Head to Head Movement

Deriving word orders that X-bar theory can't account for.
A Problem with X-bar

- X-bar theory requires that nothing may intervene between a head and its complement (by definition).
- Direct objects are the complements of verbs
A Problem for X-bar
A Problem for X-bar

- 9% of the world’s languages exhibit VSO order

V  S  O
Phóg Máire an lucharachán
Kissed Mary the leprechaun
“Mary kissed the leprechaun”
A Problem for X-bar

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• The subject (a specifier) intervenes between the V and its complement.
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Phóg Máire an lucharachán
Kissed Mary the leprechaun
“Mary kissed the leprechaun”

- The subject (a specifier) intervenes between the V and its complement.

- You can’t draw a tree like this! Try it!
A new kind of rule
A new kind of rule

- **Movement Rule**: A rule that moves something around in the sentence
- Affix lowering
- Subject/Aux Inversion
A new kind of rule

- **Movement Rule**: A rule that moves something around in the sentence
- Affix lowering
- Subject/Aux Inversion
- We’ll use movement rules to account for word order paradoxes like VSO order.
A new kind of rule

- **Movement Rule**: A rule that moves something around in the sentence
- Affix lowering
- Subject/Aux Inversion
- We’ll use movement rules to account for word order paradoxes like VSO order.
- The first movement rule we’ll look at is head-to-head movement. (Moving a head into a head).
French Adverbs
French Adverbs

- Adverbs are adjuncts
French Adverbs

- Adverbs are adjuncts
- But adverbs in French appear between the verbal head and the object (complement)
French Adverbs

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- But adverbs in French appear between the verbal head and the object (complement)

Je mange souvent des pommes  
I eat often the apples

“l often eat apples”
French Adverbs

- Adverbs are adjuncts
- But adverbs in French appear between the verbal head and the object (complement)

- Je mange souvent des pommes $V$ adv $Obj$
  I eat often the apples
  “I often eat apples”

- Compare: I often eat apples $adv$ $V$ $Obj$
English Adverbs

If the verb appears before the adverb in French, where does it attach?

If the verb appears before the adverb in French, where does it attach?
French vs. English Adverbs

a) Je mange souvent des pommes
   I eat often apples

b) J’ ai souvent mangé des pommes
   I have often eaten apples

b) I have often eaten apples

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French vs. English Adverbs

a) Je mange souvent des pommes
   I eat often apples

b) I often eat apples

c) J’ai souvent mangé des pommes
   I have often eaten apples

b) I have often eaten apples
French vs. English Adverbs

a) Je mange souvent des pommes
   I eat often apples

b) I often eat apples

c) J’ai souvent mangé des pommes
   I have often eaten apples

verb appears here when T is filled
French vs. English Adverbs

a) Je mange souvent des pommes
   I eat often apples

b) I often eat apples

b) I have often eaten apples

verb appears here when T is filled

Verb appears here when no overt auxiliary

c) J'ai souvent mangé des pommes
   I have often eaten apples

c) "I have often eaten apples"

c) J'ai souvent mangé des pommes

T

conclusion: tensed V in French is in T
English Negation

\[
\begin{align*}
\text{TP} & \quad \text{DP} \quad \text{T'} \\
\text{do} & \quad \text{NegP} \\
\text{not} & \quad \text{Neg'} \\
\text{eat} & \quad \text{DP} \\
\text{apples} &
\end{align*}
\]
## French vs. English Neg

<table>
<thead>
<tr>
<th>French</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Je ne-mange pas des pommes</td>
<td>I do not eat apples</td>
</tr>
<tr>
<td>b) I have not eaten apples</td>
<td></td>
</tr>
<tr>
<td>c) Je n’ai pas mangé des pommes</td>
<td>I have not eaten apples</td>
</tr>
</tbody>
</table>
### French vs. English Neg

<table>
<thead>
<tr>
<th>a)</th>
<th>Je ne-mange pas des pommes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I eat not apples</td>
</tr>
</tbody>
</table>

| b) | I do not eat apples         |

<table>
<thead>
<tr>
<th>c)</th>
<th>Je n’ai pas mangé des pommes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I have not eaten apples</td>
</tr>
</tbody>
</table>

| b) | I have not eaten apples      |
French vs. English Neg

a) Je ne-mange pas des pommes
   I do not eat apples

b) I do not eat apples

b) I have not eaten apples

verb appears here when T is filled
French vs. English Neg

a) Je ne-mange pas des pommes
   I eat not apples

b) I do not eat apples

c) Je n’ai pas mangé des pommes
   I have not eaten apples

Verb appears here when no overt auxiliary
verb appears here when T is filled

T
French vs. English Neg

a) Je ne-mange pas des pommes
   I eat not apples

b) I do not eat apples

b) I have not eaten apples

b) I have not eaten apples

Verb appears here when T is filled

verb appears here when T is filled

T

Verb appears here when no overt auxiliary

Conclusion: tensed V in French is in T
Verb Raising  \( V \rightarrow T \)
Verb Raising  \[ V \rightarrow T \]
Verb Raising  \[V \rightarrow T\]

Je mange des pommes

Je ne mange pas souvent des pommes
Verb raising is motivated by the inflectional suffixes!
Verb raising is motivated by the inflectional suffixes!

• In English, T lowers to attach suffixes to the verb.
Verb raising is motivated by the inflectional suffixes!

- In English, T lowers to attach suffixes to the verb.
- In French, the verb raises to T to get the suffix on the verb
Verb raising is motivated by the inflectional suffixes!

- In English, T lowers to attach suffixes to the verb.
- In French, the verb raises to T to get the suffix on the verb.
- The verb raising parameter: Verbs raise to T  OR  T lowers to V.
Verb Raising in Vata

a) a la saka li
we have rice eaten
“We have eaten rice”

b) a li saka tv
we eat rice
“We eat rice”

Data from Koopman 1984
Verb Raising in Vata

a) a la saka li
we have rice eaten
“We have eaten rice”

b) a li saka tv
we eat rice
“We eat rice”

Data from Koopman 1984
Verb Subject Object Order

1) Tá Máire ag-pógáil an lucharachán
   Is Mary ing kiss the leprechaun
   “Mary is kissing the leprechaun”

2) Phóg Máire an lucharachán
   kissed Mary the leprechaun
   “Mary kissed the leprechaun”

Tensed verbs and Auxiliaries in Irish show positional alternations just like Vata and French.
Verb Subject Object Order

1) Tá Máire ag-pógáil an lucharachán
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Tensed verbs and Auxiliaries in Irish show positional alternations just like Vata and French.
Problem: How do you get the subject after T?

- VP internal Subject hypothesis: Subjects are generated in the specifier of VP

```
T'  
|   |  VP 
|   |     
| T | Subj |
|   |   V' |
   V  Obj
```
Problem: How do you get the subject after T?

- VP internal Subject hypothesis: Subjects are generated in the specifier of VP
Problem: How do you get the subject before T in French??

- Subjects in French and English (but NOT Irish) raise from spec VP to spec TP (the reasons will be discussed in the next unit)
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Summary of V to T
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- Observation: These orders don’t show overt auxiliaries
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- Verb movement is motivated by inflectional suffixes.
- English doesn’t show verb movement: Verb Raising parameter.
- Subjects in all languages start in spec of VP
Another instance of head movement: $T \rightarrow C$

Subject Aux Inversion:

You *have* squeezed the Charmin©

*Have* you squeezed the Charmin©?

Complementizer question particles in Irish

An bhfaca tú an madra

Q See you the dog

“did you see the dog”
T to C movement

\[
\begin{array}{c}
\text{C} \\
\text{Ø}_{[+Q]} \\
\text{DP} \\
\text{you} \\
\text{T'} \\
\text{have} \\
\text{TP} \\
\text{C'} \\
\text{CP} \\
\end{array}
\quad
\begin{array}{c}
\text{C} \\
\text{have} \\
\text{Ø}_{[+Q]} \\
\text{DP} \\
\text{you} \\
\text{T'} \\
\text{TP} \\
\text{C'} \\
\text{CP} \\
\end{array}
\]
T to C movement

```
CP  
  |
  C'  
  |
  C   
μ[+Q]  
  |
  DP  
  |  
you
  |
  T  
  |
  have

CP  
  |
  C'  
  |
  C   
μ[+Q]  
  |
  DP  
  |  
you
  |
  T  
  |
  have+μ[+Q]
  tT
  |
  VP
```
T to C

- Evidence: subject/aux inversion not allowed with an embedded Q complementizer

I asked *have you squeezed the Charmin*
I asked whether you *have squeezed the Charmin*
*I asked whether *have you squeezed the Charmin.*
Interaction between V to T and T to C

- In French, both main verbs and auxiliaries are in T. Prediction: both main verbs and auxiliaries will undergo T to C:

  Avez-vous Mangé des pommes?
  have-you eaten the apples

  Mangez vous des pommes?
  Eat you the apples

\[ \text{CP} \quad \text{TP} \quad \text{Subj} \quad \text{T}' \quad \text{T} \quad \text{VP} \quad \text{V} \quad \ldots \]
Interaction between V to T and T to C

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Avez-vous Mangé des pommes?
have-you eaten the apples

Mangez vous des pommes?
Eat you the apples
Interaction between V to T and T to C

- In English, only auxiliaries are in T. Prediction: only auxiliaries will undergo T to C:
  
  Have you eaten the apples?

  *Eat you the apples?
Interaction between V to T and T to C

- In English, only auxiliaries are in T. Prediction: only auxiliaries will undergo T to C:

  Have you eaten the apples?

  *Eat you the apples?
Do Support
Do Support

I have eaten the apples
Have you eaten the apples?
I ate the apples
*Ate you the apples?
Did you eat the apples?
Do Support

I have eaten the apples
Have you eaten the apples?
I ate the apples
*Ate you the apples?
Did you eat the apples?

- Where does this “do” thing come from???
Do Support

I have eaten the apples
Have you eaten the apples?
I ate the apples
*Ate you the apples?
Did you eat the apples?

• Where does this “do” thing come from???

• Also appears in negation

I eat apples
I do not eat apples
Do Support
Do Support

**Do Insertion**

When there is no other option for supporting inflectional affixes, insert the dummy verb *do* into T.

1) T can’t both lower to V and raise to C -- so it appears in questions

2) For some reason, Negation blocks Affix lowering.
Multiple Auxiliaries

• Shannon should have been being fed at the table.

• Modals are in T:
  • Shannon should not have been being fed at the table
  • Shannon should \([\text{Adv never}]\) have been being fed at the table.

• this means that \textit{have} and \textit{be} are NOT in T in the sentence above (although they are in other constructions: Shannon has not eaten)

• How do they get there? Verb Movement
Multiple Auxiliaries:
Stacked VPs
Multiple Auxiliaries: Stacked VP

CP
  C'
    C
      TP
        DP
          T'
            Shannon
        T
            VP
              V'
                V
                  V'
                    V
                      V
                        etc.

have
been
With a suffix

```
CP
  \- C'
    \- C
      \- Ø
        \- DP
          \- Shannon
            \- T
              \- Ø\textsubscript{past}
                \- T'
                  \- TP
                    \- VP
                      \- V'
                        \- V
                          \- eat
```
With a suffix

CP → C' → C → Ø → DP → T' → T → -Ø_{past} → VP → V' → V

Shannon → t → eat
With a modal but no auxiliary

\[
\text{CP}
\]
\[
\text{C'}
\]
\[
\text{C}
\]
\[
\emptyset
\]
\[
\text{TP}
\]
\[
\text{DP}
\]
\[
\text{T'}
\]
\[
\text{T}
\]
\[
\text{Shannon should VP}
\]
\[
\text{t}
\]
\[
\text{V'}
\]
\[
\text{V eat}
\]
Single Aux

Shannon had eaten past.
Single Aux

CP
  C'
    C
      TP
        DP
          Shannon
            T
              T'
                Ø
                VP
                  Øpast
                    V'
                      V
                        V'
                          VP
                            t
                              V
                                V'
                                  eaten

had t eaten past
Verb Raising in English?

- Wait... English is affix lowering! Not verb raising

- Revised verb raising parameter
  1. All tensed verbs raise to T (French, Irish)
  2. Tensed Auxes raise to T and tense affixes lower to tensed main verbs
Affix Hopping

- Shannon ate/ Shannon eats  simple past/present  -ed/-s
- Shannon should eat  modal  modal V
- Shannon has eaten  perfect(ive)  have + en
- Shannon is eating  progressive  be + ing
- The bread was eaten  passive  be + en
(sometimes -ed, but we’ll use -en to avoid confusion)
The grand slam (leaving out modals)
The grand slam (leaving out modals)

- Shannon had been being beaten
The grand slam (leaving out modals)

- Shannon had been being beaten
- Shannon ha(ve)+d be+en be+ing beat+en
The grand slam (leaving out modals)

- Shannon had been being beaten

- Shannon ha(ve)+d be+en being beat+en

passive
The grand slam (leaving out modals)

- Shannon had been being beaten

- Shannon ha(ve)+d be+en be+ing beat+en

progressive passive
The grand slam (leaving out modals)

- Shannon had been being beaten

- Shannon ha(ve)+d be+en be+ing beat+en

  perfect  progressive  passive
The grand slam (leaving out modals)

- Shannon had been being beaten

- Shannon had been beaten

Diagram:

- Shannon (tense) had been being beaten
  - Perfect: Shannon had been beaten
  - Progressive: Shannon had been being beaten
  - Passive: Shannon had been beaten by someone
The types of Aux

$V_{\text{perf}}$
- have
- -en

$V_{\text{prog}}$
- be
- -ing

$V_{\text{passive}}$
- be
- -en
Shannon had eaten
Shannon had eaten
Shannon had eaten

have + $\varnothing_{\text{past}} = \text{had}$
Perfect

Shannon had eaten

have + Ø_{past} = had
The grand slam

- Shannon -ed [v have -en] [v be -ing] [v be -en] [v beat]

See the textbook for a tree
The grand slam

- Shannon -ed \([\mathbf{\forall} \text{ have -en}] \) \([\mathbf{\forall} \text{ be -ing}] \) \([\mathbf{\forall} \text{ be -en}] \) \([\mathbf{\forall} \text{ beat}] \)

See the textbook for a tree
The grand slam

V (Aux) to T

- Shannon -ed [v have -en] [v be -ing] [v be -en] [v beat]

See the textbook for a tree
The grand slam

V (Aux) to T

- Shannon -ed [v have -en] [v be -ing] [v be -en] [v beat]

Three instances of affix lowering

See the textbook for a tree
The grand slam

- Shannon *-ed* [\(\nu\) have *-en*] [\(\nu\) be *-ing*] [\(\nu\) be *-en*] [\(\nu\) beat]

Three instances of affix lowering

See the textbook for a tree

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The grand slam

V (Aux) to T

- Shannon -ed [v have -en] [v be -ing] [v be -en] [v beat]

Three instances of affix lowering

See the textbook for a tree
The grand slam

V (Aux) to T

Shannon -ed \[v \text{ have -en}\] \[v \text{ be -ing}\] \[v \text{ be -en}\] \[v \text{ beat}\]

Three instances of affix lowering

See the textbook for a tree
Summary
Summary

- Word Orders not produced by X-bar (VSO, VadvO, VNeg O) are generated by head to head movement.
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- V to T: motivated by the need for T to be pronounced
Summary

- Word Orders not produced by X-bar (VSO, VadvO, V Neg O) are generated by head-to-head movement.
- V to T: motivated by the need for T to be pronounced.
- V to T alternates with Affix lowering (parameter).
Summary

- Word Orders not produced by X-bar (VSO, VAdvO, V Neg O) are generated by head to head movement.
- V to T: motivated by the need for T to be pronounced
- V to T alternates with Affix lowering (parameter)
- VSO order results from a conspiracy of V to T and VP internal subjects
Summary
Summary

• Subject Aux Inversion involves T to C movement.
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• T to C movement motivated by need to pronounce [+Q] Complementizer
• (evidence: overt complementizers block T to C)
Subject Aux Inversion involves T to C movement.

T to C movement motivated by need to pronounce [+Q] Complementizer

• (evidence: overt complementizers block T to C)

T to C and V to T interact.
Summary

- Subject Aux Inversion involves T to C movement.
- T to C movement motivated by need to pronounce [+Q] Complementizer
  (evidence: overt complementizers block T to C)
- T to C and V to T interact.
- Do support triggered when T can’t be supported any other way.