    /\
          Judy      hit the man with an umbrella
```

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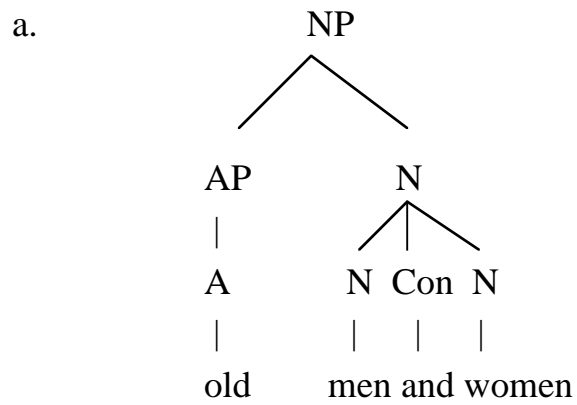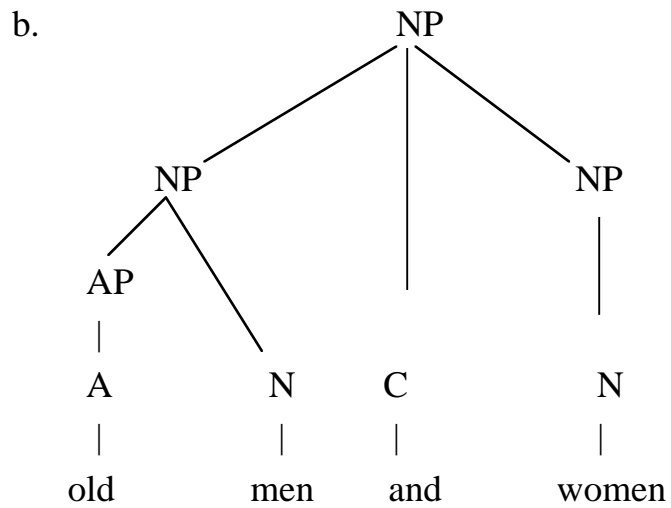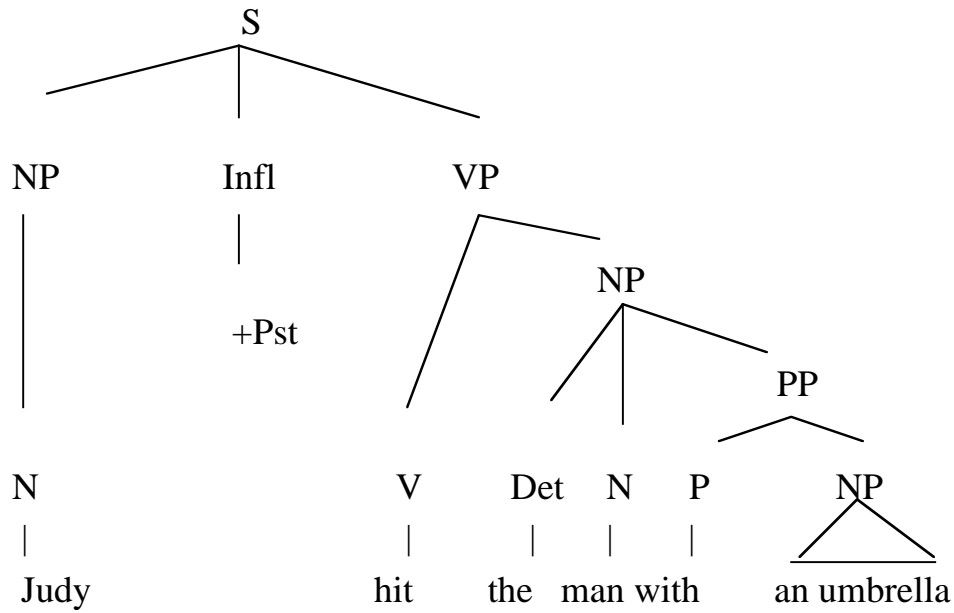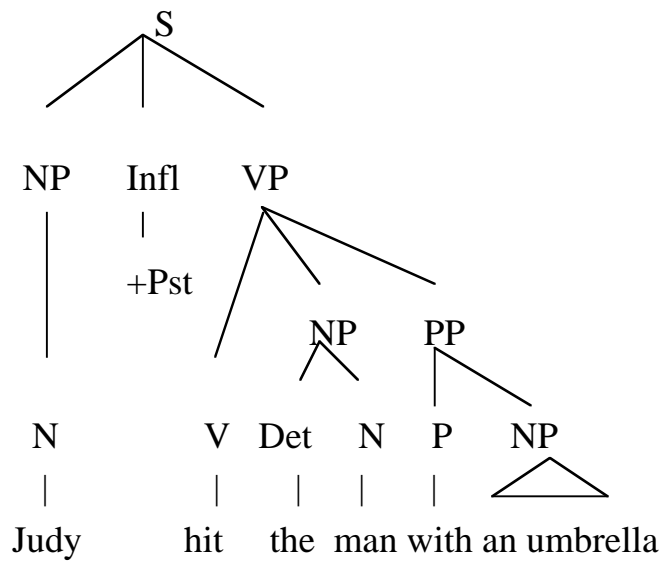
How to build tree structures?
↓
Study pp. 207-210.