Review of where we are…

The structure of the grammar:

- DS ← phrase structure rules
- movement rules
- surface structure (abstract) → SS ← more movement rules
- “phonetic form” → PF LF ← “logical form” (meaning)

\[ X' \text{ Theory} \quad \Rightarrow \quad \theta \text{-Theory} \]

Case Theory

Binding Theory

\[ X' \text{ Theory} \]

\[ \theta \text{-Theory} \]

\[ \theta \text{-Role} \]

Spec-Head Agreement

A head (X) and its specifier (SpecXP) must agree in the relevant features.

“Relevant features” include:
- \( \phi \)-features (person, number, gender) in SpecIP
- [Nominative Case] feature in SpecIP.

\([-Q]\)-CP Principle

A [-Q]-CP must have a [+wh] specifier.

Extended Projection Principle (EPP)

Clauses must have a subject (that is, ‘The specifier of IP must be filled.’).

The \( \theta \)-role is the semantic role (thematic role) played by the argument in the event.

An argument is a ‘referring expression’

The verb assigns \( \theta \)-roles to its syntactic arguments.

(4) The goalie kicked the ball.

\[ \text{Agent} \quad \text{kicked} \quad \text{Patient} \]

(5) External \( V' \)

Internal means “internal to the V’”

External means “external to the V’”

\[ \text{External} \quad V' \quad \text{Internal} \]
(6) kick: Agent <Patient>  smile: Agent <Ø>

Structural positions where a θ-role is assigned are called θ-positions. Positions where no θ-role is assigned are called θ'-positions.

Chains: The collection of positions occupied by a single argument.

(7) Mary seems to have solved the problem.

Chain: {Mary, t₁}

The θ-criterion
i) Each argument chain must be assigned exactly one a θ-role.
ii) Each θ-role must be assigned to exactly one argument chain.

Requires that we consider unmoved arguments to be trivial chains.

Traces have the status of logical variables, and count as referring expressions.

wh-words (what) and quantifiers (everyone) do not count as referring expressions.

Movement can save “violations” of the θ-criterion that occur at DS.

(8) a. Who solved which problem?
b. What did John give to whom?

This implies that the θ-criterion is checked at LF.

An A-position (argument position) is a structural position where an argument can be found at LF.

An A’-position is a structural position where a non-argument can be found at LF.

A chain of movement to an A-position is an A-chain.
A chain of movement to an A’-position is an A’-chains.

NPs are assigned Case by something (like θ-roles are assigned by verbs)

(9) Case Filter (stated as a condition on PF)
*NP if NP has phonetic content and has no Case.

(10) C-command
α c-commands β iff:
i) the first branching node dominating α also dominates β.
ii) α does not dominate β.

(11) A c-commands C, D, and E  B c-commands E (and vice versa)
    D c-commands B (and vice versa)

Informally: To find what a node c-commands, go up one level, and it is everything below it except the original node.

(12) \[\begin{array}{c}
\text{category (XP)} \\
\text{segment (XP₁)} \\
\text{adjunct (XP₂)} \\
\text{segment (XP₃)} \\
\end{array}\]

\[\begin{array}{c}
\text{XP₁} \\
\text{XP₂} \\
\text{XP₃} \\
\end{array}\]

Segments count for determining c-command.

(13) Government
α governs β iff
i) α is an X° category (that is, α is a head)
ii) α c-commands β
iii) Minimality is respected.

(14) Minimality Condition
In the configuration \[\text{XP} \ldots \text{X} \ldots \text{YP} \ldots \text{Y} \ldots \text{Y} \ldots \text{ZP} \ldots\]
X does not govern ZP.

(15) \[\begin{array}{c}
\text{X} \\
\text{YP} \\
\text{Spec} \\
\text{Y'} \\
\text{Y} \\
\text{ZP} \\
\end{array}\]

X does not govern ZP.

\[\begin{array}{c}
\text{Y does govern ZP (it’s closer).} \\
\end{array}\]
**Case-adjacency** (English):  
*A DP can only receive Case if it is (string) adjacent to the Case-assigner.*

(16) a. *John makes frequently mistakes.*  
b. John frequently makes mistakes.

(17) **Case Requirement**  
A chain is Case-marked if it contains exactly one Case-marked position.

(18) **Finite Infl assigns nominative Case via Spec-head agreement**

**Passives.** Attaching -en suppresses the external θ-role, and removes ("absorbs") the verb’s ability to assign accusative Case.

(19) *eat:* Agent <Theme> → eaten: — <Theme> Passive

(20) *break:* Ø <Theme> Unaccusative

(21) [IP [the vase], [VP broke it]]

(22) **Burzio’s Generalization**  
A verb (with an object) Case-marks its object iff it θ-marks (i.e. assigns a θ-role to) its subject.

(23) a. All the travelers should drink from the well.  
b. The travelers should all drink from the well.

(24) a. [QP All [DP the travelers]], should [VP t_i drink from the well].  
b. [DP The travelers], should [VP [QP all t_i] drink from the well].

**Note:** V can only assign Case via government and Infl can only assign Case via Spec-Head agreement.

**Movement comes in four different kinds, each with its own conditions:**

- **movement of phrasal (XP) constituents**
- **XP-movement**
- **X-movement**
- **Wh-movement**
  - topicalization
  - Move-NP
  - Extrapolation
  - movement of terminal categories

**Trace convention**  
Movement transformations leave a trace behind.

**Wh-movement**  
Move wh-XP to SpecCP when:

(i) C is [+Q] if wh-word does not move further.
(ii) the wh-XP is not inside a [+Q] CP (except the one containing the C).
(iii) the wh-XP is not inside a complex DP.
(iv) there is no nearer C.

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(iv) there is no nearer C.

Wh-movement must happen in order to satisfy the [+Q]-C requirement and the θ-criterion (because wh-words are not arguments). It is movement to SpecCP, an A’-position, so it creates an A’-chain.

**NP-movement**  
Move DP to an empty subject position (SpecIP).

(27) a. Mary solved the problem.  
b. The problem was solved (by Mary).

(28) a. It seems (that) Mary has solved the problem.  
b. Mary seems to have solved the problem.
NP-movement is movement to SpecIP, an A-position, so this creates an A-chain. NP-movement satisfies the EPP. NP-movement cannot occur out of a tensed IP because this would result in the A-chain being Case marked twice (once by the embedded I, once by the root clause I).

**Extraposition** (a rightward movement rule)
Move XP and adjoin it (rightward) to VP.

(29) a. [Details of a secret plan to finance the rebels] have emerged.
    b. Details have emerged of a secret plan to finance the rebels.  *extraposition*

**Heavy NP shift** (a subcase of Extrapolation)
Move a ‘heavy’ DP and adjoin it (rightward) to VP.

(30) a. Mary read [DP all the books she had borrowed].
    b. Mary returned [DP all the books she had borrowed] to the library.
    c. Mary returned [DP all the books she had borrowed] to the library.

(31) a. Mary read Aspects.
    b. Mary returned Aspects to the library.
    c. * Mary returned Aspects to the library.
    
    *Aspects not “heavy enough”*

**Goal:** Support Tense.

**Preferences:**
- Prefer V-raising to Affix Hopping
- Prefer Affix Hopping to Do-support.

- If Tense is already supported (if there is a modal in Infl), goal is met.
- If Tense is still unsupported and V-raising can be applied (there is a [+AUX] V),
  apply it; goal is met.
- If Tense is still unsupported and Affix Hopping can be applied (Infl doesn’t have a NegP complement), apply it; goal is met.
- If Tense is still unsupported, apply Do-support (as a “last resort”).

**V-Raising**
Raise V to Infl provided V has the feature specification [+AUX].

**Affix Hopping**
Move Infl to V, provided:

i) Infl does not have a NegP complement.
ii) Infl is adjacent to VP which dominates the targeted V.

**Substitution:** Replaces an empty (but existing) position with a moved element.

(34) a. [IP e [I I was solved the problem [VP  solved the problem]]  
    b. [IP the problem, [I I was solved t [VP solved t]],

(35) a. I wonder… [CP e [C C [VP  John bought what]]]
    b. I wonder… [CP what, [C C [VP  John bought t]],

(32) IP
    NP
    John
    I
    t_i
    t_j
    VP
    V
    V'
    cleaverly
    N
    Bill

(33) CP
    NP
    C
    C'
    C
    [+Q]
    will
    will_i
    I
    I'
    t_i
    t_j
    VP
    V
    V'
    eat
    t_k
    t_j
    NP

(35) a. I wonder… [CP e [C C [VP  John bought what]]]
    b. I wonder… [CP what, [C C [VP  John bought t]],

(32) I-raising
Move I to C, provided

i) C has the feature specification [+Q]
ii) C is situated in a root clause.

(33) Substitution: Replaces an empty (but existing) position with a moved element.
Adjunction: Creates a new position by attaching to an existing node.

Two logical *scope* readings—we match the logical structure to syntactic structure:

(41)  
\[
\begin{array}{c}
\text{IP} \\
\text{NP} \\
\text{NP}
\end{array}
\begin{array}{c}
\text{IP} \\
\text{IP} \\
\text{NP} \\
\text{NP}
\end{array}
\begin{array}{c}
\text{VP} \\
\text{NP}
\end{array}
\begin{array}{c}
\text{suspects} \\
\text{t}_j
\end{array}
\]

(42)  
\[
\begin{array}{c}
\text{IP} \\
\text{NP} \\
\text{NP}
\end{array}
\begin{array}{c}
\text{IP} \\
\text{IP} \\
\text{NP}
\end{array}
\begin{array}{c}
\text{VP} \\
\text{NP}
\end{array}
\begin{array}{c}
\text{suspects} \\
\text{t}_j
\end{array}
\]

(43)  
Scope

The scope of \( \alpha \) is the set of nodes \( \alpha \) c-commands in the LF representation.

PRO: The \( \theta \)-criterion (and the EPP) demands that there be something in the embedded subject position.

(44)  
\begin{array}{lll}
\text{a.} & \text{John tried} & \{ \text{CP} [\text{IP} \text{PRO}, \text{to leave}] \}.
\text{Subject control} \\
\text{b.} & \text{John persuaded Bill} & \{ \text{CP} [\text{IP} \text{PRO}, \text{to leave}] \}.
\text{Object control} \\
\text{c.} & \text{It is difficult} & \{ \text{CP} [\text{IP} \text{PRO}_{ar} \text{to leave}] \}.
\text{Arbitrary control}
\end{array}

PRO only appears in nonfinite clauses, where no Case is assigned to SpecIP. It is *allowed* because it is not pronounced.

For the moment, we’ll assume that PRO actually *cannot* receive Case.
**Exceptional Case Marking (ECM).** A verb assigns Case to something that is not its argument.

(45)  
- a. Mary believes [John to be intelligent].
- b. Mary believes [him to be intelligent].
- c. * Mary believes [he to be intelligent].
- d. Mary sincerely believes [him to be intelligent].
- e. * Mary believes sincerely [him to be intelligent].

(46)  
```
\[...
V' |
  \[believe\]
  \[NP\] him
  \[I[fin]\] to
  VP
```

(47)  
- a. Mary considers \[AP  John \[A int_{\lambda}elligent]\].
- b. Mary considers \[AP  him \[A int_{\lambda}elligent]\].
- c. * Mary considers \[AP  he \[A int_{\lambda}elligent]\].
- d. Mary sincerely considers \[AP  him \[A int_{\lambda}elligent]\].
- e. * Mary considers sincerely \[AP  him \[A int_{\lambda}elligent]\].

(48)  
```
\[...
V' |
  \[considers\]
  \[NP\] him
  \[A^{'}\]
  \[intelligent\]
```

ECM is blocked by closer governors; hence *believe* cannot take a CP complement:

(49)  
```
* 
  \[VP\]
  \[V\] CP
  \[C\]
  \[NP\] John
  \[I[fin]\] to
  VP
```

C governs the NP *John*, so V can’t.

The DP hypothesis. Genitive (possessive) Case is assigned to the DP in SpecDP by Spec-head agreement between D and SpecDP.

(50)  
```
D
  \[Mary’s\]
  \[DP\]
  \[DP\]
  \[N\]
  \[PP\]
```

D here is for **Determiner**; this is a **Determiner Phrase**.

Pronouns (as well as determiners like *the*) have the category D.

(51)  
- a. You politicians are all alike.
- b. We linguists know the truth.
- c. People trust us linguists.

**Relative clauses**

(52)  
```
\[Bill heard \[NP \[the\] \[speech\] \[S which\] \[S Mary made t_{i}]\].
```

Translation of the book
*Restrictive relatives* restrict the reference of the head noun.
The head noun and the *wh*-phrase are co-indexed (meaning they share the same referent).

(53) Bill heard \[\text{NP the speech, } [\text{S$_{\text{Op}}$, [S$_{\text{S}}$ Mary made t$_{\text{i}}$]]}.\]

(54) a. …the speech that Mary made.
   b. …[NP the speech, [S$_{\text{Op}}$, that [S$_{\text{S}}$ Mary made t$_{\text{i}}$]]].
   c. Comp
      \[\text{Op that}\]

**Recoverability Condition**
The content of a null category must be recoverable (from a co-indexed overt category in the sentence).

**Doubly Filled Comp Filter**
*([Comp wh-XP that/if], if wh-XP is overt (non-null)).*